TSR–M–107
COMMENT LETTER

PAGE 1 OF 1

USDOE
PO Box 3417
Alexandria, VA 22302
Fax # 703-931-9222

5-5-95

Dear DOE,

1/18.01 I am strongly opposed to the development of a new Production Reactor to make tritium. We do not need more nuclear bombs. We also do not need more tritium, a radioactive gas that boosts the explosive power of nuclear bombs. There will be enough tritium from weapons being dismantled to supply the downsized arsenal for at least 21 years, until 2016. Please stop this unnecessary development of even more nuclear power and the accompanying nuclear waste, waste that is irresponsibly and unsafely dumped in my backyard.

Please consider these points:

1. You are not factoring in the effect of future arms reductions when you ascertain a need for new tritium production. I firmly believe our nation should focus its attention on ratification of Start II and negotiate even deeper cuts in the US and Russian arsenals. We should not spend millions of dollars on a project such as this.

2. Development of a new tritium source could hurt efforts to stem the spread of nuclear bombs. Just consider the message it sends other countries- the US is not genuinely committed to controlling nuclear arms because it insists on maintaining, and further developing, a strong nuclear capacity. This is not the message we want to send just as the negotiations on extending the Nuclear Non-Proliferation Treaty begin.

2/19.01 3. The proposed budget of $50 million dollars in 1996, an estimated 15 year construction period plus the multi-year operation costs indicate that the cost of tritium production will reach billions of dollars. At the same time, Congress is slashing DOE's environmental management budget. It doesn't make sense to increase the development of more nuclear weapon potential when existing nuclear waste management is so underfunded and irresponsible. The nation has a debt to the regions, like my home area near Idaho National Engineering Laboratory, that are forced to store the waste generated by the DOE and Dept. of Defense. Do not waste more money on weapons and generate more nuclear waste.

The nuclear arms development process includes the responsible disposal of nuclear waste. Until the DOD can find a safe storage site for your nuclear waste, you have no business creating more.

Sincerely,

Lisa Johnson Hammond

Lisa Johnson Hammond
PO Box 542
Victor, ID 83455

TSR–M–108
COMMENT LETTER

PAGE 1 OF 1

72 Bruce Road
Manchester, NH 03104-3920

3 May 1995

Mr. Stephen Sohinki, Director
Office of Reconfiguration
U. S. Department of Energy
P. O. Box 3417
Alexandria, Virginia 22302

Dear Mr. Sohinki:

1/18.01 After reading in THE BOSTON GLOBE of 1 May 1995 a story reporting that the Department of Energy is considering the resumption of production of tritium in order to enhance the power of American nuclear warheads, I contacted the national office of "20/20 Vision" in order to locate the appropriate office in the DOE where I could express my opposition to this proposed action.

It seems to me that at a time when the U. S. government is attempting to stop the spread of nuclear weapons—especially in parts of the Middle East--this is no time to increase the power of our current nuclear arsenal.

If approved, we will be saying to the world: "Do what I say, not what I do."

What on earch will be the benefit to the national security of the United States if this project is completed?

Sincerely,

Charles R. Denton

Charles R. Denton

CC: 20/20 Vision

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COMMENT LETTER **PAGE 1 OF 1**

17 Big Cove Road
Candler, NC 28715
704/667-9896

May 2, 1995

Department of Energy
PO Box 3417
Alexandria, VA 22302

Subject: Tritium Production

1/18.01 As a part of the public response process as to where your department will place tritium production plants, I would like to strongly request that no site be selected to produce tritium. How can we as a nation go on producing tritium when nations are negotiating the future of the Nuclear Nonproliferation Treaty and when you do not seem to have any safe way to dispose of radioactive waste?

2/19.01 Also, in this time when deficit reduction in on the minds of most Americans, how can America spend billions of dollars to produce tritium instead of working toward safe disposal of radioactive waste and nuclear disarmament?

Please do not decide on a site at either Oak Ridge or Savannah River. Decide not to produce additional tritium.

Most sincerely,
Dorothy Murphree
Dorothy R Murphree

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COMMENT LETTER **PAGE 1 OF 1**

57 Stuyvesant Road
Asheville, N.C. 28803
May 2, 1995

To
Department of Energy
P.O. Box 3417
Alexandria, Va. 22302

1/18.01 I am deeply distressed by the Department of Energy's plan to manufacture tritium to trigger nuclear bombs. To pursue this plan would be immoral and financially devastating to the economy.

2/11.00.10 Disposal of the waste, for which there is no known safe method today, would be a continuing threat to the health and well-being of all citizens. No state wants a nuclear waste dump within its borders. Please cancel this whole plan. Let the United States be a leader toward disarmament.

Sincerely yours,
Marjorie Lockwood
(Mrs. H.T.)

TSR–M–111
COMMENT LETTER

PAGE 1 OF 1

Frederick F. Belzer
Attorney at Law
850 East Center • P.O. Box 1358
Pocatello, Idaho 83204-1358

Telephone
(208) 234-7118

Fax
(208) 232-5061

May 3, 1995

USDOE
PO Box 3417
Alexandria, VA 22302

RE: New Tritium Production Facility

Dear Sir/Madam:

I am writing to comment on the DOE's proposal to build a new tritium production facility. This facility should not be built in Idaho or anywhere. It is simply not needed.

1/18.01

The DOE has failed to factor in the effect of future arms reduction. We are no longer in a cold war strategic arms race.

Other nations will follow the US lead and revamp or increase their own nuclear arsenals. This is not in the best interest of the citizens of this country or the people of the world.

2/19.01

Vital funds necessary for clean up projects in Idaho and elsewhere will be diverted to tritium production. Funds necessary for a sound storage program will also be needlessly diverted to tritium production. This is not in the best interests of citizens of Idaho and the country.

The new tritium production facility should not be built. The wasteful planning process for a new tritium production facility should stop now.

Very truly yours,

Frederick F. Belzer

FFB:er

TSR–M–112
COMMENT LETTER

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GENERAL ATOMICS

GA/DOE-061-95
Project 9866
May 12, 1995

Mr. Stephen M. Sohinki
U. S. Department of Energy
P. O. Box 3417
Alexandria, VA 22302

Subject: Comments on the Draft Programmatic Environmental Impact Statement (DPEIS) for Tritium Supply and Recycling

Reference: (a) U. S. Department of Energy, "Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling", Executive Summary and Vols I and II, DOE/EIS-0161, February, 1995

Dear Mr. Sohinki:

The purpose of this letter is to transmit General Atomic's comments on the subject document. Our complete comments are included as Attachment 1 to this letter. The following summarizes our general comments on the DPEIS and the Record-of-Decision (ROD) process for Tritium Supply and Recycling:

1/13.00.03

- The Final PEIS should include a full evaluation of the Gas-Turbine Modular Helium Reactor (GT-MHR) as one of the technology alternatives in addition to the steam cycle MHTGR, rather than the current limited treatment. The ROD evaluations of cost, schedule, and production assurance should include the GT-MHR as one of the candidate technologies. The requisite information on this design was formally provided to DOE by GA during the summer of 1994. If additional information is required, GA is prepared to respond to information requests.

2/13.00.05

- A single Record-of-Decision process should be adopted for both the Tritium Supply and the Fissile Materials Disposition programs to ensure that the multipurpose options are properly taken into account. This single ROD process would permit valid comparisons of cost, schedule, production assurance and environmental impact of multipurpose plants versus the combinations of other technologies required to satisfy both the Tritium Supply and Fertile Materials Disposition missions.

  The PEISs for both programs, if kept separate, should include multipurpose plants (e.g. GT-MHR and ALWR) as explicit technology alternatives including full environmental impact characterizations. This will ensure that if a Record-Of-Decision is made adopting a multipurpose alternative, the PEIS will support this decision.

3/13.00.60

- The current approach taken in the PEIS for evaluating multipurpose options is distorted for the gas-cooled reactor in that it focuses solely on the relative number of reactor modules required for a multipurpose plant versus those required for a tritium production plant without providing any perspective on the meaning of these numbers. The steam cycle MHTGR is capable of producing tritium at 3/8 goal quantity with a total installed

3550 GENERAL ATOMICS COURT, SAN DIEGO, CA 92121-1194 P.O. BOX 85608, SAN DIEGO, CA 92186-9784 (619) 455-3000

3/13.00.60 continued

thermal capacity of only 1050 MWt. Other reactor options require installed capacities of 1800 MWt (if in fact only one small ALWR can product tritium at 3/8 goal quantity) to about 3400 MWt to achieve the same level of tritium production.

The multipurpose gas-cooled reactor options discussed in the draft PEIS are limited to those that are fueled with pure weapons grade plutonium oxide and have no fertile fuel material. For these options lithium targets are, due to reactor physics considerations, placed only in the core reflectors, resulting in decreased tritium production per reactor module relative to the high enriched uranium fueled tritium production MHR. The intent of these options has been to produce tritium while achieving a degree of plutonium destruction that exceeds the spent fuel standard. Another option can be considered, however, in which the degree of plutonium destruction achieved is only equal to that achieved by the ALWR. With this option, natural uranium replaces the erbium poison, allowing lithium targets to be placed in the active plutonium-fueled core regions and significantly increasing tritium production per reactor module. This option is being quantified by General Atomics at this time.

In the multipurpose application, the flexibility of the MHTGR results in several options for producing tritium at 3/8 goal while dispositioning plutonium, as indicated in Attachment 2. Each individual module, with no changes in the plant design, can be dedicated separately to disposition plutonium, to produce tritium, or to achieve a combination of these two purposes. The PEIS describes an option where the total installed thermal capacity is 2100 MWt, which is small compared to the installed capacity required for the large ALWR options. Therefore, it is only because the MHTGR and GT-MHR are exceptionally efficient as tritium producers that the impact of changing to a multipurpose reactor appears to be so significant. However, if one compares the multipurpose MHTGR and GT-MHR with the multipurpose ALWR, it is clear that the environmental impacts of the multipurpose MHTGR are generally lower, and the environmental impacts of the GT-MHR are significantly lower.

4/02.04

- The additional environmental impacts associated with generating the electrical load requirement for the APT should be included explicitly as part of the APT technology option. In addition, the lifecycle costs analysis of this option must include the cost of this electricity at a realistic rate.

5/02.03

- The technology options which are capable of producing electricity (or steam for conversion to electricity) result in avoided environmental impacts because they would displace existing generating capacity and/or new capacity. This avoided environmental impact should be discussed in the PEIS. Another advantage of these options that should be discussed is their flexibility to produce electricity with various alternative fuel cycles in the event that the projected tritium production or plutonium disposition missions are terminated.

6/13.00.57

- The "phased" approach for the APT should be deleted and all of the technology options should be based on a singular capacity requirement. The environmental impacts of the

6/13.00.57 continued

PEIS, as well as the cost, schedule, and production assurance evaluations of the ROD process, should be based upon a singular capacity requirement. Alternatively, the phased approach should be applied for all technologies that are capable of achieving it, including the MHTGR, the GT-MHR and, presumably, the small ALWR.

7/12.05

- Either the Executive Summary or Chapter 1 of the PEIS should provide a clear statement explaining the tritium production goal. The explanation is not found until the reader reaches Chapter 3, where the terms "steady state requirement" and "baseline requirement" are finally explained as fractions of the original NPR program goal quantity.

8/13.03.05

- The PEIS should explicitly state how many small ALWRs are needed to produce tritium at the 3/8 goal level, and should do so in a manner consistent with other DOE documents. A discussion should also be provided of the effects of tritium production in LWRs, both large and small, on fuel enrichment, operational constraints, and other safety and technical characteristics of the reactor. The discussion should include the effects of changes in the characteristics, cause by tritium production, on environmental impacts and the technology base/licensing (certification) basis of the LWRs.

9/13.00.30

- The draft DOE report to Congress on multipurpose LWRs, dated January 31, 1995, makes it clear that the degree of plutonium destruction and rate of material processing achieved by the multipurpose LWR are lower than those of the MOX plutonium burning version of the LWR, unless the tritium targets are designed and tested to higher levels of exposure than have been achieved to date, or the lithium content of the target rods is reduced to limit the internal pressure in the target rods to that tested to date. In the latter case, the rate of tritium production per target rod is reduced, and the installed thermal capacity required to reach 3/8 goal quantity is increased. This information should be included in the PEIS.

10/13.00.24

- It is stated on page 4-447 of the PEIS that, "In fact, the gas-cooled reactor developer believes that it may not be feasible to use the 350 MWt MHTGR design as a multipurpose reactor." This statement is absolutely false and must be deleted. General Atomics has never said that the 350 MWt plant could not be used in a multipurpose application. GA has not evaluated the 350 MWt plant for multipurpose use, but we have every reason to believe that it could perform in this capacity. However, GA believes that the 600 MWt GT-MHR is the most cost-effective multipurpose gas-cooled reactor design and has the best environmental impact characteristics of potential multipurpose options.

11/13.00.59

- It is stated on p. A-101 that the GT-MHR presents a substantial increase in the technical, schedule, and cost risks of bringing the concept to maturity. In fact, the GT-MHR reactor technology is the same as the MHTGR reactor technology, and has been substantially successfully demonstrated in German and U.S. reactors. Regarding the power conversion system, world-leading US and international vendors consider the GT-MHR to be essentially a repackaging of existing industrial and aeronautical technology. Substantial engineering is needed but there are no feasibility issues. Given adequate funding, a fully tested turbomachine could be delivered to the site in less than 7 years.

S. Sohinki -4- GA/DOE-061-95

11/13.00.59 continued

This would allow the design, testing and construction of the complete GT-MHR to be accomplished in 10 years.

12/13.00.33

- The treatment of the alternative concepts is obviously imbalanced, as revealed by the selection of a "low to moderate" consequence radiological accident for the MHTGR that includes multiple failures, whereas single failures were considered for the other reactor concepts, and an administrative violation is presented for the accelerators. A more balanced treatment of all concepts should be presented, where single equipment failures are considered for all concepts.

13/13.00.18

- It should be recognized that in general the gas-cooled reactor spent fuel volumetric decay heat generation rate is several orders of magnitude less than that for LWR spent fuel, which has a much higher power density. Therefore, even though the volume of spent fuel generated by three MHTGRs or two GT-MHRs is as much as a factor of 20 larger than that from a small ALWR, this does not adversely affect on-site spent fuel storage facility area or geologic repository area required for ultimate disposal of spent fuel. These parameters are governed by thermal heat load rather than by volume of the spent fuel. The heat loads allow only about 4 canisters per acre for LWR spent fuel, whereas about 77 canisters per acre are allowed for GT-MHR spent fuel. Thus, the geologic repository area required for disposal of spent fuel from three MHTGR modules or two GT-MHR modules is about half that required for disposal of spent fuel from one small ALWR.

14/16.14

- The ROD comparisons of cost, schedule, production assurance and environmental impact should be released for public comment well in advance of identification of the preferred alternative.

The attachment of this letter contains further discussion of the above as well as comments regarding specific pages or portions of the DPEIS. If you have any questions on the attachment or the above, please contact me at (619) 455-2580 or Steve Worcester at (619 455-4656.

Sincerely,

A. J. Neylan
Vice President, Power Reactor Group

AJN/GJC:gjc
Attachments

cc:
B. Boggs, DOE/DP-25
H. Canter, DOE/MD-3

S. Sohinki -1- GA/DOE-061-95, Att. 1

GENERAL ATOMICS COMMENTS ON THE
TRITIUM SUPPLY AND RECYCLE DPEIS

A. General Comments:

1. The DPEIS continues to show the steam cycle MHTGR technology as the reference for environmental impact characterizations, even though the DOE Office of Nuclear Energy has adopted the less costly, more energy efficient gas turbine design (GT-MHR) as the reference for future development. The choice to continue with the MHTGR was made in spite of significant effort by General Atomics to provide the DOE with sufficient environmental impact information on the GT-MHR for inclusion in the DPEIS. Our understanding is that, since the environmental impact of a GT-MHR is "enveloped" by the environmental impact of a SC (steam cycle)-MHTGR and the GT-MHR is mentioned as an option, an ROD could select a GT-MHR without fear of an additional NEPA action being required (beyond the site specific EIS, which is required in any event). However, it is not clear that a GT-MHR will be considered in the ROD deliberations, just as it is not clear why the GT-MHR was excluded as a specific technology option in the DPEIS. Given the range of ALWR choices which are included in the DPEIS, the addition of the GT-MHR would seem reasonable.

The Final EIS should include the Gas-Turbine Modular Helium Reactor (GT-MHR) as one of the technology alternatives in addition to the steam cycle MHTGR, and the ROD evaluations of cost, schedule, and production assurance should include the GT-MHR as one of the candidate technologies. The requisite information on this design was formally provided to DOE by GA during the summer of 1994. If additional information is required, GA is prepared to respond to information requests.

2/13.00.05 continued

2. The treatment of the multipurpose options in the PEIS is not a full and fair evaluation, so is not consistent with the requirements of the National Environmental Policy Act. The environmental impacts of the multipurpose options are compared only with those of the tritium production options. A full and fair assessment would compare the impacts of the multipurpose options with those of the plutonium disposition and tritium production options combined. The approach taken in the PEIS is particularly distorted for the gas-cooled reactor in that it focusses solely on the relative number of reactor modules required for a multipurpose plant versus those required for a tritium production plant without providing any perspective on the meaning of these numbers. The steam cycle MHTGR and the GT-MHR are both more efficient producers of tritium than the ALWRs. The steam cycle MHTGR is capable of producing tritium at 3/8 goal quantity with a total installed thermal capacity of only 1050 MWt. (1200 MWt would be required if the GT-MHR was utilized.) As shown in the PEIS, the MHTGR generally has the lowest overall environmental impacts of any of the production reactor options under consideration. Other reactor options require installed capacities of 1800 MWt (if in fact only one small ALWR can produce tritium at 3/8 goal quantity) to about 3400

MWt to achieve the same level of tritium production. Thus, it is clear that the MHTGR is the most efficient tritium production reactor under consideration.

The multipurpose gas-cooled reactor options discussed in the draft PEIS are limited to those that are fueled with pure weapons grade plutonium oxide and have no fertile fuel material. For these options lithium targets are, due to reactor physics considerations, placed only in the core reflectors, resulting in decreased tritium production per reactor module relative to the high enriched uranium fueled tritium production MHR. The intent of these options has been to produce tritium while achieving a degree of plutonium destruction that exceeds the spent fuel standard. Another option can be considered, however, in which the degree of plutonium destruction achieved is only equal to that achieved by the ALWR. With this option, natural uranium replaces the erbium poison material, allowing lithium targets to be placed in the active plutonium-fueled core regions and significantly increasing tritium production per reactor module. This option is being quantified by General Atomics at this time.

In the multipurpose application, the flexibility of the MHTGR results in several options for producing tritium at 3/8 goal while dispositioning plutonium, as indicated in Attachment 2. Each individual module can be dedicated separately to disposition plutonium, to produce tritium, or to achieve a combination of these two purposes. The PEIS describes an MHTGR option where the total installed thermal capacity is 2100 MWt, which is small compared to the installed capacity required for the large ALWR options. (2400 MWt would be required if the GT-MHR was utilized.) Therefore, it is only because the MHTGR is exceptionally efficient as a tritium producer that the impact of changing to a multipurpose reactor appears to be so significant. However, if one compares the multipurpose MHTGR with the multipurpose ALWR, it is clear that the environmental impacts of the multipurpose MHTGR are generally lower. If one compares the multipurpose reactor options with the combined impacts of separate tritium
3/13.00.60 continued
production and plutonium disposition plants, it is clear that the total installed capacity required for the multipurpose plant is lower for the MHTGR and is about equal for the ALWR. All of these points need to be explicitly stated and clarified in the PEIS.

2/13.00.05 continued
In addition, because the environmental impact currently identified in the DPEIS does not envelope the environmental impact of the multipurpose options, it would appear that the current DPEIS would not permit a multipurpose technology selection without an additional NEPA action. This is clearly undesirable and does not result in full and fair consideration of the multipurpose plant.

The Tritium Supply and Recycle program and the Fissile Materials Disposition program need to have some greater level of coordination between them:

(a) The PEISs for both programs, if kept separate, should at least include multipurpose plants (e.g. GT-MHR and ALWR) as explicit technology alternatives including full environmental impact characterizations. This will

ensure that if a Record-of-Decision (ROD) is made adopting a multipurpose alternative, the PEIS will support this decision.

(b) A single Record-of-Decision process should be adopted for these programs to ensure that the multipurpose options are properly taken into account. This single ROD process would permit valid comparisons of cost, schedule, production assurance and environmental impact of multipurpose plants versus the combinations of other technologies required to satisfy multiple missions.

4/02.04 continued
3. The extraordinary electrical load requirement of the APT represents a very real environmental impact, in addition to a very real lifecycle cost addition. The reserve margins of the regional power pool will surely need to be augmented over the life of the plant due to other developments and expansion in the region, few of which will require the entire generating capacity of two GT-MHR modules or a small ALWR, as does the APT. Even if a regional power pool had sufficient reserve margins that new capacity addition were not specifically associated with the APT, at least the environmental impact associated with operation of existing capacity should be specifically associated with the APT. A reasonable methodology which could be used to identify this impact would be to use a composite of the regional power pool generating capacity, for example: 20% nuclear, 15% hydro, 30% natural gas, 10% oil, 25% coal. One could then develop a composite environmental impact based upon this generating source breakdown. This will lead to the conclusion that even the APT results in some spent nuclear fuel being generated, which indeed it does, and that it entails associated adverse effects on public health and safety.

The additional environmental impacts associated with generating the electrical load requirement for the APT should be included explicitly as part of the APT technology option. In addition, the lifecycle costs analysis of this option must include the cost of electricity at a realistic rate.

4. The technology options which are capable of producing electricity (or steam for conversion to electricity) result in avoided environmental impacts because they would displace existing generating capacity and/or new capacity. This avoided environmental impact (which can be quantitatively derived in a manner as discussed in #3 above) should be discussed in the PEIS.

5. The application of the so-called "phased" approach only for the APT is inappropriate and leads to a number of confusing "apples & oranges" comparisons of environmental data. The MHTGR could also bring additional modules on-line within five years if proper provisions for plant expansion were made during construction of the initial modules.

The "phased" approach for the APT should be deleted and all of the technology options should be based on a singular capacity requirement. The environmental impacts of the PEIS, as well as the cost, schedule, and production assurance evaluations of the ROD process, should be based upon a singular capacity requirement. Alternatively, the phased approach should be applied for all technologies that are capable of achieving it, including the MHTGR, the GT-MHR and, presumably, the small ALWR.

6. Either the Executive Summary or Chapter 1 of the PEIS should provide a clear statement explaining the tritium production goal. The explanation is not found until the reader reaches Chapter 3, where the terms "steady state requirement" and "baseline requirement" are finally explained as fractions of the original NPR program goal quantity analyzed in the April, 1991, draft EIS for NPR. This information should be explicitly presented earlier in the document.

7. There are a number of statements in the PEIS that are contradicted by the draft DOE report to Congress, "An Assessment of the Multipurpose Light Water Reactor", dated January 31, 1995. Regarding the capability of LWRs to produce tritium at 3/16 goal quantity and the capability to increase production to 3/8 goal quantity if needed, the report to Congress states, "that one large, new LWR can achieve this production target, and that it would be capable of doubling this production rate to make up for any unanticipated lost production if necessary. The higher production rate would introduce some technical and operational constraints. The Department found that, under the right conditions, one small LWR could produce 3/16 goal quantities." The PEIS states that all environmental impacts are presented for tritium production at the 3/8 goal level, and it appears from the draft PEIS that it is assumed that this production rate is achieved by only one small LWR, although this is not explicitly stated anywhere in the document. It was stated by DOE representatives at the public comment meeting in Washington DC on April 5, 1995, that one small LWR can produce tritium at the 3/8 goal level.

The PEIS should explicitly state how many small LWRs are needed to produce tritium at the 3/8 goal level, and should do so in a manner consistent with other DOE documents. A discussion should also be provided of the effects of tritium production in LWRs, both large and small, on fuel enrichment, operational constraints, and other safety and technical characteristics of the reactor. The discussion should include the effects of changes in these characteristics, caused by tritium production, on environmental impacts and the technology base/licensing (certification) basis of the LWRs.

8. The draft DOE report to Congress on multipurpose LWRs also makes it clear that the degree of plutonium destruction and rate of material processing achieved by the multipurpose LWR is lower than that of the MOX plutonium burning version of the reactor, unless the tritium targets are designed and tested to higher levels of exposure than have been achieved to date, or the lithium content of the target rods is reduced to limit the internal pressure in the target rods to that tested to date. In the latter case, the rate of tritium production per target rod is reduced, and the

installed thermal capacity required to reach 3/8 goal quantity is increased. This information should also be included in the PEIS.

9. It is stated on page 4-447 of the PEIS that, "In fact, the gas-cooled reactor developer believes that it may not be feasible to use the 350 MWt MHTGR design as a multipurpose reactor." This statement is absolutely false and must be deleted. General Atomics has never said that the 350 MWt plant could not be used in a multipurpose application. GA has not evaluated the 350 MWt plant for multipurpose use, but we have every reason to believe that it could perform in this capacity. However, GA believes that the 600 MWt GT-MHR is the most cost-effective multipurpose gas-cooled reactor design and has the best environmental impact characteristics of potential multipurpose options.

10. It is stated on p. A-101 that the GT-MHR presents a substantial increase in the technical, schedule, and cost risks of bringing the concept to maturity. In fact, the GT-MHR reactor technology is the same as the MHTGR reactor technology, and has been substantially successfully demonstrated in German and U.S. reactors. Regarding the power conversion system, world-leading US and international vendors consider the GT-MHR to be essentially a repackaging of existing industrial and aeronautical technology. Substantial engineering is needed but there are no feasibility issues. Given adequate funding, a fully tested turbomachine could be delivered to the site in less than 7 years. This would allow the design, testing and construction of the complete GT-MHR to be accomplished in 10 years. A basis for the claim of increased risks on p. A-101 should be provided, or the statement should be deleted.

11. The treatment of the alternative concepts is obviously imbalanced, as revealed by the selection of a "low to moderate" consequence radiological accident for the MHTGR that includes multiple failures, whereas single failures were considered for the other reactor concepts. However, the selection of an administrative violation instead of an equipment failure as the design basis accident to present for the accelerator severely negates the credibility of this PEIS. A more balanced treatment of all concepts should be presented, where single equipment failures are considered for all concepts.

12. The ROD comparisons of cost, schedule, production assurance and environmental impact should be released for public comment well in advance of identification of the preferred alternative.

S. Sohinki -6- GA/DOE-061-95, Att. 1

B. Specific Comments:

Page No. Comment

6/13.00.57 continued

ES-3: The "phased" approach for APT should be deleted and all of the technology options should be based on a singular capacity requirement. Alternatively, the "phased" approach for tritium production should be explained in the Executive Summary, and it should be applied for all technologies that are capable of achieving it, including the MHTGR (see Comment 3-2), the GT-MHR and, presumably, the small ALWR.

15/13.00.04

ES-8: It is stated that, "The MHTGR and light water reactor....lack tritium production experience and the development of tritium target technology. The APT technology....also has no tritium production experience and only recent development of tritium targets." This statement is not correct. The status of the LWR tritium target development program is documented in the following report: W.J. Apley, "Tritium Target Development Project Executive Summary Topical Report," PNL-8142, September 1992. Target development for the gas-cooled reactor is documented in numerous reports to DOE that were prepared during the New Production Reactor Program, most notably: "Fuel and Target Technical Development Status Report," CEGA-002818, December, 1993, and "Tritium Recovery Facility Technical Development Status Report," CEGA-002693, February, 1993. A comparison of the information in these documents indicates that the development status of the tritium target in the gas-cooled reactor is significantly advanced over that of the LWR tritium target. This statement is based on the following comparison, taken from information in these reports:

COMPARISON OF LWR AND MHTGR TRITIUM TARGET DEVELOPMENT STATUS

Target Development Attribute	MHTGR	LWR
Successful In-Core Irradiation of Full Size Targets	Yes	No - reduced scale targets only
Targets Tested to Conditions Required to Meet Spent Fuel Standard in Multipurpose Reactor	Yes	No
Successful Tritium Recovery Demonstrated from Full Size Targets	Yes - two different processes	No - deuterium simulation only, on reduced scale targets

None of this information is provided in the PEIS, although it is briefly acknowledged on page 4-468 that the LWR tritium target has not been qualified to envelope the fuel cycles commonly used in a commercial light water reactor. If this information is not

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included in the PEIS it should be included in the technical assurance evaluations that will be done to support the Record of Decision. With regard to tritium target development, the fact that the APT option is still evaluating two different target technologies is an indication of the relative level of immaturity of this technology. One of the major areas of technical uncertainty for APT is the target efficiency (neutron yield per incident proton), which directly affects tritium production rate.

The same incorrect information is presented in Section 3.4.2 (page 3-29) of the PEIS.

16/13.04.23

ES-21 thru ES-22:
The discussion of pulsed vs continuous wave accelerators on these pages makes it unclear which is being proposed for APT, and hence leaves an unclear impression of the degree of technology development required to support APT.

17/14.06

1-7: It is stated in the first paragraph of column 2 that the New Production Reactor Program was "canceled". The program was, according to the announcement signed by Secretary Watkins, "deferred".

18/13.02.04

3-2: It is stated that it would require more than 5 years to add capacity for the MHTGR to produce additional tritium. This is not correct. The MHTGR could bring additional modules on-line in this time period if proper provisions for plant expansion were made during construction of the initial modules.

19/02.09

3-4: The discussion of steam or electricity sale from the reactors that can produce steam and electricity offers an excuse for not considering the environmental benefits of this sale that result from not having to build other electric production capacity (avoided impacts). It is stated that the impacts of the sale are "too speculative" to be addressed at this time. Concerns are raised regarding the separation of military and commercial nuclear technology. In fact, the "N" Reactor at Hanford sold electricity to the local utility. Furthermore, this issue was addressed during the New Production Reactor Program. Initial discussions with the utility companies in the service areas of the candidate NPR sites were quite positive. Any precedents established at that time should be cited as a basis under which the sale of electricity from the tritium supply reactors could proceed. There is sufficient basis from the NPR program for assuming that electricity sales would take place. The positive environmental impacts that result need to be considered. At present, the PEIS only discusses the adverse effects of transmission lines. As such, the presentation is unbalanced.

20/02.04

Similarly, the discussion of electricity supply for APT is speculative and unbalanced. It is assumed that the APT electrical needs could be met by a facility well away from the site, and this assumption is used as a basis for not providing a full evaluation of the environmental effects of this electricity supply. In fact, this would only mean that the environmental impacts of the generating capacity needed to support APT would be felt

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at an off-site location. This is not, however, a reason for not discussing the impacts at all.

21/01.09

3-32,3-35,3-38, 3-60:
In the previous draft EIS for a New Production Reactor (April 1991) the land area required for each reactor concept (HWR, ALWR, MHTGR) varied by site, but was never less than 360 acres (for an HWR at SRS). The MHTGR had the largest requirement at only one site, and only during construction.

In this draft PEIS, the land area requirements are constant from site to site, and no extra land is needed during construction. Now the MHTGR requires the most land, in spite of the fact that only 3 modules are now needed compared with 8 in 1991.

Since none of the other reactor concepts is modular, it is not logical that their land requirements would decrease more than the MHTGR requirements. Either the MHTGR requirements are overestimated, or the requirements of the other concepts are underestimated. The land use impacts need to be re-evaluated.

22/13.02.05

3-33: The safety related electrical loads for the MHTGR are small enough that they are supplied by safety related battery power. While a backup power facility is provided to mitigate unavailability, it is not a safety feature.

The below-grade containment structure is made of steel-lined reinforced concrete.

Gravity-drop of the control rods is the front-line safety-related scram system. Independent shutdown capability is provided by gravity-drop of the reserve shutdown control material, which is in the form of boronated graphite pellets, not safety rods. Both of these systems were successfully demonstrated at Fort St. Vrain.

23/13.02.06

3-34: This layout is not consistent with the layout developed for the MHTGR during DOE's New Production Reactor program. The most recent and applicable layout is provided in the NP-MHTGR Project Closeout Report, CEGA-002764, 1993.

24/13.04.24

3-42: The fuel requirements for the APT look low. Is this amount sufficient to test the emergency power supplies?

25/11.01.24

3-71: The dose and risk for the APT(He-3) at ORR should be reevaluated. According to Table E.2.6.1-2 (as corrected per comment E-47 below), APT(He-3) contributes a factor of 20 less than APT(SILC), not a factor of 2 less. This comment also applies to p. 3-76.

26/11.01.25

3-71: The doses at SRS given here are approximately 0.5 mrem higher for all concepts than values in Section E.2.8.2. The risks are also correspondingly higher. This should be reconciled.

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27/11.01.26

3-72: The population doses at ORR given here are approximately 10 person-rem higher for all concepts than values in Section E.2.6.2. The risks are 0.4 fatalities higher, which is a factor of 2 more than would be expected from 10 person-rem. This should be reconciled.

28/11.01.27

3-73: The population doses at SRS given here are approximately 40 person-rem higher for all concepts than values in Section E.2.8.2. The risks are also correspondingly higher. This should be reconciled.

29/11.01.28

3-77: The value of 1 person-rem for APT(He-3) at INEL should be rounded to 0.6 instead of 1, to maintain consistency with the fatal cancer value.

30/11.01.29

3-77: The population doses at ORR given here are approximately 10 person-rem higher for all concepts than values in Section E.2.6.2. The risks are 0.4 fatalities higher, which is a factor of 2 more than would be expected from 10 person-rem. This should be reconciled.

31/11.01.30

3-79: Based on information in Table E.3.4-7, the worker reduction for HWR at INEL should be 0.2%, not 0.02%, and the public reductions for MHTGR, ALWR, and APT should be 0.3, 0.09, and 0.3, respectively, not an order of magnitude lower. This should be reconciled.

3-79: Based on information in Table E.3.4-28, the public reductions for HWR, MHTGR, ALWR, and APT should be 0.1, 0.1, 0.09, and 0.1, respectively, not two orders of magnitude higher. This should be reconciled.

32/11.02.05

3-80 thru 3-81:
Although the headings allege this data to be for collocated tritium supply and recycling, the data entered on these pages is actually for Tritium Supply Alone. The cancer risks from the accidents considered for the tritium target extraction facility in Table F.2.2.5-1 and for the tritium recycle facility in Table F.2.4-1 should be included. This is especially significant for the APT concepts, since for the reactor concepts as presented, the tritium supply dominates the cancer risk. However, comments below (for pages F-25 and F-26) indicate that the frequencies of moderate consequence events should be lower than assumed in this Draft PEIS. That would reduce the risk of cancer fatalities such that the tritium supply would no longer dominate the moderate consequence cancer risk for all reactor concepts. The sums of the cancer risks to the individual and the population should be presented, along with the doses and fatalities associated with the risk dominant event/facility.

3-81: According to Tables F.2.2.3-2 and F.2.2.3-4, the population doses at ORR for Large and Small ALWRs should be $4.9x10^3$ and $2.2x10^4$, respectively. This should be corrected.

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32/11.02.05 continued	3-82:	Based on information in Table F.2.1.4.2-3, the cancer risks at INEL for the APT concepts don't seem to have been adjusted for the accident frequency. Furthermore, for all sites except SRS, the cancer risks and cancer fatalities for the APT concepts differ from those in Tables F.2.1.4.2-3 and F.2.1.4.3-2 for no apparent reason. Also, for the NTS, ORR, and Pantex sites, the individual doses for the APT concepts differ from those in Tables F.2.1.4.2-3 and F.2.1.4.3-2 for no apparent reason. This should be reconciled.
	3-82 thru 3-83:	Although the headings allege this data to be for collocated tritium supply and recycling, the data entered on these pages is actually for Tritium Supply Alone, and should be moved to p. 3-84. While the tritium supply dominates the cancer risk for the HWR and ALWRs, the accidents considered for the tritium target extraction facility in Table F.2.1.5-1 and for the tritium recycle facility in Table 2.3-2 produce more cancer risk than either the MHTGR or APT concepts produce by themselves. It would be more appropriate to present the sums of the cancer risks to the individual and the population, along with the doses and fatalities associated with the risk dominant event/facility.
33/11.02.09	3-83:	According to Table F.2.1.4.2-3, the population dose for APT(He-3) at NTS should be $1.8 x 10^{-3}$, not $1.8 x 10^{3}$.
34/11.02.10	3-84:	The data in Table F.2.1.5-1 shows that the tritium target extraction facility poses more cancer risk for high consequence accidents than either the MHTGR or the APT concepts, and the data in Table F.2.2.5-1 shows that the tritium target extraction facility poses more cancer risk for moderate consequence accidents than the APT concepts. Therefore, it is erroneous to state that "the radiological impacts from the recycling and extraction facilities are negligible compared to those from the supply technologies." The Tritium Supply Alone section needs to be revised by incorporating the data currently on pages 3-80 thru 3-83, which, as noted in separate comments above, is actually applicable for Tritium Supply Alone.
35/10.12	3-87:	In the previous draft EIS for a New Production Reactor (April 1991) the Hazardous solid waste generated for each reactor concept (HWR, LWR, MHTGR) varied from site to site, but was generally more for the LWR than for the MHTGR and HWR by factors of 7 to 24. Here, the MHTGR allegedly produces 2.5 times as much as the LWR and HWR, and even produces more in three modules than it produced in 1991 in eight modules. We have been unable to obtain the reference document to check the basis for these numbers, but they appear to be in error. This should be re-evaluated.
36/02.03	4-442:	The evaluation in Section 4.8.1 of sale of steam from tritium supply technologies is grossly unbalanced. It discusses at length the adverse impacts of transmission lines but provides no discussion of the avoided impacts that are realized by not having to build other generating capacity to supply the needs of the surrounding service area.

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37/13.04.27	4-443:	A better explanation should be provided of why building a dedicated plant at a DOE site to support operation of an APT operation is considered to be a cost saving.
38/02.03	4-444 thru 4-445:	The discussion of the operational impacts of the coal-fired plant for the APT is incomplete. Although the effectiveness of the pollution control systems on the plant are discussed at length, no indication is given of the emissions to the atmosphere that would result from operation of the plant, and the health effects to the general public that result from these emissions are ignored. A more complete discussion is required to comply with NEPA requirements. The discussion of the impacts of a natural gas fired plant in Section 4.8.2.2 is similarly lacking.
39/13.02.07	4-447:	It is stated that, "Substantial uncertainty exists for the use of a gas-cooled reactor for plutonium disposition." The basis for this assertion should be given or the assertion should be deleted. Use of plutonium coated particle fuel has been demonstrated in six separate tests, which were conducted more than twenty years ago in the Dragon and Peach Bottom HTGRs. Thus plutonium disposition is not a new mission for the gas-cooled reactor.
40/13.00.59	4-448:	It is stated that the PEIS does not assess the impacts of the 600 MWt GT-MHR because the available design information is not comparable to that of the 350 MWt MHTGR design. However, there is even less design information available for the HWR evaluated in the PEIS, which is stated to be a preconceptual design on which almost no work has been done, yet this information is presented in the PEIS. GA provided ample information on the 600 MWt GT-MHR for use in this PEIS, and DOE has chosen to use none of it. The discussion in Attachment 2 of the treatment of the multipurpose reactor includes a list of references that were provided. On page A-31 of the PEIS it is stated that the ALWR data presented in the PEIS was obtained from both the NPR Program and the Surplus Fissile Material Program. There are extensive data on the 600 MWt GT-MHR design available from the latter program, yet this information was not used in the PEIS. This is not a fair and consistent treatment of candidate technologies. The 600 MWt GT-MHR has environmental impact characteristics that are considerably more favorable than those of the 350 MWt design. These should be given full and fair presentation in the PEIS.
41/13.02.08		The discussion of Pit Disassembly and Conversion assumes that the facility for this activity would be collocated with the reactor. In fact, safeguards considerations may dictate that this activity be conducted at the pit storage facility at the Pantex site, and that plutonium be shipped to the fuel fabrication facility in the form of plutonium oxide. The discussion also refers constantly to fabrication of "mixed oxide" fuel. In the case of the gas-cooled reactor, mixed oxide fuel is not used. The fuel is weapons grade plutonium oxide only. No fertile material is used. These matters should be acknowledged and discussed in the PEIS.

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42/13.03.06	4-451:	The information given in Tables 4.8.3.1-1 through 4.8.3.1-4 appears to be based on assumptions appropriate for an LWR MOX assembly facility. For example, the building footprint is shown to be 115,000 sq. ft., but in Reference GA1994b cited in the PEIS, it is shown that the footprint of this facility is only about 75,000 sq. ft.. Appropriate information for the gas-cooled reactor fuel fabrication facility should be given.
43/13.00.22	4-460:	The environmental impacts presented for the multipurpose gas-cooled reactor should be compared with those for other multipurpose reactor technologies and with those for the combined individual tritium production and plutonium disposition missions. Instead, the presentation provided in the PEIS limits its focus to the relative number of modules required for tritium production only vs multipurpose while providing no perspective as to whether these environmental impacts are large or small compared to other options. In general, the environmental impacts of the gas-cooled reactor for tritium production are small compared with other reactor options and would continue to be comparatively small if doubled.
44/13.02.09	4-461:	It is stated that, "The assumption can be made and supported that with more reactors the potential for accidents to occur may increase as well as the radiological impacts to the public and site workforce." Again, it should be noted that even if doubled, the impacts of the gas-cooled reactor are small compared to those of other reactor technologies. However, there is no basis for assuming that the radiological impacts of accidents would be larger as a result of having more reactor modules. MHTGR reactor modules are designed to operate independently from each other with no common safety related systems. Accident consequences are determined by events at a single module and are unaffected by the presence of other modules.
45/13.00.18	4-462:	It is stated that spent LWR mixed oxide fuel assemblies would have greater decay heat than spent uranium fuel assemblies. It is then assumed that the same is true for the gas-cooled reactor. This assumption is not correct. The decay heat of plutonium spent fuel in the gas-cooled reactor is less than that of the uranium spent fuel from the tritium production-only design. Accordingly, storage density in the spent fuel storage area is not adversely affected. Also, references to wet storage of gas-cooled reactor spent fuel should be deleted. Spent fuel from the MHTGR is stored in dry facilities at all times. It should also be recognized that in general the gas-cooled reactor spent fuel volumetric decay heat generation rate is several orders of magnitude less than that for LWR spent fuel, which has a much higher power density. Therefore, even though the volume of spent fuel generated by two GT-MHRs is as much as a factor of 20 larger than that of a small ALWR, this does not adversely affect on-site spent fuel storage facility area or geologic repository area required for ultimate disposal of spent fuel. These parameters are governed by thermal heat load rather than by volume of the spent fuel. The heat loads allow only about 4 canisters per acre for LWR spent fuel, whereas about 77 canisters per acre are allowed for GT-MHR spent fuel. Thus, the geologic repository

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45/13.00.18 continued		area required for disposal of spent fuel from three MHTGR modules or two GT-MHR modules is about half that required for disposal of spent fuel from one small ALWR.
46/13.00.03	A-31:	If information on the ALWR from the Surplus Fissile Materials Program is to be used, information from that program on the 600 MWt gas-cooled reactor should also be used.
47/13.02.11	A-42:	It is stated that the reactor is a "moderate" pressure device. On pages ES-9 and S-5 it is stated to be a "high" pressure device. Page A-42 should be changed to be consistent with the other two pages. Also, the reserve shutdown material of the MHTGR is boronated graphite pellets, not boron carbide spheres. The electrically driven circulator is located above the steam generator, not above the core. A single cross vessel, not multiple ducts, direct the helium to the (single) steam generator.
48/13.02.10	A-43:	The spent fuel storage facility is not "underwater." Storage is provided in dry wells, the exterior of which is water cooled.
49/13.02.03	A-50:	A chemical that should be added to Table A.2.1.2-3 is graphite. According to information provided to DOE in letter CEGA-94-0011, Enclosure 2, Table 4-5, 122 tons of graphite are required per year.
50/13.03.07	A-52:	More detail should be provided regarding the need to increase enrichment of the LWR tritium production core and to derate the plant. The effects of these changes on safety parameters and licensing basis should be discussed.
51/13.03.05	A-60:	Assuming all ALWR concepts use the same targets, how can a small ALWR produce the same quantity of tritium with half the lithium required by a large ALWR? This PEIS never explicitly discusses how many small ALWRs would be needed, but leaves the impression that one would suffice. Can one small ALWR really produce baseline quantities of tritium? If not, all tables throughout the document should be modified to be appropriate for the required number of small ALWRs.
52/13.04.25	A-63	More information should be provided regarding why there are different target designs under consideration for APT and why a backup is needed. It appears that the level of technical maturity of the APT target design is not adequate to define a reference conceptual system. If a phased approach were not adopted, what would the reference target be?
53/13.04.26	A-74:	In Table A.2.1.4-3, it makes no sense that the annual chemical requirements would change so drastically (Lithium goes to zero?) just because the APT was constructed in phases instead of being fully constructed initially. There must be an error.
54/13.00.03	A-97:	It is not clear why the relationship between the 600 MWt GT-MHR and the 350 MWt MHTGR is any different from the relationship between the small ALWR and the large

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54/13.00.03 continued

ALWR. Both ALWRs are evaluated in this PEIS. Both gas-cooled reactors should also be evaluated in this PEIS.

It is stated that the GT-MHR "represents a different technology." In fact, the reactor technology of the two designs is the same. The differences lie in the power conversion system technology. The comparison of the GT-MHR with a BWR is inappropriate. The GT-MHR would not be plagued with the operating problems that have been experienced by the BWR and other light water reactors.

55/13.00.35

A-99: The paragraph on the National Academy of Sciences (NAS) conclusions on the linkage between tritium production and plutonium disposition should be deleted. The NAS reached its conclusions without regard to the limitations that are faced today in setting the Federal budget. It made statements regarding the relative costs of multipurpose vs single purpose options without conducting detailed financial analyses to support those statements. Detailed evaluations have shown the NAS conclusions regarding economics to be incorrect, both with regard to the merits of multipurpose options and with regard to the merits of exceeding the spent fuel standard for plutonium disposition.

56/13.00.18

A-100: It is noted that the cyclic tritium production campaigns would affect the LWR fuel cycle such that the level of destruction of plutonium in the multipurpose application would be reduced. Thus, the discharged fuel would not meet the spent fuel standard. It should be noted in the discussion of the MHTGR and GT-MHR on page A-101 that the level of plutonium destruction achieved for the multipurpose plant is in excess of the spent fuel standard.

The discussion of the System 80+ design describes the need to derate the plant in various modes of operation as if it were a virtue by referring to how it maintains "flexibility" in its power output. This is, in fact, a limitation of the ALWR as a multipurpose plant - one from which the MHTGR does not suffer.

The amount of tritium produced in an ALWR when concurrently using MOX fuel should be addressed, as well as the potential safety issues that are associated with that fuel configuration that require derating the plant.

A-101: It is stated that the GT-MHR presents a substantial increase in the technical, schedule, and cost risks of bringing the concept to maturity. In fact, the GT-MHR reactor technology is the same as the MHTGR reactor technology, and has been substantially successfully demonstrated in German and U.S. reactors. Regarding the power conversion system, world-leading US and international vendors consider the GT-MHR to be essentially a repackaging of existing industrial and aeronautical technology. Substantial engineering is needed but there are no feasibility issues. Given adequate funding, a fully tested turbomachine could be delivered to the site in less than 7 years. This would allow the design, testing and construction of the complete GT-MHR to be

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accomplished in 10 years. A basis for the claim of substantially increased risks should be provided, or the statement should be deleted.

57/13.00.22

The discussion of decreasing tritium production efficiency of the MHTGR in the multipurpose mode neglects the fact that the tritium production efficiency of the gas-cooled reactor is far better than that of other candidate reactor technologies. The GT-MHR is capable of producing tritium at 3/8 goal quantity with a total installed thermal capacity of only 1200 MWt (two 600MWt standard modules), and the MHTGR can do it with only 1050 MWt (three 350MWt standard modules). As shown in the PEIS, the MHTGR has the lowest overall environmental impacts of any of the production reactor options under consideration. Other reactor options require installed capacities of 1800 MWt (if in fact only one small ALWR can product tritium at 3/8 goal quantity) to about 3400 MWt (for one large ALWR) to achieve the same level of tritium production. Thus, it is clear that the MHTGR is the most efficient tritium production reactor under consideration. In the multipurpose application, the total installed thermal capacity required to produce tritium at 3/8 goal while dispositioning plutonium is 3000 to 4800 MWt, which is comparable to the installed capacity required for the ALWR options. Therefore, it is only because the MHTGR is exceptionally efficient as a tritium producer that the impact of changing to a multipurpose reactor appears to be so significant. However, if one compares the multipurpose MHTGR with the multipurpose ALWR, it is clear that the impacts of the multipurpose MHTGR are lower or about the same. If one compares the multipurpose reactor options with the combined impacts of the tritium production and plutonium disposition plants, it is clear that the total installed capacity required for the multipurpose plant is lower for the MHTGR and is about equal for the ALWR. Thus the question of whether the MHTGR can produce tritium and disposition plutonium "in a noninterference manner" is a question of perspective. All of these points need to be explicitly stated and clarified in the PEIS.

58/13.00.05

A-102: Speculation is presented regarding the rate of plutonium disposition in a multipurpose gas-cooled reactor. Evaluations of multipurpose core designs by GA indicate that the plutonium disposition rate per reactor module is increased by 50% when the reactor is operated in a multipurpose mode versus plutonium disposition-only. For the ALWR, the plutonium disposition rate per reactor is decreased due to derating and the effects of periodic retargeting. It is stated on page A-100 that one large ALWR could disposition approximately 50 MT of plutonium over its 40-year reactor life, and that one AP-600 could disposition approximately half this amount. Six 350 MWt MHTGR modules or four 600 MWt GT-MHR modules could disposition about 60 MT of plutonium over their 40-year reactor life. The speculation on this matter should be replaced with this information.

59/13.04.19

In the second paragraph of Section A.3.2.4 it is stated that excess commercial power could not be generated with the accelerator-based plutonium disposition systems based on the molten salt or particle bed target systems. This is correct, but it should also be noted that in August, 1994, General Atomics and Los Alamos presented a joint proposal

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59/13.04.19 continued		to DOE requesting support to develop an accelerator-driven MHR that could achieve destruction of 99% of the initially charged plutonium-239 and generate enough electrical energy to drive the accelerator and sell excess capacity to the grid.
60/13.02.02	B-28 thru B-32:	According to Tables A.2.1.1-2 and A.2.1.2-2, the HWR consumes significantly more fossil fuel annually than the MHTGR. So, how can the MHTGR emit the most criteria pollutants?
61/03.06	B-33:	The value of 4.60 under APT should probably be under ALWR instead, as it was in the previous four tables.
62/11.00.26	E-11, Table E.2.2.2-2:	One set of numbers (perhaps the second group) should be for General Population Consumption instead of both being for Maximum Individual Consumption.
63/11.01.31	E-13:	The text for the HWR gives risk of fatal cancer from 1 year of operation, whereas for all the other concepts the text gives risk of fatal cancer from 40 years of operation (except for Large ALWR, for which no discussion paragraph is provided). Quote the same figures of merit for all concepts, to avoid confusion or deception.
64/11.01.32	E-20:	The annual tritium release given for tritium target extraction facilities in Table E.2.3.5-1 is equal to the design criterion for the NPR Tritium Recovery Facility. This is not reasonable. Since the current goal of producing 3/8 as much tritium would result in handling less than such a facility was designed for in the NPR program, we would expect a commensurate reduction in tritium release.
65/11.01.33	E-27, E-28:	The same values are entered in both tables (for maximally exposed individual and for population) for the Full Accelerator Production of Tritium with spallation-induced lithium conversion. There must be some mistake.
66/11.01.34	E-30:	The paragraph summarizing health effects should quote values for NTS, not INEL.
67/11.01.35	E-37, E-38:	Alternatives should be presented in the same order in both tables. (Full Accelerator cases are switched.) Title of Table E.2.5.1-3 should be ". . . at Nevada Test Site"
	E-47, E-48:	In Table E.2.6.1-2, the CEDEs (and next two entries to the right) for the full accelerator cases are probably switched, since they cannot be derived by adding the values to the left. Alternatives should be presented in the same order in both tables. (ALWR cases are switched with other reactor cases, full accelerator cases are switched.)

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68/11.01.36	E-123:	This table shows five chemical hazards for HWR at Savannah River Site, whereas seven hazards were listed for HWR at all the other sites. Why are nitric acid (a dominant hazard at other sites) and trichlorotrifluoroethane (Freon 113) not also hazards at SRS? If added, summary Table E.3.4-36 on p. E-130 should be fixed accordingly.
69/11.01.23	E-124:	This table shows six chemical hazards for MHTGR at Savannah River Site, whereas five hazards were listed for MHTGR at all the other sites. Why would ammonia and trichlorotrifluoroethane (Freon 113) be hazards at SRS and not at other sites? Why should methane emissions not be listed at SRS? If changes are made, summary Table E.3.4-36 on p. E-130 should be corrected accordingly.
70/11.02.11	F-6:	The reference for MHTGR source terms should be a document applicable to the MHTGR, which DOE 1992r is not. Table F.2.1.2-1 indicates that DOE 1995e is the source.
71/11.02.12	F-8:	The references for ALWR source terms should probably be DOE documents, instead of DOESNL documents, which are not included in the Section 6 References.
72/11.00.20	F-10:	The source term for the ABWR appears incomplete, since the list of nuclides is significantly shorter than for the other reactor concepts, including the SBWR. What about Sr, Ru, Sb, Te, Ba, La, Ce?
73/11.02.12	F-12:	Reference DOE 1993n:2 is cited as the source of Table F.2.1.3.2-1 data, but is not included in the Section 6 References.
74/11.01.24	F-21:	It is not reasonable that the population dose and cancer fatalities at ORR are only 20% higher than at INEL for the APT(SILC), when they were nearly an order of magnitude higher for all the other concepts. Reconcile with p. 3-83, which indicates more than an order of magnitude difference between the two sites.
75/11.02.16	F-24:	According to p. 3-80, the individual dose at NTS is 8.4×10^{-3}, not 8.4. This should be reconciled.
76/11.00.19	F-25:	The treatment of the alternative concepts is obviously imbalanced, as revealed by the selection of an event for the MHTGR that includes multiple failures, whereas single failures were considered for the other concepts. The event to analyze should include an isolated containment from the start of the event, as was assumed for all the other reactor concepts. This discrepancy was present in the April, 1991, draft EIS for NPR, was commented upon, and DOE agreed to resolve the issue. Unfortunately, the issue remains. Furthermore, the assumption of 10^{-3} per year for the MHTGR event frequency is extremely and unfairly conservative for an event with multiple failures of safety systems, especially when an event with a single failure is assumed for the ALWR to have a 10^{-3}

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76/11.00.19 continued — per year frequency. This event should be less likely than the initiating event frequency of 2.1 x 10^{-4} per year. (See comment F-26 below.) This affects footnotes to Tables F.2.2.2-2 and -3.

77/11.02.15 — F-26: In more than 1087 years of actual PWR experience as of January, 1992, no large pipe breaks have been observed. The vessels and piping in both the MHTGR and the ALWRs will be similar. Thus, the frequencies of the events in Sections F.2.2.2 and F.2.2.3 can be estimated based on the χ^2 variate at the 50% cumulative probability level to be less than 2.1 x 10^{-4} per year, instead of 10^{-2} and 10^{-3}, respectively. (See p. 19.3-10 of the CESSAR for Design Certification of the System 80+.) This affects text on p. F-26 and footnotes to Tables F.2.2.2-2 and -3 and F.2.2.3-2 through -7.

78/11.00.20 — F-29: According to p. 3-80, the individual cancer fatality at NTS for the large ALWR is 4.9x10^{-5}, which is more reasonable than 4.9x10^{-4}. Fix Table F.2.2.3-4.

79/11.00.28 — F-30: In Section F.2.2.4.1, the selection of an administrative violation instead of an equipment failure as the design basis accident to present for the accelerator severely negates the credibility of this PEIS, since it is so out of balance with the fact that equipment failures are considered for all the other concepts.

F-30, F-31:
For all of the preceding concepts, when no frequency of occurrence was estimated, the PEIS assumes one. However, no such assumptions are presented for the APT alternatives. Treating the concepts differently should be avoided.

80/11.02.14 — F-31: In Sec. F.2.2.4.3, explicitly define the "worst single failure." Quantify the "minimal" release.

81/11.02.13 — F-31: Section F.2.2.5, Sentence 4 ["Air leakage . . ."] is garbled and appears incomplete as written.

82/11.02.08 — F-31: The population dose at the Pantex Plant should be 25000, not 0.00025.

83/02.01 — I-8 through I-11:
The added electrical demands of various concepts are discussed, and the need for new, ugraded, or rerouted transmission lines is noted. But for concepts that can generate electricity (MHTGR & ALWR), no note is made of the electricity that can be supplied. Could that supply be delivered with the transmission line changes listed here? In particular, could it be delivered from the ORR site with no new transmission lines?

84/13.04.06 — I-10 & 11:
The APT will utilize 4 to 13% of the regional power pool margin - as of what date? Is there any consideration given to other growth in the region that would reduce (or increase) that margin over the 40 year life of the tritium supply facility?

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85/11.01.22 — I-53,55,59,63,67:
The cancer risk from hazardous chemicals to the maximally exposed member of the public at SRS differs from that shown in Table E.3.4-36. This should be reconciled.

S. Sohinki -1- GA/DOE-061-95, Att. 2

CONSIDERATION OF THE MULTIPURPOSE REACTOR OPTIONS
IN THE PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENTS FOR
TRITIUM PRODUCTION AND PLUTONIUM DISPOSITION

Background

When work on the New Production Reactor was terminated, Congress authorized and appropriated funds in FY-93 and directed the Department of Energy (DOE) to undertake assessments of both light water reactor and gas-cooled reactor systems for the multipurpose functions of plutonium consumption, tritium production and electricity production. The 1995 Energy and Water Appropriations conference report directed the DOE to submit to Congress, within 180 days, a report on the technological feasibility of a multipurpose reactor for the disposition of plutonium and the production of tritium. In a letter to the Secretary of Energy dated December 13, 1994, Senators Thurmond and Hollings and Representatives Spence and Spratt expressed their support for inclusion of a deep burn multipurpose reactor option in the programmatic environmental impact statements (PEISs) being prepared by DOE for both tritium production and plutonium disposition.

86/13.00.59

As indicated, Congress has consistently directed DOE to give full consideration to multipurpose reactors. However, it appears that DOE has not accepted this direction. In the case of the gas-cooled reactor, except for brief mention in an appendix, DOE has chosen not to assess in the tritium production draft PEIS the current 600 MWt Gas Turbine Modular Helium Reactor (GT-MHR), which has been developed for multipurpose application in response to the Congressional direction. Instead, the tritium production draft PEIS assesses an older design, the 350 MWt steam cycle gas-cooled reactor, which is significantly less effective and has not been developed for multipurpose application. For the plutonium disposition PEIS, available information indicates that DOE has chosen not to assess the gas-cooled reactor at all and not to assess any multipurpose reactor option. This approach by DOE does not present a balanced assessment of the relative benefits of multipurpose application of the GT-MHR.

Tritium Production Draft Programmatic Environmental Impact Statement

The tritium production draft PEIS describes the use of three 350 MWt steam cycle gas-cooled reactor modules for tritium production. None of the information provided by General Atomics to the DOE Office of Reconfiguration on the 600 MWt gas turbine cycle tritium production reactor module is used (Refs. 1-5), other than a brief mention in an appendix of the possibility of deploying the gas turbine plant as a technology option for tritium production.

In an appendix to the tritium production draft PEIS, DOE has included a brief discussion of a multipurpose light water reactor and a multipurpose gas-cooled reactor. In the case of the multipurpose gas-cooled reactor, although the 600 MWt gas turbine plant is briefly mentioned in the appendix, the only environmental information available is based on a hypothetical 350 MWt steam cycle multipurpose reactor design on which no work has been done by General Atomics. There is, accordingly, no basis for the environmental impact information presented in the document for the multipurpose gas-cooled reactor.

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None of the information provided by General Atomics to the DOE Office of Nuclear Energy (and subsequently to the Office of Fissile Materials Disposition) on the 600 MWt gas turbine cycle multipurpose reactor module is used (Refs. 6 and 7), other than the brief mention in an appendix of the possibility of deploying this alternative. On January 23, 1995, staff from Fluor Daniel, under contract to the DOE Office of Reconfiguration, visited General Atomics to obtain information on the multipurpose gas-cooled reactor. However, because the Office of Fissile Materials Disposition had not yet released its report to Congress on Phase II of the DOE Plutonium Disposition Study, General Atomics was requested by Fissile Materials to allow Fluor Daniel only to read the multipurpose reactor information and to take notes. Fluor Daniel was not allowed to take copies of any of the information, and almost none of the information appears in the tritium production draft PEIS.

87/13.00.22

In addition, in the tritium production draft PEIS, DOE presents only a comparison of the environmental effects of the hypothetical multipurpose plant vs the tritium production plant. No comparison of multipurpose impacts vs the cumulative impacts of the tritium production and plutonium disposition is provided. Accordingly, a full and fair assessment of the multipurpose option is not presented.

Plutonium Disposition Programmatic Environmental Impact Statement

Available information indicates that DOE has no plans to include a multipurpose option in the PEIS for plutonium disposition, and that DOE in fact plans to eliminate the gas-cooled reactor from consideration in the PEIS during the initial options screening process. Despite significant design progress and transferability from the NPR and from industrial gas turbine technology, the alleged basis for this action is lack of design maturity of the GT-MHR. As a result, the planned plutonium disposition PEIS will not provide a full and fair assessment of all reasonable alternatives as required under the National Environmental Policy Act (NEPA), and it will not provide information that has been requested by Congress.

Consequences of DOE's Treatment of Multipurpose Options

88/13.00.60

By evaluating the multipurpose option only in the tritium production draft PEIS, DOE presents only a limited comparison of the environmental effects of the multipurpose plant vs the tritium production plant, implying a significant environmental impact penalty for using a multipurpose reactor for tritium production. No comparison of multipurpose impacts vs plutonium disposition impacts or of multipurpose impacts vs the cumulative impacts of tritium production and plutonium disposition is provided. Accordingly, a full and fair assessment of the multipurpose option is not presented.

Table 1 provides a summary of the gas-cooled reactor options that should be considered in the PEIS documents. Based upon the number of reactor modules required for each mission as shown in the table, it is clear that, in choosing to address only the relative impacts of the multipurpose option compared to the tritium production plant, DOE has presented the comparison that puts the multipurpose option in the least favorable light. It is also clear that the

S. Sohinki -3- GA/DOE-061-95, Att. 2

88/13.00.60 continued environmental impacts of the multipurpose option should be less than those of the plutonium disposition plant and less than the cumulative environmental impacts of the individual missions. However, in the approach taken by DOE to evaluating the multipurpose plant only in the tritium production PEIS, these comparisons are not made available to the public.

Recommendations

89/13.00.59 The PEIS for tritium production should consider the environmental impacts associated with the multipurpose and tritium production gas-cooled reactor plant configurations shown in Table 1. The 350 MWt steam cycle multipurpose reactor presented in the PEIS should not be discussed because there are no design and performance data for it, and its evaluation is meaningless in view of the availability of information on the more advanced and environmentally benign 600 MWt gas turbine cycle reactor module. The PEIS for plutonium disposition should consider the impacts of the multipurpose and plutonium disposition plant configurations shown in Table 1, which include plutonium disposition plants which accommodate processing of the plutonium inventory over the design life of the reactors as well as an accelerated disposition schedule (Ref. 8). 90/14.01 DOE should also coordinate the efforts of the Offices of Reconfiguration and Fissile Material Disposition to provide the public with a comparison of the environmental impacts of the multipurpose plant with the cumulative impacts of the individual missions.

S. Sohinki -4- GA/DOE-061-95, Att. 2

TABLE 1
GAS COOLED REACTOR PLANT CONFIGURATIONS FOR TRITIUM PRODUCTION, PLUTONIUM DISPOSITION, AND MULTIPURPOSE APPLICATION

Tritium Production Only	
350 MWt Steam Cycle, 3/8 goal	3 reactor modules
600 MWt Gas Turbine, 3/8 goal	2 reactor modules
Plutonium Disposition Only	
600 MWt Gas Turbine	
50 metric tonnes dispositioned in 12 years (25 years after start of preliminary design)+	14 reactor modules
50 metric tonnes dispositioned in reactor lifetime	4 reactor modules
Multipurpose Application (Plutonium Disposition and Tritium Production)	
600 MWt Gas Turbine	
3/8 goal, all modules plutonium-fueled, 50 metric tonnes dispositioned in 12 years (25 years after start of preliminary design)	8 reactor modules*
3/8 goal, one module uranium-fueled, Approximately 70 metric tonnes dispositioned in reactor lifetime	5 reactor modules*
~3/8 goal, all modules plutonium-fueled with natural uranium in place of erbium poison, Approximately 50 metric tonnes dispositioned in reactor lifetime#	4 reactor modules

Notes: See next page.

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TABLE 1 (Continued)

Notes:

+ The 13 years indicated here is a conservative estimate of lead time, and includes construction of fuel fabrication facilities for multiple plants. The 10 years noted on page 5, item 10 of Attachment 1 is the time required to complete the design, integral testing and construction of a standard 4 module GT-MHR plant.

• To achieve 3/8 goal quantity tritium production, the plutonium fuel cycle length in the multipurpose reactor is shortened relative to that of the plutonium disposition reactor. Plutonium throughput per reactor module is accordingly increased by about 50%, and the number of reactor modules required to disposition a given inventory of plutonium in a given period of time is correspondingly reduced. The resulting extent of plutonium destruction is less compared to that of the plutonium disposition reactor, but it is still in excess of the "spent fuel standard".

' These values are being confirmed.

S. Sohinki -6- GA/DOE-061-95, Att. 2

References

1. R.M. Forssell (CEGA) letter to Stephen M. Sohinki (DOE), Supplemental NPR Data for the MHTGR, CEGA-94-0009, May 31, 1994

2. R.M. Forssell (CEGA) letter to Stephen M. Sohinki (DOE), Supplemental NPR Data for the Modular High Temperature Gas-Cooled Reactor (MHTGR), CEGA-94-0010, June 10, 1994

3. R.M. Forssell (CEGA) letter to Stephen M. Sohinki (DOE), Supplemental NPR Data for Modular High Temperature Gas-Cooled Reactor (MHTGR), CEGA-94-0011, June 30, 1994

4. R.M. Forssell (CEGA) letter to Stephen M. Sohinki (DOE), Supplemental NPR Data for Modular High Temperature Gas-Cooled Reactor (MHTGR), CEGA-94-0012, July 6, 1994

5. Summary Description of Gas Turbine NP-MHR Design for New Production Reactor, CEGA-002995, July 1994, transmitted by R.M. Forssell (CEGA) letter to Stephen M. Sohinki (DOE), CEGA-94-0013, July 27, 1994

6. MHTGR Plutonium Consumption Study Phase II Final Report, GA/DOE-051-94, April 29, 1994, transmitted by D. Alberstein (GA) letter to Warren P. Chernock (DOE), GA/DOE-051-94, April 29, 1994

7. D. Alberstein (GA) fax to Kevin McGuire (Management Strategies, Inc.), "General Atomics Response to Questions to Reactor Vendors Concerning the Multipurpose Reactor Design," November 28, 1994

8. R.M. Forssell (GA) letter to Howard R. Canter (DOE), Scope for Programmatic Environmental Impact Statement for Long-Term Storage and Disposition of Weapons-Usable Fissile Material: Plutonium Consumption Modular Helium Reactor, GA/DOE-035-95, February 10, 1995

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COMMENT LETTER

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1743 Russell Rd
Paoli, PA 19301

May 7, 1995

Mr. Stephen Sohinski
Director, Office of Reconfiguration
US Dept. of Energy

Dear Mr. Director:

I note with great dismay the government's intention to build a new facility to produce tritium.

1/18.01 Good God, man! Haven't we learned our lesson yet? Hundreds of thousanfds of curies of radiatioin have already been released into the air and water by the Suvannah River tritium production plant—added to the tons of radioactive waste generated all over the country from the 15 DOE plants involved in the bomb-making process plus the toxic waste from hundreds of military facilities! We have used the Cold War period to wage war against our own citizens under the guise of preparing for war against our enemies! And you are going to be party to more of the same, although the Cold War has ended?

A bit of hard logic: current stockpiles of tritium are being replenished with tritium recycled from decommishioned warheads. As the process of nuclear dismantling continues pursuant to START II etc, more and more tritium will become available. It is estimated that we will therefore have enough tritium to last until 1015 and beyond.

Please take an ethical stand, my friend. Refuse to be a part of any DOE plans for a new tritium facility. ARgue instead that the US government should fulfill its obligations under Article VI of the Nuclear Nonproliferation Treaty to negotiate further cuts in nuclear stockpiles and the elimination of nuclear weapons.

With all due respect, I am,

Sincerely,

Gordon Bennett
Gordon C. Bennett

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COMMENT LETTER

PAGE 1 OF 2

SENATOR TEEL BIVINS
DISTRICT 31

COMMITTEES:
Finance
Education
Natural Resources
Sub-Committee on Agriculture
Chair, Nominations

The Senate of
The State of Texas

DISTRICT OFFICES
P.O. Box 9156
Amarillo, Texas 79105
(806) 374-8994
FAX: (806) 374-4607

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CAPITOL STATION
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Austin, Texas 78711
(512) 463-0131
FAX (512) 475-3733
TDD (512) 475-3758

May 8, 1995

Secretary of Energy Hazel R. O'Leary
c/o Office of Reconfiguration, DP-25
U.S. Department of Energy
P.O. Box 3417
Alexandria, Virginia 22302

Dear Secretary O'Leary:

Thank you for this opportunity to comment on retention and expansion of the Pantex Plant through the proposed draft Tritium Supply and Recycling Programmatic Environmental Impact Statement issued by the U.S. Department of Energy. I would like to compliment you and the DOE for holding this important hearing to ensure that both public concerns and views are fully considered and that Pantex remains a vital, environmentally sound facility for decades to come.

1/11.00.29 First and foremost, I am adamant that any current and future functions at Pantex will be conducted in a safe and environmentally sound manner. My first priority is to ensure any expansion at Pantex be implemented in a way that does not impair the health or safety of area residents or have an adverse effect on the environment. These goals serve as a prerequisite to any current or future activities at Pantex, including expansion.

2/13.08.01 The Texas Panhandle, which I represent in the Texas Senate, and Pantex have been good neighbors for over 40 years. Pantex enjoys strong support among the public, provides thousands of high-quality jobs and has generally benefitted Amarillo and the surrounding community. I would be receptive to exploring the possibility of new functions being initiated at Pantex and look forward to working with the DOE to ensure that any of these potential new missions are safe, environmentally sound and appropriate for the Texas Panhandle. In my judgment, Pantex has played an essential role in maintaining our national security for decades, and I hope it will continue to do so for years to come.

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3/14.09 I also believe that DOE's goals in the areas of nuclear weapons stewardship and objectives in the increasingly critical field of stewardship of the byproducts of these weapons can best be met through the inclusion of research in DOE's decision-making process. I strongly support the recent establishment of the Amarillo National Resource Center at Pantex with adequate funding to examine these increasingly critical issues.

In addition, I support the formation of the Higher Education Consortium by the Texas A&M University System, Texas Tech University and the University of Texas System to manage the Amarillo National Resource Center. This consortium offers a wealth of resource to assist DOB in addressing these issues, which are of the utmost importance to our national security.

Thank you for the opportunity to express my views. I look forward to working with you on these vital issues.

Sincerely,

Teel Bivins

TB/mc

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COMMENT LETTER

PAGE 1 OF 2

Jim Rigg
4546 N. Clayton Pl
Boise ID 83704

May 10 1995

U.S. DOE
PO Box 3417
Alexandria VA 22302

Comments on Tritium Supply PEIS:

The historical trend for need and likely use of nuclear weapons has been decreasing since the 60's.

1/13.00.20 The likely use and counter use of these weapons appears at the lowest point due to recognition of problems associated with cleaning up after an attack. Conventional weapons offer the greatest flexibility.

2/18.01 Allow Tritium supply to "naturally" deplete and the number of weapons will decline after 2011.

3/19.01 Gov. has not specifically stated the lengths to which they will go to offer restitution to possible economic losses associated with a major accident.

Current DOE estimates of site cleanup indicate that the cost of cleaning up after ± 50 years of Nuclear research & testing will equal the cost of research.

No Nuclear sites or Nuclear submarines, etc. have been decommissioned, cleaned up, and returned to other use.

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Jim Rigg ② 5-10-95

If The United states wishes to halt The spread of nuclear weapons/Technology, we need to demonstrate That we are slowly removing our weapons.

We need identifiable procedures and sites for long term storage of waste. 10,000 years +

Sincerely

Jim Rigg

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COMMENT LETTER **PAGE 1 OF 1**

7 Dartmouth
Pocatello, ID 83201
May 5, 1995

To: U.S. DOE
P.O. Box 3417
Alexandria, VA 22301

From: Jean Elle

Re: Tritium Supply & Recycling for Bomb Triggers

Aside from the moral, ethical and legal questions involved, there are very real practical and self-interest problems to be considered. Here a few of them:

1/10.02 Why are we doing this? Why are we moving this material hither and yon when we don't know what to do with the residue after finishing the recycling process?

2/18.01 How much longer can we afford to indulge our penchant for such destructive devices? Doesn't this activity put intense pressure on other nations to develop more and more deadly weapons to "protect " themselves from their "enemies?"

Wouldn't it be more productive to invest that vast wealth in encouraging developing nations to promote peaceful, self-help activities for their own citizens? Wouldn't that make the world a safer place for all of us?

Are nuclear weapons even relevant anymore, or is this our Maginot Line of the twenty-first century?

How can we expect--even demand--that other nations support nuclear nonproliferation while continuing to indulge our own appetite for high-tech weaponry?

What responsibility do we have to leave a healthy environment for future generations?

It is altogether fitting during this twenty-fifth Earth Day celebration for us to stop and measure the risks of being "unprepared" for nuclear attack against the danger of destroying the life support system of Planet Earth.

Copies to President Bill Clinton
DOE Secretary Hazel O'Leary
Idaho Governor Phil Batt
Senator Larry E. Craig
Senator Dirk Kempthorne
Representative Michael Crapo

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COMMENT LETTER **PAGE 1 OF 2**

AMERICAN NUCLEAR SOCIETY
OAK RIDGE / KNOXVILLE SECTION

May 5, 1995

Address reply to:
Oak Ridge/Knoxville Section
American Nuclear Society
P.O. Box 5075
Oak Ridge, TN 37830-5075

U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Recommendation for Review of the Draft Programmatic Environmental Impact Statement (DPEIS) for Tritium Supply and Recycling by the U.S. Nuclear Regulatory Commission (NRC) under the Provisions of 40 CFR 1502.19 and 1502.24

Ref: 1. U.S. Department of Energy, *Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling, Executive Summary and Volumes I and II*, DOE/EIS-0161, February 1995.

2. U.S. Department of Energy, *Implementation Plan: Tritium Supply and Recycling Programmatic Environmental Impact Statement - REVISED*, DOE/EIS-0161IPREV, January 1995.

3. My letter to you, "Comments on the Draft Programmatic Environmental Impact Statement (DPEIS) for Tritium Supply and Recycling," April 28, 1995.

1/16.20 The Oak Ridge/Knoxville Section of the American Nuclear Society recommends that DOE secure the review of Ref. 1 by the NRC. The NRC is not listed in Table 6.2-1 of Ref. 2 for purposes of coordination and consultation. At 10 CFR 1021.100, 1021.101, and 1021.103, DOE acknowledges its obligation to comply with the regulations issued by the Council for Environmental Quality as given in 40 CFR Parts 1500 through 1509. Specifically, under 40 CFR 1502.19, DOE is required to furnish the entire statement to "any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved," and, under 40 CFR 1502.24, DOE "shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements."

Areas requiring NRC review of the DPEIS include but may not be limited to the following:

2/17.03 ★ As discussed in our Comment 2 in Ref. 3, the classification of radioactive wastes generated by the target, multiplying blanket, and beam stop in the Accelerator Production of Tritium (APT) is under the jurisdiction of the NRC per Sects. 2(12)(B) and 2(16)(B) of the *Nuclear Waste Policy Act of 1982*, as amended, and per Sect. 2(9)(B) of the *Low-Level Radioactive Waste Policy Act*. NRC should review the nuclear waste classifications for all

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U.S. Department of Energy
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May 5, 1995

options discussed in the DPEIS.

3/13.00.21 ★ As discussed in our Comment 4 in Ref. 3, several of the reactor alternatives for which accident analyses are presented in Appendix F of the DPEIS are under review by NRC for design certification under 10 CFR Part 52. This fact gives NRC both "special expertise" in the safety aspects of the technology presented in the DPEIS and jurisdiction over outside analyses that could impact the course of current deliberations on certification. NRC should be asked to review the adequacy of the material presented characterizing the environmental impacts (DPEIS Volume II Appendices A, E, and F) of reactors currently being reviewed for licensing actions to assure consistency. NRC also has "special expertise" in the safety review of gas-cooled reactors. NRC review of the accident analysis methodology used by DOE is also appropriate because of the NRC's "special expertise" in reviewing vendor methodologies and because NRC's independence can assist DOE in satisfying the above-cited regulatory requirement for insuring "professional integrity." NRC's expertise and recent experience in looking at different types of advanced reactors can also aid DOE in identifying and assessing the legitimacy of "safety issues" for the APT such as those suggested by our Comment 5 in Ref. 3.

4/18.01 ★ Finally, as discussed in our Comment 9 in Ref. 3, the NRC is responsible for regulations at 10 CFR Part 110 with regard to controlling the export of equipment and materials that could be used to proliferate nuclear weapons. The lack of proliferation controls for accelerators in general and the APT in particular compared to the regulatory controls in place for the other alternatives should be assessed independently by NRC. We are extremely concerned about the lack of statutory or regulatory controls given the APT's capabilities to generate polonium-210 from lead spallation targets and special nuclear material (plutonium-239) from targets made of depleted or natural uranium. It would also be prudent of DOE to take advantage of the special expertise in non-proliferation and counter-proliferation available within other Federal agencies such as the Defense Nuclear Agency, the Defense Intelligence Agency, and the Central Intelligence Agency's Non-Proliferation Center.

The Oak Ridge/Knoxville Section of the ANS appreciates your kind and timely attention to this recommendation. If further information is needed, please contact us by mail at the address given above.

Sincerely,

David L. Moses, Ph.D., P.E.
Chairman 1994-95

c: J. G. Toscas, ANS
A. E. Walter, ANS

Markus J. Nauerz
Tempelhofer Ufer 35A
10963 BERLIN
Tel 01149-30-2626 645

P.O. Box 25221
WASHINGTON D.C.
USA 20007-8221

US Department of Energy
Office of Reconfiguration
Director Stephen Sohinki
P.O. Box 3417
Alexandria VA
USA 22302

05.11.95

Dear Mr. Sohinki

1/18.01 Please stop the DOD!
A new tritium production facility is not necessary.
The political cost would be so high.
Many are just watching and monitore the moves so far.

Thank you very much

Markus Nauerz

SECOND VICTORY FOR WORLD COURT PROJECT

Nuclear deterrence to go on trial at the Hague

On 19 November 1994 the United Nations resolved to put their trust in the law, not nuclear weapons, for their security. In a sensational vote in the General Assembly a clear majority of states withstood desperate counter-moves led by the US, UK and France and passed an historic resolution. This asks the International Court of Justice for an advisory opinion on the question: *"Is the threat or use of nuclear weapons in any circumstance permitted under international law?"*

The final vote count was as follows: *78 states in favour, 43 against, and 38 abstentions.* In a surprise move, New Zealand was the only Western state to vote for the resolution, while her traditional partners Australia, Canada, Ireland and Sweden abstained. The resolution

was sponsored by the Non-Aligned Movement (NAM), who had attempted a similar move in 1993 only to be foiled by western pressure.

After a failed attempt, proposed by Morocco, to squash the resolution by calling for 'no action', France proposed to delete the word 'urgent'. This was narrowly defeated, with the help of Sweden, who had previously been concerned that a second question to the Court might cause a delay. "My government is of the opinion that use of nuclear weapons would not comply with international law and is anxious that the legal situation be clarified as soon as possible by the Court" stated the Ambassador for Sweden.

The nuclear states have much to fear from the Court case proceeding. Nuclear deterrence doctrine will stand trial at the highest court in the world. The prosecution case is damning. The Chemical and Biological Weapons Conventions outlaw those weapons of mass destruction. There is no such specific prohibition on nuclear weapons - yet they are worse. This is like exempting heroin from a ban on narcotics.

For the first time the nuclear weapon states will have to try to convince the 15 World Court judges, in public hearings, that nuclear deterrence takes precedence over the law - while arguing illegality for all but themselves.

The resolution will broaden and strengthen a question already being considered by the Court. Put by the World Health Organization in May 1993, it asks the Court to decide the legal status of nuclear weapons use as they relate to health and environmental effects. Public hearings could coincide next year with the 50th anniversary of the Hiroshima and Nagasaki nuclear bombings.

Meanwhile, with this resolution the UN has sent a powerful warning to the nuclear cartel in the run-up to the Nuclear Non-Proliferation Treaty Review and Extension Conference in April 1995. It will strengthen the hand of the many countries pressing for limited extension, conditional on the nuclear weapon states moving decisively towards nuclear disarmament. They have signalled that they will not accept an attempt to permanently legitimize the possession of nuclear weapons by indefinitely extending the Treaty.

The implications of a Court judgment outlawing nuclear weapon use and threat are far-reaching. For example, the defence policies of the nuclear weapon states will have to be drastically reviewed, as will the legal position of their armed forces.

Excerpts from statements

Indonesia (on behalf of NAM): "Strategic doctrines have yet to be renounced even in the post-Cold War era. Hence their use as a deliberate political choice remains a frightening possibility. Furthermore, a nuclear disaster triggered by technical malfunction, misinformation or human error cannot be ruled out."

France: "The very fact of asking for an advisory opinion on the legality of a particular category of arms amounts to questioning the inalienable right of any State or group of States to remain sovereign, as long as they comply with international law, in the choice of their means of defence. Such an approach is a blatant violation of the United Nations Charter. It goes against law. It goes against reason...If some people think a tribunal should be established to prosecute the recognized nuclear powers, those people should think twice. One day, they also could face a situation where the legitimacy of the means they use to ensure their security would be challenged."

UK: "This draft resolution can do nothing to help the ongoing work by the International Court of Justice on the similar question from the World Health Assembly. On the contrary, it risks being seen as a deliberate attempt to exert political pressure over the Court to prejudice its response...(It) can do nothing to further global peace and security. On the contrary, a legal opinion on this essentially political and hypothetical question risks seriously undermining confidence in existing multilateral treaties. This in turn could serve to undermine the security of all those who put their trust in those treaties...(It) risks serving the interests of those who wish to distract attention from the destabilizing accumulation of conventional arms and from clandestine programmes aimed at acquiring weapons of mass destruction...(It) could impose heavy costs, but offers no benefits in return."

States' submissions to ICJ
In response to the call of the International Court of Justice for statements on the WHO question, 34 states finally made submissions, of whom at least 21 are estimated to have declared their unequivocal belief of the illegality of the use of nuclear weapons. However the Court of course does not take decisions like the General Assembly: it will be necessary to present the most powerful legal arguments to rebut the views of the nuclear club. Unfortunately the Court has indicated it cannot accept as formal evidence submissions from the cities of Hiroshima and Nagasaki.

NGO activity
This resolution would not of course have been passed without the concentrated efforts of the World Court Project network - thanks go once again to all who have given their time and resources to this remarkable initiative. The response of the NGO community to the breakthrough in the UNGA has been one of great enthusiasm and increased confidence that the Court will be unable to dodge the question on technical grounds. A request from the General Assembly is one that cannot be ignored or downgraded.

Article VI The Non-Proliferation Treaty

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

50 years is enough

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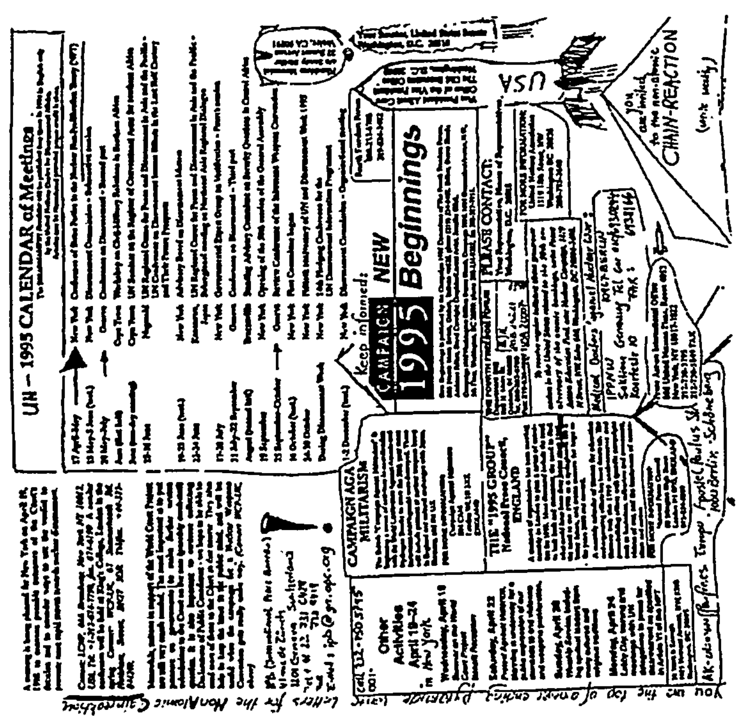

TSR-M-122
COMMENT LETTER
PAGE 1 OF 1

May 7, 1995

US Dept. of Energy
Re: Tritium Supply and Recycling
Mr. Steve Sohinkey et al
Dear Sirs and Madams;

Concerning the need for a complex to produce tritium for the purpose of enhancing nuclear bomb blasts, I wish to offer my opinion as a concerned citizen.

1/18.15

I am well convinced that we don't need a new tritium production facility at all for the following reasons:
In today's climate of vast nuclear weapons overkill, and slow reduction agreements which will still result in far more nuclear weapons than necessary for deterrence and "national security"- is the extra bang really worth the billions of dollars that this program will require?
Absolutely not.
Even a 40% addition to the power of the blast will not scare any of our enemies a little bit more. This is especially poignant since the real danger will never be in the form of a massive nuclear attack- it will be in a small nuclear "backpack" type, or other unconventional- and unretaliable- attack.

In addition the planned construction of such a facility would render our diplomatic efforts to effect the quick ratification of Start II- and even deeper cuts in Russia's nuclear arsenal- suspicious if not laughable. This would also undercut President Clinton's effort to secure the renewal and expansion of the Nuclear Non-Proliferation Treaty, a vital step forward for world peace and our own Nationa Security.

I would be greatly interested in knowing if such reasoning as this is being given serious consideration by our decision makers. Please let me know if this is not an eminently reasonable point of view.

sincerely yours,
John S. Hepler

John S Hepler

J. S. Hepler
292 Haydenburg Ridge Road
Whitleyville, TN 38588

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COMMENT LETTER
PAGE 1 OF 1

14469 N. 55th E.
Idaho Falls, ID 83401
May 12, 1995

U.S. DOE
PO Box 3417
Alexandria, VA 22301

re: Draft PEIS for Tritium Supply & Recycling

Gentlemen:

1/16.07 My leading comment is that I fail to find any real cost information and comparisons in the document. As a taxpayer and retired systems engineer, I consider this should be a major factor in the comparative evaluation of both the preferred technology and site location. A related issue is how justifiable decommissioning is to enable property to be used for other purposes (per p. 3-28 of Vol. I). Decontamination is justifiable, but I am not aware of any other industry that is required to decommission a facility. I was disappointed to find that even relative costs were not addressed in the Summary Table ES-1.

2/13.00.22 I am strongly in favor of having the capability to eliminate Plutonium from retired weapons everywhere while generating power from it and I would even advocate recovery of it from any spent nuclear fuels (SNF), including that from tritium production (e.g. by using ANL's electrorefining method). This could eliminate public perceptions that they don't want any SNF or potential bomb material in their back yard (e.g. Nevada's Yucca Mt.). Page A-99 of Vol. II, however, refers to a potential problem of producing tritium in the same facilities as are used to dispose of weapon materials, which falls under IAEA safeguards; this needs to be resolved.

3/13.03.01 From a review of the technology options, if tritium production is to be done while burning plutonium, I feel that the ALWR offers the best engineering option to produce power for operation of not only the tritium facilities but also to reduce commercial power requirements for the entire site operations. The ALWR can apparently operate with plutonium fuel elements without attendant reduction in tritium or power production that the MHTGR experiences.

4/13.09.01 It appears to me that the SRS site has the tritium production experience and also would only require updating the recycling capabilities; this should render it the most cost effective site. Altho Table ES-1 in the Summary has some other sites better in some aspects, there doesn't seem to be any overriding reasons to locate elsewhere, especially when considering costs.

5/13.05.04 A number of my friends, both professional and lay), don't want the tritium production facility at INEL. We feel that INEL should be the major center for research and development efforts in solving waste management problems by developing technical answers, not storing wastes at INEL.

Respectfully submitted,

Lowell A. Job

Lowell A. Job

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COMMENT LETTER **PAGE 1 OF 1**

9 May 1995

Stephen Sohinki, Director
Office of Reconfiguration
U S Department of Energy
PO Box 3417
Alexandria VA 22302

Dear Mr. Sohinki,

We are a small group of concerned citizens working for a sustainable future.

There is no way to have a sustainable future if we continue to produce nuclear weapons. I urge you not to build a new tritium production facility. The production of tritium is not helpful to the planet or its human community.

1/18.01

We are anxious to see our government fulfill its obligations under Article VI of the Non Proliferation Treaty to negotiate further cuts in nuclear stockpiles and elimination of nuclear weapons. We also hope our government will place high priority on negotiating the proposed convention on fissile material cutoff in order to place similar restrictions on fissile material production in other countries.

Our planet needs help – lets not make the situation worse!

Sincerely,
Marion Leonard
Director

SAVE OUR WORLD
P.O BOX 1493, SAG HARBOR, NEW YORK 11963 · (516) 725-3932

TSR–M–127
COMMENT LETTER **PAGE 1 OF 1**

Re: Tritium Supply & Recycling Draft Programmatic Environmental Statement 5-13-95

1/18.01

The draft of the PEIS has failed to assess the <u>need</u> for new tritium supplies. The Non-Proliferation Treaty commitments require <u>all</u> nuclear powers, including the U.S., to move toward a nuclear weapons free world. Please encourage us Texans toward wind & solar energy and our nation toward peace.

Mary Lynn Bell
Muleshoe, TX 79347

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COMMENT LETTER
PAGE 1 OF 1

May 11, 1995

Dear Madam or Sir:

1/13.08.03 Please drop Pantex as a possible site for tritium supply and recycling. We don't have enough water. Also, all the land around here is agricultural—who would want to eat produce or animals raised next to a nuclear reactor? Don't listen to greedy businessmen in Amarillo. They don't speak for all. Mrs. Leo LaBorde

TSR-M-129
COMMENT LETTER
PAGE 1 OF 24

State of Idaho
OVERSIGHT PROGRAM • 800/232-4635
IDAHO NATIONAL ENGINEERING LABORATORY
Department of Health & Welfare
1410 N. Hilton • Boise, ID 83706 • 208/334-0498 • (FAX) 208/334-0429
900 N. Skyline • Idaho Falls, ID 83402 • 208/528-2600 • (FAX) 208/528-2605
PHILIP E. BATT, Governor
ROBERT N. FERGUSON, Administrator

May 15, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
US Department of Energy
P.O. Box 3417
Alexandria, VA 22302

RE: State of Idaho Comments: Draft Programmatic Environmental Impact Statement Tritium Supply and Recycling DOE/EIS-0161

Dear Mr. Sohinki:

Thank you for the opportunity to comment on the above referenced document. Our comments are both general and specific.

1/14.01 In general, we continue to be concerned about cumulative impacts from the many facilities and programs currently under consideration by the Department of Energy (DOE). As explained in this Draft PEIS, the issue of where to locate a tritium supply and recycling facility is only one of the decisions DOE is in the process of making. Other decisions include where to locate facilities for the management of spent nuclear fuel (SNF), radiological and hazardous waste streams, and excess fissile materials.

INEL is a candidate site, evaluated in separate EISs, for the facilities mentioned above. Our concern is that the separate evaluations, conducted on different schedules and by various groups within DOE, will not adequately take into account the cumulative impact of all the potential decisions that could affect INEL. Furthermore, we are concerned that these cumulative impacts, in conjunction with existing conditions and planned environmental restoration and disposal activities will result in higher than estimated health risks.

Investigate • Evaluate • Report

Stephen M. Sohinki, Director
May 15, 1995
Page Two

2/09.04 A similar concern is raised with regard to the many shipments of radiological materials, both to and from INEL, which are associated with DOE decisions to locate facilities at the site. These shipments must be accounted for together with non-INEL related radiological materials that are being transported across Idaho by DOE and non-DOE entities.[1] Non-INEL related radiological shipping campaigns are not an uncommon occurrence along major highways in Idaho. This fact, taken together with the unprecedented level of radiological material movement associated with upcoming DOE decisions, must be given a comprehensive evaluation.

GENERAL COMMENTS

3/04.02.04
- Siting a tritium production and recycling facility at INEL raises a sensitive issue in the State of Idaho. Past practices at the site have resulted in tritium contamination to the Snake River Plain Aquifer. We understand that there is little risk of tritium entering the groundwater from any of the proposed alternative technologies. However, given the association of tritium with groundwater in the minds of many Idahoans, this proposal may not be perceived in a positive light.

4/13.05.02
- During your preparation of the Final Tritium Production and Recycle PEIS, DOE will have issued a record of decision (ROD) on the Programmatic SNF/INEL Environmental Restoration and Waste Management EIS (SNF/INEL EIS). To some degree the ROD will probably specify: 1) the quantity of SNF that will be shipped to INEL; 2) the amount of SNF and waste that will be treated, packaged, stored, and disposed of at INEL; 3) the manner in which environmental restoration activity will take place; and 4) the type of facilities that will be needed at INEL to respond to these decisions.

[1] An example of a DOE Non-INEL radiological shipment is the low specific activity nitric acid proposed for transport to the United Kingdom from Hanford. An example of a Non-DOE radiological shipment is the 6,253 curies of activity that a single vendor of luminous safety signs reported were shipped to Idaho in the first quarter of 1995.

Stephen M. Sohinki, Director
May 15, 1995
Page Three

4/13.05.02 continued
Upon issuance of this ROD, you will have a much better idea of activities that are planned for INEL. With this information you should revisit the cumulative impact analysis in the Tritium PEIS to make sure all proposed projects and activities are accounted for. In addition, you should determine whether INEL can accommodate the waste management and disposal activities inherent in the production and recycling of tritium. For example, the alternative tritium technologies generate substantial quantities of low level waste. Will INEL facilities have the capacity to process and dispose of this waste?

5/13.00.41
- All reactor technologies, except the accelerator facility, will generate SNF, which is not accounted for in DOE's current inventory projections. In addition, DOE is in the process of deciding where and how its current and projected inventory will be stored. This tritium PEIS must: 1) acknowledge that the proposed action will increase DOE's inventory of SNF above the amounts estimated in the SNF/INEL ERWM EIS; 2) explain that the SNF from tritium production may not be stored at the reactor site; and, 3) take into account impacts associated with transporting the SNF to the designated storage site.

6/10.38
- Waste Minimization/Pollution Prevention (WMin/P2) is mentioned frequently throughout this PEIS. The PEIS claims that it is a concept that will be incorporated into the design and operation of all the proposed technologies. The PEIS also states that INEL has an active WMin/P2 program. In reality, however, there seems to be a lack of long term commitment to the program on the part of DOE-Idaho and its contractors. For example, funds have been cut for WMin/P2 activities and the program has been "zeroed out" for FY 96. In FY 97, it falls below the available budget and will probably not be funded. Also, in our day-to-day dealings with waste management operators at the site, we have experienced an opinion that WMin/P2 is not a waste management function. Therefore, there is some question as to whether it should be funded from EM-30.

Without a strong commitment to WMin/P2 the costs and environmental impacts associated with the proposed tritium technologies will increase. In other words, it makes good economical and environmental sense to avoid the creation of waste in the first place. Granted, waste minimization capability can be built into the design of a new facility. But without a commitment from the operators of the facility, many of the benefits mentioned in the PEIS are unlikely to be realized.

Stephen M. Sohinki, Director
May 15, 1995
Page Four

7/12.08
- The PEIS does not account for impacts associated with the decontamination and decommissioning (D&D) of alternative technologies. The reason given is that the level of detail is not developed enough (pg. 3-4). Therefore, this evaluation will be conducted as part of future tiered NEPA reviews.

  While tiered environmental review may be appropriate for D&D activity, this PEIS should estimate the amount and type of waste that could be generated by such activity. Maximum quantities of each type of waste are identified.

  Such an accounting is necessary in order to present a realistic picture of the total contribution this proposed action will make to the waste DOE must manage. DOE waste management planning must ensure that appropriate facilities are available to handle projected waste streams from all of its activities. Otherwise, the proposed action presented in this PEIS could contribute cumulatively to an impact on DOE's waste treatment and disposal capability.

8/04.01.03
- The PEIS states that the Los Alamos National Laboratory is infeasible and impractical as an alternative site for APT-generated tritium because of cooling water requirements. However, there are similar water limitations in southeastern Idaho. At a minimum, the PEIS should acknowledge that surface water in southeastern Idaho is the subject of ongoing court adjudication. The outcome of this process cannot be predicted at this point, but ultimately it could affect INEL's water rights.

Our specific concerns are detailed below. These comments have been generated by State experts in their respective fields. Hopefully, their peer review of the technical presentation in the PEIS will help you improve the document. If you have any questions or require clarification on our contribution to this review, please don't hesitate to call us.

SPECIFIC COMMENTS:

Vol. I, sec. 1.5, p. 1-8 and 1-9

9/16.18
"Other NEPA Reviews": There is no mention of site-specific EISs on environmental restoration and waste management or other proposed projects (except those specifically related to weapons material), which would be relevant in assessing cumulative impacts and in choosing a site. Will these be considered in the future site-specific tiered NEPA process?

Stephen M. Sohinki, Director
May 15, 1995
Page Five

10/13.00.52
Vol. I, p. 3-2, col. 2, para. 1

"Tritium Supply and Recycling Plants Technical Reference Report": This document is not identified in the same manner as other references. Is it reference FDI 1995a?

11/10.38
Vol. I, p. 3-4, col. 1, 1st bullet

This paragraph states that consideration has been given to waste minimization and pollution prevention in the design goals for new facilities with regard to their eventual D&D. Consideration should also be given to the minimization of waste from facility operations.

12/10.37
Vol. I, p. 3-4, col. 1, 2nd bullet

While a comprehensive assessment of ultimate disposition of spent fuel is not yet possible, a comparison of the amount of fuel (in units of metric tons of heavy metal) that would be disposed from the proposed facility to that from other government and commercial sources would be helpful in assessing the impact of the tritium facility and its contribution to the cumulative impact of management and disposition of spent fuel from various sources.

13/13.00.19
Vol. I, pg. 3-6, Use of Existing Department of Energy Reactors or Accelerators

It is not reasonable to reject the use of DOE's existing reactors, because: 1) none of the operating facilities are large enough to produce the amount of tritium required to support the projected stockpile requirements; 2) they are currently committed to existing programs and 3) are reaching the end of their design life.

First, while none of the reactors alone may be able to meet the projected tritium demand, together it may be feasible. In fact, it would seem particularly strategic from a defense standpoint to have several small producers, at widely scattered locations, rather than a single, large producer. Second, since these reactors are reaching the end of their design life, one can assume that their commitment to existing programs is also coming to an end. For that reason, modifying and upgrading these reactors for a new mission as tritium producers, sounds like a reasonable alternative. Not only would DOE be reusing existing facilities rather than adding them to the growing D&D stockpile, but it would be possible to delay the development and expense of an entirely new facility. Such an option may be

Stephen M. Sohinki, Director
May 15, 1995
Page Six

13/13.00.19 continued

desirable given the uncertainties regarding how much tritium will be needed. Also, given the changing international scene with respect to nonproliferation this alternative may be attractive because it does not send the message that the US is building new nuclear defense capabilities.

For the same reasons stated above, this PEIS should not have rejected the Hanford Fast Flux Test Facility and the Savannah River K-Reactor. The PEIS states that upgrading these facilities was rejected because DOE could not rely on these old reactors for new, long-term, assured tritium supply. However, upgrading either the Hanford or Savannah River Reactors would provide a tritium source that could be relied upon for some time. If one or more smaller reactors were also upgraded, as suggested in the paragraph above, then DOE would have a back-up, in the event the larger reactor had to be shut down.

14/13.00.19

Vol, I, p. 3-7, Use of Commercial Reactors

The PEIS actually makes an excellent case for the production of tritium in existing commercial reactors. By not building a dedicated tritium production facility the United States would be downsizing its existing weapons program. Potential savings would be measured in the billions of dollars for the life cycle of the facility not built and as much as 1,200 cubic yards of additional SNF not generated.

15/10.37

Vol. I, sec. 3.4.2, p. 3-32 to 3-39 and p. 4-92 to 4-99; Vol. II, app. A (tables)

Spent nuclear fuel quantities in metric tons of heavy metal (instead of or in addition to cubic yards) should be provided in order to compare to quantities currently being stored at DOE facilities and expected to be produced in the future from other sources (see comment on p. 3-4 above).

16/13.00.53

Vol. I, p. 3-12, col. 1, para. 3

Why was the Hanford Site dropped as a candidate site for future weapons complex missions? Page 1-10 explains that Hanford was eliminated because nuclear weapons functions at that site have been terminated? Page 3-12 states that Hanford is now dedicated to environmental and waste management activities. When and why was this decided? Who made the decision? And, was NEPA compliance ever completed for this policy action?

Stephen M. Sohinki, Director
May 15, 1995
Page Seven

17/13.00.53

By way of comparison, INEL currently has an environmental and waste management mission. It is not part of the Nuclear Weapons Complex (Page 1-4). If this PEIS will provide NEPA compliance to locate defense related activities at INEL, then it should also evaluate the suitability of Hanford. It is not appropriate to eliminate a reasonable alternative from an EIS simply because it does not fit with current agency policy. Consideration of all reasonable alternatives is particularly important at the programmatic level.

18/11.00.27

Vol. I, p. 3-75-79, tab. 3.6-1 and Vol. II, p. I-66; Vol. II, p. E-14, tab. E.2.3-1 and p. E-27, tab. E.2.4.1-2.

Radiation doses and cancer risks for workers under the heading "Tritium Supply Alone" in tab 3.6-1 apparently include the doses and risks from other site activities as well as those from tritium supply (by comparison to tab E.2.3-1), but not those from tritium recycling. However, the dose and cancer risk in tab 3.6-1 and on p. I-66 under "Tritium Supply Alone" to the MEI from the APT(He-3) alternative at INEL are less than those from the no-action alternative, and it is unclear how they could have been derived from those in tab E.2.4.1-2. If the "tritium supply alone" doses include those from other site activities, then the dose and risk to the MEI cannot be less than those from the other activities alone (no-action alternative). This apparent discrepancy should be corrected or explained.

19/02.01

Vol. I, p. 4-3, col. 2, para. 4 and p. 4-443 to 4-446, sec. 4.8.2

"A detailed quantitative analysis, based on the proportional contributions from each fuel source, would be conducted..." Apportionment of power requirements on the basis of the current mix of fuel sources would probably be inappropriate, especially for the APT, which has large power requirements, and especially for the northwestern US (INEL), where current electric power use relies heavily on hydroelectric plants, but significant expansion of hydroelectric generating capacity may be unlikely. The impact of a 500 to 600 MWe power requirement would be similar to that described in sec. 4.8.2, whether it is filled by a dedicated collocated plant or by increased generating capacity elsewhere.

Stephen M. Sohinki, Director
May 15, 1995
Page Eight

20/03.02

Vol. I, p. 4-5, col. 1, para. 1 and Vol. II, p. B-2, col. 1, para. 1

The assumptions described for modeling the effect of toxic/hazardous pollutant emissions are not necessarily conservative, especially the artificial placement of sources at the center of a large site, such as the INEL.

21/06.10

Vol. I, p. 4-7, col. 2, para. 3

It is explained that radiological impacts to on-site biota were not evaluated because studies conducted at INEL have only detected sublethal effects in individual animals. The fact that past activities have not caused radionuclide levels of concern in animals is no indication that biota are not at risk. For one thing, the impacts of the proposed tritium alternatives must be evaluated in conjunction with potential releases from existing and proposed facilities. For another, the many studies conducted at INEL, have shown elevated levels of radionuclides in the tissues of plants and animals at the site.

In order to determine that the PEIS does not need to evaluate impacts on biota, there needs to be a more thorough discussion of the findings of studies done at INEL. In addition, it must be shown that cumulatively, tritium releases will have not a significant impact.

22/09.07

Vol. I, p. 4-14, col. 2, para. 3 and p. 4-437 to 4-441, sec. 4.7

Was there no assessment of the impact of transportation of reactor fuel to or spent fuel from sites? At a minimum, the rate of spent fuel generation in metric tons of heavy metal should be provided so that it can be compared to other sources.

23/04.02.04

- **Vol. I, p. 4-26, Ground water quality**

"Two ground water monitoring networks are operated at the INEL, one by the USGS, the other by RESL".

This is inaccurate. There are several "networks" of monitoring wells, drilled and maintained by the USGS. These include the INEL-wide facility ground water monitoring group and well networks for RCRA and CERCLA-required monitoring. Ground water beneath the INEL is monitored by groups including the USGS, DOE's site contractor, LITCO, other DOE contractors, and the State of Idaho.

Stephen M. Sohinki, Director
May 15, 1995
Page Nine

23/04.02.04 continued

- **Vol. I, p. 4-26, Ground water quality (cont'd)**

"No tritium is currently disposed of at the INEL;. . ."

This statement should read: No tritium is currently disposed <u>to the ground water</u> at the INEL.

"Other radionuclides of significance include strontium-90, cesium-137, and Iodine-129. The first two, especially cesium-137, are strongly held on mineral grains in the soil. Therefore, it is unlikely that either will reach the aquifer in significant quantities".

This statement suggests that all Strontium-90, Cesium-137, and Iodine-129 in the aquifer had to migrate through the vadose to reach the aquifer. From Orr and Cecil, 1991 (DOE/ID-22096) we see that in 1988 there was an area of about 1 mi^2 where the Strontium-90 concentrations exceeded the MCL. There are significant enough quantities of Strontium-90 present to exceed the MCL over this region.

Recent CERCLA investigations at the ICPP under the FFA/CO indicates that there is a significant source term of Strontium-90 in the vadose and the current Strontium-90 levels in the aquifer are as great as when direct injection of Strontium-90 bearing wastes was occurring. This discovery, with supporting information from vadose monitoring wells suggests that Strontium-90 levels in the aquifer may increase in the future.

24/04.02.08

Vol. I, p. 4-28, Ground water Availability, Use and Rights

"The combined pumpage of the 27 onsite production wells averaged approximately 2100 MGY from 1982 through 1985".

More recent data is available and is used in the SNF/INEL ERWM EIS. The more recent data is slightly less, at about 2000 MGY.

This section includes the following statement: "This is 40 percent of the 5280 MGY of ground water withdrawn from the aquifer in the Eastern Snake River Plain."

Stephen M. Sohinki, Director
May 15, 1995
Page Ten

24/04.02.08 continued

Lindholm, 1993 (USGs Open-file Report 91-98), states that in 1980, 1.9 million acre feet of water was pumped for irrigation on the Eastern Snake River Plain. At 3.0689 acre feet per million gallons, that is 619,114 million gallons. Since irrigation accounts for an estimated 96 percent of all ground water use, total pumpage from the Eastern Snake River Plain aquifer is about 645,000 MGY. Therefore, water pumped by the INEL is more like 0.3 percent of all water pumped from the aquifer.

25/10.35

Vol. I, p. 4-49, Nonhazardous Waste

"INEL has eliminated the commercial/industrial waste streams that had previously been generated and disposed of in the commercial/industrial landfill."

This statement needs to be clarified or corrected. It is our understanding that the solid, nonhazardous waste generated on the INEL is, with one exception, classified as a commercial/industrial waste and the landfill is an industrial waste landfill.

26/02.09

Vol. I, p. 4-53, tab. 4.2.3.2-2

The peak power requirements shown are somewhat misleading. Some of the technologies, such as the MHTGR and ALWR, have the capability of producing energy and offsetting this power requirement. Others, especially the APT, do not have this capability and would have significant power requirements.

27/08.18

Vol. I, p. 4-67, Employment and Local Economy

Under No-Action: "...employment at INEL decreased to approximately 10,100 persons in 1994. This is a decrease of about 1,000 persons from the 1990 employment. INEL employment is projected to total almost 10,100 persons in 2010 and remain at this level through 2020."

These figures need to be revisited. In early 1995, approximately 1,200 INEL employees took early retirement or voluntary separation. Another 1,000 may be laid-off later this year. The end of Naval reactor training at INEL and the departure of several hundred navy personnel, many with dependents, also needs to be factored into the PEIS estimates.

Stephen M. Sohinki, Director
May 15, 1995
Page Eleven

28/10.33

Vol. I, pp. 4-94 to 4-99

The amounts of various waste types that would be generated by the different technologies are discussed. While there would be increases to all waste streams by all technologies, the increases in low level radioactive waste (LLW), which is disposed of on the INEL by shallow land burial, would be the most significant. The increases in possible site-wide disposal range from 109% with the HWR to 18% with the ALWR (small) and APT. With such large increases would the Subsurface Disposal Area (SDA) where LLW is disposed of be able to meet the performance criteria for LLW disposal contained in DOE Order 5820.2A? While the current SDA Performance Assessment (PA) indicates that operations conducted on a scale similar to the present and recent past will likely meet the performance criteria, the PA's sensitivity analysis indicated that SDA performance might be close to the upper limit allowed.

29/13.00.13

Vol. I, p. 4-444, Fuel Receiving, Storage, and Handling

The indirect impacts of coal mining and shipping should be considered along with the impact of operations at the plant site.

30/11.02.02

Vol. I, p. 4-454, col. 2, para. 1

"Compared to doses resulting from direct exposure to such a criticality event, these doses are inconsequential and well below DOE standards for extreme accidents given in DOE order 6430.1A."

What is the estimated dose resulting from direct exposure to such a criticality event? Also, provide a more specific reference to DOE standards for extreme accidents.

31/08.19

Vol. I, p. 4-479 and 4-480, fig. 4.15-1 and 4.15-2

There is a problem with the scale and/or positioning of the INEL site as shown on this map. The INEL site does not extend into Montana. The 50-mile circle on this map also appears to be too large and/or incorrectly positioned; it should be approximately tangent to the southernmost point on the Idaho-Montana border.

32/12.05

Vol. II, p. lv

Add acronyms HEU and MGY.

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Stephen M. Sohinki, Director
May 15, 1995
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VOL. II, APPENDIX D

33/08.20 **Vol II, Page D-8, Table D.3-1.**

This table shows that approximately 74% of the INEL employees reside in Idaho Falls and 76% in Bonneville County. Yet, the text that accompanies this section implies that the effects of building a tritium supply and recycling facility at the INEL would be spread out over the region of influence. Such effects would be much more concentrated and localized than the EIS indicates.

VOL. II, APPENDIX E

34/11.01.20 In Volume II, Appendix E, it is not clear that the Plutonium Pit Disassembly Conversion/Mixed Oxide Fuel Fabrication Facility impacts are appropriately included in the proposed alternatives. The potential impacts from this facility should be evaluated as direct impacts associated with proposed alternatives. The occupational doses from normal plutonium handling and glovebox operations, as well as postulated accident scenarios doses to both on- and off-site personnel, could be significant depending on the processes involved within this facility. These actions will also contribute to cumulative impacts both on and off-site.

35/11.01.21 **Vol. II, p. E-8, col. 2, para. 5; p. E-9, col.1, para.1; p. E-21, col.1, para. 3; etc.**

Health Risk Data: This document is not identified in the same manner as other references. Is it HNUS 1993b? or HNUS 1995a?

36/11.01.04 **Vol. II, p. E-10, para. 2**

Did the writers intend to use two different time periods: 1989 to 1992 vs. 1982 to 1992.

37/11.01.05 **Vol. II, p. E-71, sec. E.3.1 Background**

This section is very sketchy, especially the third paragraph, outlining how Hazard Quotients were calculated. It appears that all Hazard Quotients (HQs) were summed to yield Hazard Indexes for all options relevant to the site. Define "options relevant to the site."

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May 15, 1995
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37/11.01.05 continued

Hazard Indexes should only be summed for Hazard Quotients when the individual chemicals contribute to the same toxicological endpoint and the toxicity is additive. Otherwise, effect-specific HIs need to be calculated. Also, do the HQ and HI modeling methods consider STELs and Ceilings?

The "reference exposure limit" is the recommended exposure limit.

Ceiling values are used by all included agencies' exposure limits. Why were they not considered in the background statement (eg. n-butyl alcohol)? The only stated exposure time frames were 15 minute and 8 hour. In addition to ceilings, what about 16 hour (double shift) or 4- 10 hour workdays or overtime in general?

Paragraph one in this section, further states that risk assessors calculated the risk of long term low level (chronic) and short term high level (acute) exposures. However, paragraph 2 states that workers are assumed to have a low exposure 8 hour day, 40 hour week. What about acute exposures and chemicals which have STELs or Ceilings? In such cases, the 8 hour day, 40 hour week assumption would not apply. If all exposures are going to be maintained at less that the exposure limits, why do a health risk assessment for workers?

The slope factors for all carcinogens are multiplied by the inhaled dose to determine the cancer risk. The fourth sentence in paragraph 3 should read: "The inhalation slope factors for all carcinogens are multiplied by the inhaled dose to determine the cancer risk from inhalation." The overall cancer risk for each chemical is determined by summing the lifetime cancer risks for each relevant route (ingestion, inhalation, dermal) of exposure. Different slope factors often exist for each route of exposure.

It appears that PELs were used in the calculations. What about TLVs, RELs and STELs, which were mentioned earlier in this section and those listed in the exposure limit table E.3-2?

38/11.01.06 **Vol. II, p. E-71, sec. E.3.2 Chemical Toxicity Profiles**

In the last sentence, what does, "for those chemicals for which adverse health effects *were developed* in this PEIS," mean?

Stephen M. Sohinki, Director
May 15, 1995
Page Fourteen

39/11.01.07

Vol. II, p. E-72, para. 1

OSHA PELs are also for preventing cancer effects, not just non cancer adverse effects.

This paragraph indicates that all three (OSHA, NIOSH, ACGIH) were used to develop HQs and HIs. Therefore, why was NIOSH not included in the risk assessment section tables E.3.4-n. Also, why does the equation for the HQs use PELs and not the others.

40/11.01.08

Vol. II, p. E-73, tab. E.3.1

Table E.3.1 contains a myriad of chemical entities (acetic acid, vinyl chloride), chemical mixtures (aliphatic hydrocarbons, aromatic petroleum distillate, resins and formers), and product names. How were these chemicals selected to be included in the risk assessment? (p. E-71)
This table needs to be reviewed critically. We have many questions and comments:

- Compound names should be standardized (IUPAC or ACS). The use of trade names (e.g., the Dupont trade names for Freon Brand chlorofluorocarbons) should be avoided.
- The CAS Registry No. heading does not require a footnote.
- The units for solubility should be stated [i.e., either (w/v) or (v/v)].
- What is the standard temperature for vapor pressure when not stated?
- Would flash point be a more useful heading than *Flammability*, and the ranges currently used therein?
- The criteria for "Carcinogenicity" ranking need additional defining in the text. For example, what does "Not applicable" (footnote f) or "None" (as for Ethanol) mean here? Both EPA and IARC classifications are given in the table (see Ethylene Oxide) although IARC classifications do not drive any regulations in the United States.
- The table footnotes refer to many published reference sources. Where are these references located in the document?

Stephen M. Sohinki, Director
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Page Fifteen

40/11.01.08
continued

<u>For individual chemicals in Table E.3-1</u>:

Acetylene

- *Solubility*: "*quite* soluble in water." How soluble is "quite?" [2% (w/v) has been used as a reference in the literature].
- *Incompatibilities*: add *zinc*, *silver*, *mercury* (forms explosive solids)
- *Lungs* (*not serious*). Is a simple asphyxiant; target organ is *CNS*.

Aliphatic hydrocarbons

- Aliphatic usually refers to saturated, noncyclic molecule; *cyclohexane* (a cycloalkane) may not be the best representative for this class of chemicals.

Aromatic Petroleum Distillate

- *benzo(a)pyrene*, a polycyclic aromatic hydrocarbon, may not be the best representative for this class of chemicals. *Chrysene* and *pyrene* are also polycyclics.

2-Butoxyethanol

- *Incompatibilities* should be available for this common solvent.

2,4-Dinitrotoluene

- What does the reference to "*(mixture)*" under carcinogenicity refer to here?

Ethanol

- Reference to carcinogenicity as "*none*." How does this differ from EPA Group E &/or footnote 'f' "Not Applicable?"

Ethylene Oxide

- Why is IARC referred to here and not for other chemicals that this Agency has reviewed (e.g., cadmium)?

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Page Sixteen

40/11.01.08 continued

Freons®

- Most, if not all, chlorofluorocarbons can induce myocardial sensitization to circulating catecholamines. Therefore, the CVS should be indicated as a target organ for each.

Heptane

- The peripheral nervous system (PNS) is not a target organ for n-heptane.

Hexane

- The peripheral nervous system (PNS) is a target organ for n-hexane.

Hydrocarbons

- Should this not be *Aliphatic* hydrocarbons (n-heptane is representative of the aliphatics, i.e., rather than *cyclohexane* earlier).

Hydrogen cyanide

- *Incompatibilities:* Many

Isobutyl acetate

- *Incompatibilities:* Nitrates, strong oxidizers, alkalis, acids

Methane

- Flammability: Flammable gas

Napthalene

- Typo - Naphthalene
- Typo - Chromic anhydride

Stephen M. Sohinki, Director
May 15, 1995
Page Seventeen

40/11.01.08 continued

Nickel (*refinery dust*)

- How is this applicable to DOE facilities?

Nitrocellulose

- Highly flammable
- Target organs: CNS, skin

Resins and formers

- Incompatibilities: Many for isocyanates; list major ones.

Tetrachloroethane

- Incompatibilities: *fuming* sulfuric acid *(oleum)* not "*fume of* sulfuric acid"

Vinyl Acetate

- *Solubility:* "Somewhat soluble in water." Define "somewhat."

41/11.01.09

Vol. II, p. E-73 to E-90, tab. E.3-1 and E.3-2

When the intent of the health risk section is to evaluate risk to the public and workers, why is the EPA's cancer classification the only one listed in the chemical toxicity profiles and table of exposure limits? OSHA, NIOSH, and ACGIH classify carcinogens. In particular ACGIH has a very detailed cancer classification system.

Stephen M. Sohinki, Director
May 15, 1995
Page Eighteen

42/11.01.10

Vol. II, p. E-82 to E-90, tab. E.3-2

Why are the 1992 TLVs used instead of 1994?

Why are the 1990 RELs used instead of 1992?

What does an entry of "NA" in the *Cancer Class* mean?

The method of calculating the RfD and RfC from:

- the ACGIH TLV
- the OSHA PEL
- the NIOSH REL
- the RTECS TWA/PEL (what is this?)

and especially,

- the RTECS LD50,

is not well documented. The equations should be outlined in the text.

Where are the references for the footnotes in the table located?

Footnote p: should this read "NIOSH REL?"

Individual entries, Table E.3-2:

Acetylene

- Typo - the superscript for the RfD entry is incorrect.

Aromatic petroleum distillate

- The RfD superscript "b" indicates that it was calculated from the TLV, which is not given.
- Slope factor (oral) for benzo(a)pyrene listed as: 7.3 in IRIS

Diethylene Glycol Ethyl Ether

Stephen M. Sohinki, Director
May 15, 1995
Page Nineteen

42/11.01.10 continued

- Why was this LD50 used? Reference?

Dinitrotoluene (2,4)

- RfC not found in IRIS.

Epoxy Solvent

- If the same as toluene why even put in this table (toluene listed separately)?

Fiske 604

- What is this product?

Formaldehyde

- Explain the slope factor derivation

Freons as a class are Trade names and this should be indicated or the names omitted. The complete chemical names should be entered in the parentheses.

Freon 113

- What does "[ST]" in the OSHA-PEL entry mean?

Isobutyl Acetate

- RfD calculated from RTECS-TWA (not given)

Isopropyl Alcohol

- What does the Superscript "i" on this RfD mean (footnote says "Information is not available.")?

Stephen M. Sohinki, Director
May 15, 1995
Page Twenty

42/11.01.10 continued

Mercury (vapor)

- A 1994-1995 ACGIH TLV-TWA of 0.025 mg/m3 exists with an A4 designation (not classifiable as a human carcinogen).
- Are the RfD and RfC not HEAST values (* symbol)?

Nitric Acid

- RfD calculated from the ACGIH TLV-TWA which is not given

Nitrocellulose

- How can you calculate the RfD from such a vague LD50 of >5g/kg? Should the RfD also be >0.2?
- What does "e" reference in *Cancer Class* mean?

Perfluoroalkyl ether

- What does "e" reference in *Cancer Class* mean?

Perfluoro compounds

- Can you give an example of this class? (We can recall only one entity - Dichlorotetrafluoroethane or Freon 114).
- What does "e" reference in *Cancer Class* mean?

43/11.01.11

Vol. II, p. E-85, tab. E.3-2

Formaldehyde NIOSH REL is not 0.16 ppm as listed. It is 0.016 ppm. Furthermore, the OSHA PEL is 0.75 ppm not 1 ppm. Given time constraints we were not able to check all the tables. Therefore, a thorough check should be made for other errors. The result of such errors is to produce incorrect HQs and HIs for workers. Also, formaldehyde does not appear in the risk assessment tables, so why is it included in the exposure limit table? It seems logical to only include information on the chemicals of concern.

Stephen M. Sohinki, Director
May 15, 1995
Page Twenty-one

44/11.01.12

Vol. II, beg. p. E-91, tabs. E.3.4-1 to E.3.4-7

Either the Risk Assessment calculation used the least stringent exposure limits of the two listed , or did not consider the TLVs which are listed in the Risk Assessment tables as indicated by footnote c. The TLVs happen to be more stringent for the two chemicals checked on page E-93: methanol and ethanol. This results in a smaller hazard quotient and a smaller hazard index, which implies less risk than if all the agency standards were considered. OSHA is the only law. However, it is recognized that the other agencies' standards (NIOSH and ACGIH) are more current with available toxicology and epidemiology. Why would only PELs be considered and not the most conservative (e.g. ammonia) as listed in exposure limit tables PEL: 27 TLV: 17 REL: 18.

45/11.01.13

Vol. II, p. E-91 to E-130 (Tables E.3.4.1 - E.3.4.36)

The contaminants of potential concern (COPCs) vary from site-to-site. How were the COPCs chosen for each site?

46/11.01.14

Vol. II, p. E-92, tab. E.3.4.-2

The TLV listed for methanol of 200 mg/m3 is incorrect. It should be 262 mg/m3. We only conducted a spot check, so the rest of the numbers should be checked for errors. It appears as though the larger the PEL the larger the rounding. For example, acetone was rounded up to 1800 from 1780 and nitric acid from 5.2 to 5. One would like to think that a fair amount of scientific rigor goes into establishing exposure limits. Therefore, what is the purpose of rounding and especially rounding up?

47/11.01.15

Vol. II, p. E-122, tab. E.3.4-29 and E.34-35 (page E-128)

These tables mention Tetrachloroethylene as a COPC. However, it is not listed in either Table E.3-1 or Table E.3-2. Explain why it is not reviewed in those tables if it is, in fact, a COPC.

48/11.01.16

Vol. II, p. E-133, para. 2

Odds Ratio not Odd Ratio

Stephen M. Sohinki, Director
May 15, 1995
Page Twenty-two

49/11.01.17 **Vol. II, p. E-133, sec E.4.2 Idaho National Engineering Laboratory**

Two IDHW and one NCI epidemiologic cancer study are referred to in the text (i.e., 1991a and 1991b). Where are these references located?

50/11.01.18 **Vol. II, p. E-133, sec E.4.2 Workers**

"No occupational epi studies have been conducted to date, although NIOSH is planning one in 1994." Considering the date of publication of the PEIS as February 1995, this statement needs to be corrected or updated.

51/11.02.03 **Vol II Appendix F**

The release fraction values listed in Appendix F, tables F.2.1.1-1, F.2.1.3.1-1., F.2.1.3.2-1., F.2.1.3.3-1. F.2.1.3.4-1. from postulated accidents could not be verified. Reference documents provided in DOE reading room material did not provide adequate documentation to support release fraction value usage.

52/11.00.37 **Vol. II, p. F-4 to F-16**

The patterns of probability curves in most of the figures showing conditional probability vs. latent cancer fatalities for high consequence reactor accidents are similar; they are essentially shifted to the right or left. However, the pattern in Fig. F.2.1.3.4-1 for the simplified boiling water reactor is quite different; there is a much greater difference between the NTS curve and those for the other sites. This difference should be explained (or corrected?). Note that the tables of population doses in person-rem and cancer fatalities do not appear to show this difference; the ratio of INEL population dose to NTS population dose, or of INEL cancer fatalities to NTS cancer fatalities is consistently about 10 in all of the tables.

53/10.32 **Vol. II, Page H-11, Transuranic Waste**

"INEL contains 30 percent of DOE's TRU wastes." It is more like 60-65%.

Stephen M. Sohinki, Director
May 15, 1995
Page Twenty-three

54/10.31 **Vol II, Page H-12, Transuranic Waste**

"Approximately half of the TRU wastes are expected to be reclassified as alpha contaminated LLW in the future. These wastes do not meet INEL waste acceptance criteria for LLW, and therefore will be managed as TRU waste." This needs to be clarified. Current plans are to ship the majority of INEL TRU waste to WIPP for disposal. Only low level TRU waste can be disposed of in WIPP. The alpha contaminated waste will likely be treated and disposed of elsewhere.

55/10.30 **Vol. II, Page H-12, Low-Level Waste**

..."(incinerator, which was shut down for modifications, completed startup and resumed limited operations in 1994)."

While sizing and compaction have resumed at WERF, the incinerator has yet to restart actual waste incineration. Some incinerable LLW from the INEL is currently being sent to SEG in Tennessee for processing with stabilized ash returned to the INEL for disposal. Once incineration at WERF resumes it will be mainly low level mixed waste that will be incinerated.

56/02.11 **Vol. II, Page I-10, APT**

Siting the APT at the INEL would utilize 4.15 % of the regional power pool capacity margin. With the possibility of decreased generation by BPA to help salmon recovery along the Columbia River, this large draw could become very problematic and needs significant discussion.

FORMAT

57/16.19 At the public hearing in Pocatello, the DOE representatives asked for our opinion on the format of the Draft PEIS. In response to that request, we provide the following comments.

In general, the format of this Draft PEIS is far better than other DOE NEPA documents we have reviewed. Particularly helpful were the following sections:

Section 3.1.1 Planning Assumptions and Basis for Analysis.
Section 3.1.2 Environmental Impact Analysis.
Section 4.1 Environmental Resource Methodologies

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May 15, 1995
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57/16.19 continued

These sections provide an excellent background to understanding the alternatives and impactPage Twenty-three assessments. Placing them up-front in the document, rather than in an appendix or buried in the analyses serves two additional purposes. First it provides a clear introduction to the alternatives and impact assessments. Second, it prevents duplication, because the information need not be repeated in subsequent discussions. All of DOE's EISs should include similar sections.

In addition, we liked the co-presentation of the affected environment and environmental impacts for each candidate site. Other EISs usually describe the affected environment for each site and then present the potential impacts from different alternatives under consideration. In other words, the affected environment section is separated from the impacts assessments. This PEIS describes the affected environment of a site and follows immediately with a discussion of potential impacts to the site from the different technologies under consideration. Not only does this improve the flow and readability, but it also helps reviewers to focus on a particular site.

Obvious effort went into making this PEIS readable and user-friendly. The document is well written and organized. In addition, attendant information sheets, access through the Internet, video accompaniment, and a dynamic dialogue for public hearings, were all helpful in carrying out NEPA's directives to inform and engage stakeholders in federal action decision making.

Sincerely,

Bob Ferguson
Administrator

cc: Jeff Shrade, Special Assistant to the Governor
Steve West, Manger, Office of Environmental Health
Jim Johnston, Manager, INEL Oversight
Ann Dold, NEPA Coordinator, INEL Oversight
Roger Twitchell, NEPA Compliance Officer, DOE-ID

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COMMENT LETTER **PAGE 1 OF 1**

PADDOCK & HASTIN
ATTORNEYS AT LAW
360 ROBERTS HOLLOW LANE
COOKEVILLE, TENNESSEE 38501
(615) 268-2938

April 30, 1995

Re: Comments on proposal to produce tritium at Oak Ridge, Tennessee. (DOE/EIS-0160)

Dear D.O.E.,

1/13.00.01

We oppose any production of tritium at Oak Ridge and urge the Department of Energy to adopt the "No Action" option.

Negotiations on the Nuclear Non-proliferation Treaty continue. One of the primary difficulties the United States faces in securing a permanent treaty is the belief that the U.S. and the nuclear powers in the area of the former Soviet Union are not committed to the goal of total nuclear disarmament. The U.S. committed to this goal, and rightly so, when we signed the existing non-proliferation treaty.

Planning and building tritium production facilities conflicts with our policy of eliminating nuclear weapons as a significant factor in international relations. The "no action option" is the only option consistent with this nation's policy on nuclear disarmament and our own best interests in achieving a world in which nuclear arms are not a significant factor in relations between nations.

2/19.01

Moreover, the creation of a new capacity to produce tritium is a wasteful and unnecessary expenditure of federal funds. We are told that the Social Security system, and indeed the entire nation, faces bankruptcy if we do not reduce the federal deficit. The production of tritium so that nuclear bombs will have larger effects, is not a priority for scarce public funds.

3/10.02

Oak Ridge is an area which already requires a great expenditure to clean up the radioactive messes left by past slovenly practices. If D.O.E. has funds to spend in Tennessee, cleaning up radioactives and toxics is the first priority.

4/18.15

In "The curve of Binding Energy" Ted Taylor described the results if the World Trade Center were to be bombed with a small, even "home-made" nuclear device. The continued existence of such weapons and the materials to assemble them is a threat and we should abandoned the continued maintenance of our stockpile of terror weapons. Our attention and money must be turned to thwarting terrorism and the conditions which breed terrorists.

Sincerely,

Brian Paddock

Mary Hastin

cc: U.S. Senators

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COMMENT LETTER
PAGE 1 OF 1

TIMOTHY TAKARO, M.D.
12 WESTCHESTER DR.
ASHEVILLE, NORTH CAROLINA 28803

May 15, 1995

Department of Energy
PO Box 3417
Alexandria, Va. 22302

Gentlemen:

1/18.01 I am writing to offer my opinion on the proposal by DOE to build an operational tritium production facility by the year 2011, in order to have new tritium available beyond what can be recycled from dismantled bombs. This flies in the face of the newly adopted extension of the nuclear non-proliferation treaty and the promise of the five nuclear "have" nations to the remaining "have-not" nations that we would in good faith further reduce our nuclear weapons stockpile.

Since there are about 20,000 warheads still remaining (the equivalent of 200,000 Hiroshima-size bombs) and we have agreed with Russia to reduce these to about 5000-8000 by the year 2003, and the technology of recycling tritium from dismantled bombs is not only available but much less expensive and much safer than producing new tritium, and since funds are proposed to be reduced for the clean-up budget of the Office of Environmental Management of DOE, it seems to run counter to logic to spend millions of dollars on new tritium. This seems like a case of inappropriate priorities.

How does DOE justify this proposal in the light of these facts?

I urge you to rethink your position on this issue. I think we should not add a further burden to the nuclear waste disposal problem by planning to make more tritium and we should be consistent and up-front with the co-signers of the nuclear non-proliferation treaty.

Sincerely yours,

Timothy Takaro M.D.

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COMMENT LETTER
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Panhandle Ground Water
Conservation District No. 3

P.O. Box 637 • White Deer, Texas 79097 • Ph. 806/883-2501 • Fax 883-2162

May 11, 1995

U.S. Department Of Energy
P.O. Box 3417
Alexandria, VA 22301

Re: Tritium Supply and Recycling Draft
Programmatic Environmental Impact Statement

Dear Sir or Madam:

1/04.02.01 Panhandle Ground Water Conservation District is the local regulating agency for ground water withdrawals in Carson County, Texas. As regulators we are very concerned that any substantial additional withdrawals from the western Carson County area could result in devastating impacts to the aquifer in that area. We have experienced as high as 7 foot annual decline rates in the Amarillo well field adjacent to the plant.

It was stated that "all water required for construction would come from ground water." (Vol I, pg 4-302). "Operating the tritium supply and recycling facility would result in approximately 1-3 feet of additional drawdown of the Ogallala per year." (Vol I, pg 4-305) These conditions, along with the tremendous withdrawals that the City of Amarillo experience, jeopardizes the reasonable useful life of the aquifer.

2/02.01 The additional required electricity needs would also require an increased draw on the Ogallala. Most likely, the area that this water would come from is in northeast Potter County, from water rights owned by a local utility company. This would also be in the area of concern.

I am enclosing a map showing the declines that have occurred over the past ten years in western Carson and northeastern Potter County, to illustrate our concerns over any

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May 11, 1995

additional production in the area of the Pantex Plant.

We have negotiated an agreement with the City of Amarillo to develop other owned water resources, to reduce the amount of withdrawals and slow the annual decline rate. They have realized that their current production is harmful to the Ogallala's extended life.

We strive to be good stewards of the precious water rescouses in our District and respectfully request your consideration of our these valid reservations to the project.

Sincerely,

C.E. Williams

C.E. Williams
General Manager

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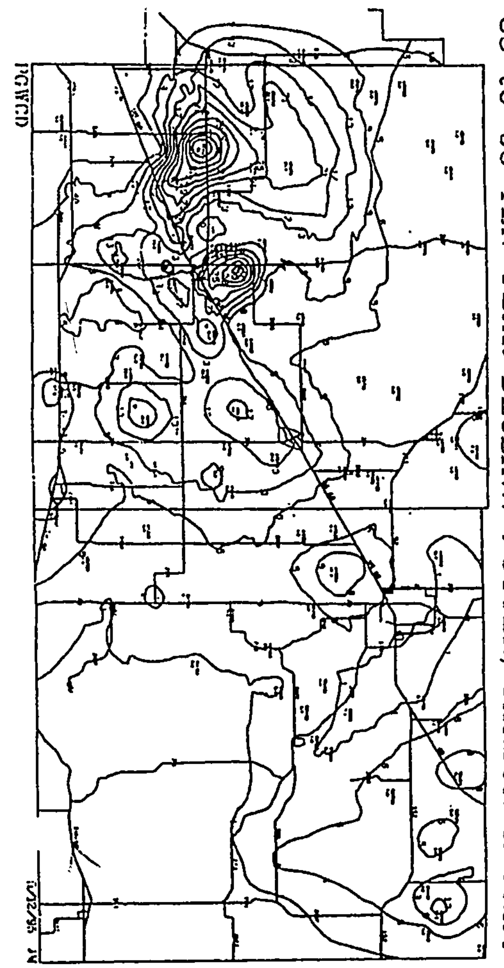

PANAL — Panhandle Area Neighbors and Landowners

HCR 2 BOX 20 PANHANDLE, TEXAS 79068 (806)335-1050

May 11, 1995

U.S. Department of Energy
Box 3417
Alexandria, VA 22302

Re: Tritium Supply and Recycling Draft PEIS

As the chairmen of the Panhandle Area Neighbors and Landowners (PANAL) organization we have been asked to submit comments from the membership regarding this PEIS.

Since February 1991 we have been studying and following the Department of Energy's reconfiguration process and continue to be astounded by decisions and documents released by the DOE. One of the most absurd projects is this particular one of Tritium Supply and Recycling.

1/18.01

To begin with, the Nation has not yet made the decision as to how many nuclear weapons one country must need in order to protect it's citizens. Until this decision has been made, no further tritium supply facilities are needed now or possibly ever. With the ratification of the START II treaty, nuclear weapons reduction will be even greater than the present stockpile now indicates.

With the present nuclear warheads being returned for dismantlement, the need for the country is not where and how to build more new tritium production facilities, rather it should be centered on how do we handle the problem we presently have with the fissile materials no longer needed.

The cost of the disposition of these radioactive and hazardous materials is of so great a magnitude that to be considering producing more of the same only indicates a lack of intelligence on the part of the Department of Energy. The American People deserve better from the agency which purports to save us.

2/19.01

With the U.S. deficit rising by the minute, for one agency of our Government to be proposing to spend billions of dollars on such unnecessary facilities is a disgrace to our Democracy. The moral fiber of this country demands that our resources not be destroyed by the greed of a handful of militant warriors.

Not only is the U.S. placing the Non-Proliferation Treaty in jeopardy by proposing to build new tritium supply facilities, it is also placing the lives, health and quality of life of its citizenry in great jeopardy.

We can speak for 100% of the neighbors and landowners adjacent to the Pantex Plant when we say "No" to any tritium supply or recycling facility at Pantex. The risk is entirely too great for this area.

-1-

We do not have the water resources required for any of the proposed options - even your own documents indicate that water usage would adversely affect our already declining Ogallala Aquifer. (Vol.I,pg S-17 and ES-31).

3/04.02.01

Treated wastewater discharged to the playas on site will percolate into the groundwater as the playas are the recharge source for the aquifer. Contaminants will enter the aquifer (Vol I, pg 4-305). This is the only source of renewable fresh water for the entire Texas Panhandle and parts of Oklahoma, Colorado and New Mexico. Four other midwestern states stand the potential of being affected by what migrates into the Ogallala from tritium supply and recycling activities at Pantex.

4/20.01

The waste generated by these activities will be greatly increased as per Vol I, pg 4-336, which will also necessitate the construction of treatment and staging facilities. This increased money spent on construction of new facilities is not only unnecessary, but also ludicrous. At a time when the DOE is downsizing, to be building new facilities is not good management or conscientious planning.

5/11.00.12

The increased radiation dose to the workers and the public is not acceptable. When there is no foreseeable need for such a facility, to expose the public to unnecessary risks to their health is unforgiving. We adamantly oppose the siting of the tritium supply and recycling facilities at Pantex. Our people and their health are too valuable an asset to have them destroyed by a "Pipe Dream" of the Department of Energy.

6/11.01.02

In this agricultural area where the food chain begins we find this idea for siting at Pantex to be deplorable. Production agriculture generates in excess of $10 billion in economic activity in the Texas Panhandle and accounts for 25 to 30 percent of the work force in the area. More than 100,000 jobs are generated in Texas as a result of High Plains agriculture. This Texas High Plains is one of the most diversified agricultural areas in the WORLD. There are 14 million acres of agricultural land with 9 million acres in pasture and 5 million acres in crops, commercially producing 25 crops.

If this trade area were considered a state, its cash receipts would rank 13th for all commodities, 8th for livestock, 4th for meat animal production 34th in crop sales. This area produces 80 percent of the state's fed beef and 27 percent of the Nation's beef. Around 3.1 million head of cattle were on feed in the Texas Cattle Feeding Association area December 1, 1993. The area packing plants slaughtered nearly 6.7 million cattle in 1993 - 27% of the fed cattle slaughtered from the major feeding states.

Any contamination risk to this agricultural industry would devastate Texas.

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Agriculture provided the foundation that built Texas into the state it is today. It is the second-largest industry, providing a job for one in every five Texans and generating more than $40 billion annually. Agriculture produces the essentials of life. As long as people need food, housing and clothes, they will need and depend on agribusiness.

As the farmers, landowners and stewards of our natural resources, we cannot afford to allow the Department of Energy to inhibit the economic industry which has sustained the area, the state of Texas and the Nation by the siting of the tritium supply and recycling facilities at Pantex.

Our community says, "100% NO"!

7/15.08 As an added note, the so called Public Hearing for this PEIS was a farce. It was a big show for the DOE, but with no justification. Concerned citizens were not heard because the AAEDC and SWPS controlled the discussion groups. Facilitators were not in control and since comments were not recorded – what was the purpose of inviting the public? For true public participation give us back our 5 minutes each to allow citizens to voice their ideas, concerns and opinions. We listen to DOE's options, they should in turn listen to us.

Respectfully submitted by Doris and Phillip Smith

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COMMENT LETTER **PAGE 1 OF 1**

Anne Banks Redwine
403 Sioux Trail
Chattanooga, TN 37411

May 11, 1995

Stephen Sohinki, Director
Office of Reconfiguration
U.S. DOE
P.O. Box 3417
Alexandria, VA 22302

Dear Sir:

In regard to plans for a new Tritium production facility to be built over the next several years, please consider the following:

1/11.00.12 The safety of such a facility and its waste products are very difficult to maintain and there is always the danger of an accident or of low level radiation leaks that are harmful, isn't this correct?

The siting of such a facility at Oake Ridge is not wanted. The Tennessee River could receive any overflow endangering all below it throughout Tennessee and beyond. We do not want such a facility near our major Universities, cities, land and the Smokies, definitely.

2/19.01 The expense is huge at a time when money is needed for education, environmental protection, health, housing, the State Department, civilian research, economic development, etc. Industry which puts something back that people in our communities can use now are needed, when they are not dangerous to people or the environment, not more dangerous bombs.

3/18.01 With the Non-Proliferation Treaty signed, we have promised to further reduce the production of nuclear weapons and not to produce fissionable materials now. This would mean no more weapons. If we cut nuclear bombs below 5000, would we actually need more tritium? Couldn't the dismantling of other bombs in the future provide all tritium needed? Actually, 200 bombs is all we would ever need as a deterrent-according to many estimates. Many say, we should have none. Certainly we do not need enough for a huge expensive factory to be built that may endanger people.

Let me urge you to take no action on plans for this facility either at Oak Ridge or anywhere.

Yours sincerely,
Anne B. Redwine
Anne B. Redwine

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COMMENT LETTER PAGE 1 OF 2

3805 Overlook Dr.
Amarillo, TX 79109
May 14, 1995

U.S. Department of Energy
Box 3417
Alexandria, VA 22302

Re: Tritium Supply and Recycling Draft
Programmatic Environmental Impact Statement

The Nuclear Nonproliferation Treaty has been renewed indefinitely; Ukraine has committed to total nuclear disarmament; the U.S. and Russia are reducing nuclear stockpiles. Though the size of stockpiles is classified, it is estimated that the U.S. and Russia will have between 5,000 and 8,000 warheads each when reductions are completed in 2003. It is feasible to assume that other reductions may occur.

1/13.00.15 These reductions in the nuclear stockpile should be taken into account and plans for a tritium supply should provide for the option that a small supply of tritium will be needed. I request that such an option be included.

2/19.01 The U.S. should be frugal with money and resources and should avoid creating additional environmental problems in the nuclear defense complex.

3/13.00.02 In any case, building a tritium production facility at Pantex is undesireable for several reasons.

According to the Executive Summary of the Tritium Supply and Recycling Draft PEIS, page ES_8, "only the HWR has tritium production operating experience". The other three technologies do not. Citizens have been assured repeatedly that DOE intends to avoid repeating past mistakes, yet three out of four possibilities presented are unproven. How can we know that they are safe? The history of nuclear reactors suggests that unforseen problems will arise.

For the MHTGR and ALWR "a plutonium pit disassembly/conversion/mixed-oxide fabrication facility would be needed to provide mixed oxide fuel rods ... and would be the major contributor to potential environmental impacts", ES-11, ES-14.

I oppose building an untested facility which could cause extensive contamination in a rich agricultural area. The plants in the nuclear complex which are the most heavily contaminated are those which have been involved in plutonium and uranium fabrication. In addition, spent nuclear fuel would be stored on site. It is not sensible to bring those activities and their attendant risks to an additional site.

4/04.02.01 On initial consideration, the APT option seems the most desirable; and for the nation as a whole it probably is, even though it, too, is unproven. However, the APT uses tremendous amounts of water. Water use from the Ogallala aquifer could increase as much as 924% over the projected No

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COMMENT LETTER PAGE 2 OF 2

4/04.02.01 continued Action option and additional drawdown would be from 1-3 feet per year, Vol. I, p. 4-305. "Drawdowns would adversely affect aquifer levels.", ES-31. Use of wastewater for cooling purposes would mitigate this depletion; however, the amount of water necessary to generate electricity to operate the accelerator and to provide for the needs of an additional workforce are not included. The quantity of water needed for these purposes should be calculated and given careful consideration.

The ability of this region to sustain its population is directly dependent on the Ogallala aquifer; therefore, it is foolhardy to locate any water intensive project at Pantex.

5/18.01 The location of a tritium production plant at a facility which is already both the nation's primary nuclear weapons assembly plant and the storage area for plutonium pits could indicate that the U.S. is consolidating weapons production. Our government and people would be alarmed if another nation took such action; therefore, we should avoid giving provocation.

6/08.14 The business community in Amarillo is eager to increase the number of jobs at Pantex; however, Vol. I p. 4-313 states, "Between peak construction (2005) and full operation (2010) annual average growth would vary from decreases of 1 percent to increases of 1 percent. None of the annual average increases associated with the tritium supply technologies and recycling facilities constitutes a major difference from the No Action annual average increases" This refers to increases in employment, population, housing and public finance. Even during the peak construction phase, "New jobs would be created, but this employment growth would be less than 1 percent over No Action estimates.", Vol. I, p. 4-314.

It appears to me that the risks of increased pollution and water usage outweigh the economic benefits.

Thank you for this opportunity to comment.

Sincerely yours,

Louise Daniel

Louise Daniel

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COMMENT LETTER **PAGE 1 OF 2**

PHIL GRAMM
TEXAS

United States Senate
WASHINGTON, D.C. 20510–4302

May 10, 1995

The Honorable Hazel R. O'Leary
Secretary
U S Department of Energy
c/o Office of Reconfiguration, DP-25
Post Office Box 3417
Alexandria, Virginia 22302

Dear Secretary O'Leary:

I am writing to express my support for the retention and expansion of the Pantex Plant associated with the proposed draft Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS) issued by the U.S. Department of Energy (DoE).

There can be no question that any current and future functions at Pantex must be conducted in a safe and environmentally sound manner. My highest priority is to ensure that an expansion at Pantex be implemented in a way that does not impair the health or safety of area residents or have an adverse effect on the environment. These goals serve as prerequisites to any current or future activities at Pantex, including expansion.

1/13.08.01

I support the assignment of new activities at Pantex as described in the PEIS if adequate assurances that such activities are safe and environmentally sound can be secured. I would support a new tritium facility at Pantex if DoE chooses Pantex as the preferred site based on merit and cost-effectiveness. Pantex is an ideal site for a wide range of new functions because of the unparalleled local and statewide support enjoyed by the facility, including lower labor and utility costs, and lower cost to DoE through environmental soundness at Pantex. The Pantex Plant, because of its efficiency, cost effectiveness, and existing capital plant, should be an obvious choice for expanded functions, and remain a vital part of DoE's Nuclear Weapons Complex as well as an active participant in fissile materials storage and disposition activities.

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I would also like to encourage the DoE to make full use of the research expertise that exists in the area that could be used in conjunction with the Pantex Plant. Specifically, the Texas A&M University System, Texas Tech University, and the University of Texas System recently formed the "Higher Education Consortium" to conduct plutonium-related research at the Amarillo National Resource Center, which the DoE established last year. The consortium offers a wealth of resources that could effectively complement any current or future Pantex mission.

Thank you again for your consideration of my concerns, and I look forward to working with you on these vital issues in the future.

Yours respectfully,

Phil Gramm

PHIL GRAMM
United States Senator

PG:mgg

Lynn B. Myers, P. E.
132 Foxwood Drive
Aiken, South Carolina
29803

May 10, 1995

United States Department of Energy
P. O. Box 3417
Alexandria, VA 22301

COMMENTS ON TRITIUM SUPPLY AND RECYCLING
DRAFT PROGRAMMATIC ENVIRONMENTAL STATEMENT

Included in this letter are my comments on the subject PEIS. I would like to first state that although I am employed in the Tritium Facility at the Savannah River Site by WSRC, my comments are not influenced by any economic effects of the proposed activity because I intend to retire and move out of the area long before the activities presented in the PEIS will take effect. My qualifications to make technical comments on the PEIS include the following: I am a registered Professional Engineer with a Masters degree in Nuclear Engineering. I have nearly 37 years of experience in the nuclear industry, with over 20 years of that being employed by AEC/DOE prime contractors. I have been involved in naval reactor startup and test; commercial reactor startup, design and licensing; research reactor startup; high-level radioactive waste repository licensing and design; production reactor safety analysis; and nuclear weapons facility safety analysis. My comments represent my own technical opinions and not necessarily those of anybody else.

TRITIUM RECYCLE FACILITY LOCATION

1/13.09.01 The Savannah River Site contains a tritium reprocessing facility that is virtually brand new, having started up in 1993. It is inconceivable that any rationally prepared estimate of life cycle costs, either economic or environmental, could justify building a new recycle facility at any other site. Such a cost estimate would have to include the costs of building a new facility, operating the new facility, decommissioning the new facility, and decommissioning the facility at SRS. These costs would be compared with operating the facility at SRS, decommissioning the facility at SRS and upgrading the supporting facilities at SRS.

TRITIUM PRODUCTION FACILITY LOCATION

1/13.09.01 continued The PEIS considers an alternative of producing tritium at a new production facility at some site other than SRS and then recycling the tritium at SRS. This alternative would require extracting the tritium at the production facility and then loading it into some sort of transport container, either as a gas or on a hydride bed, either of which would require a container loading system, which does not seem to be addressed in the PEIS; transporting the the containers from the production site to SRS; and then unloading the containers at SRS. The environmental impacts of these activities (other than the transportation of virgin tritium, which is addressed in Section 4.7.2.2) do not seem to be addressed in the SAR. In any case, the increased costs of the additional handling would seem to mitigate for colocating the production and recycle facilities. Based on the previous comment, that combined facility should be at SRS.

REACTOR PRODUCTION OF TRITIUM

2/10.02 When I first started to work in the high level radioactive waste repository business, in the late 1970's, the first repository was scheduled to start in 1983. That date, and many other scheduled dates, have passed without seeing any real progress toward repository construction. Today, the anticipated date for startup is further in the future than it was in the 1970's. Considering all of the high level radioactive waste from operating commercial power reactors, shut down commercial power reactors, research reactors, and defense programs awaiting a home, it would be irresponsible for DOE to construct another reactor when other options are available. My personal opinion is that disposal of high-level radioactive waste in the vadose zone will prove to be unacceptable, resulting in much longer delays in putting a repository into operation.

USE OF A TRITIUM PRODUCTION REACTOR TO GENERATE ELECTRICITY

3/13.00.54 All isotopes of hydrogen, including tritium, are very diffusive. The diffusivity of hydrogen increases dramatically as the temperature increases. At room temperature, tritium diffuses far into the stainless steel wall of a tank or pressure vessel. Therefore, it is very difficult to envision how a target could be clad with a material that would contain the tritium within the target. Any tritium that diffuses through the target cladding and into the coolant, goes from being product to being radioactive waste. The PEIS should address this subject before it concludes that power generation by a tritium production reactor is feasible.

GAS COOLED PRODUCTION REACTOR

4/13.02.01 During the 1970's, several gas cooled reactors were ordered for the commercial production of electricity. All of those orders were eventually canceled, and only Fort St. Vrain was actually constructed and operated. The operating experience of Fort St.

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4/13.02.01 continued — Vrain does not inspire confidence in gas cooled reactors, and attempting to resurrect this failed technology for the critical function of tritium production involves an unwarranted risk.

OTHER REACTOR TECHNOLOGIES

5/13.00.17 — Another possible reactor technology that should be considered is the light water equivalent of the HWR. That is a low temperature LWR. The advantages would be that expensive heavy water would not be required for coolant and moderator, and the waste tritium buildup in the coolant would be drastically reduced over that in the HWR. No heavy water processing facility would be required to detritiate the expensive heavy water as would be required for the HWR.

APT WITH HELIUM TARGET

The PEIS does not present very much information as to the source of He-3 for the target for the APT. Figure A.2.1.4-5 shows He-3 from weapon recycle and from commercial sources. If the only source of He-3 is the decay of H-3, there would appear to be only three possible sources of substantial quantities of He-3: the US weapons program, the former Soviet Union weapons program and Canada. The Canadians are as unlikely to provide He-3 for the US weapons program as they are to provide H-3. It seems that the only substantial supply is the decay of tritium in weapons. Since each recycle of He-3 from decayed tritium will inevitably involve the losses of some He-3, can we be assured that there is an ample supply of He-3 to support a He-3 target APT for the necessary lifetime of the production facility?

6/13.04.22 — Another concern is that the PEIS does not address the neutronics of the reaction that produces H-3 from He-3. I assume it is of the form:

$$^{3}He + {}^{1}n \rightarrow ?? \rightarrow {}^{3}H + {}^{1}H.$$

However, it would seem that there is a non-zero cross section for the reaction:

$$^{3}He + {}^{1}n \rightarrow ?? \rightarrow {}^{4}He.$$

If there is a buildup of He-4 in the target gas, it would ultimately poison the reaction and reduce the efficiency of the tritium production. How would the He-4 be removed from the He-3? Would this require the periodic disposal of all of the target gas, including the He-3, which would seem to be in limited supply?

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COMMENT LETTER

PAGE 1 OF 3

130 Oklahoma Avenue
Oak Ridge, TN 37830
May 11, 1995

US DOE
Tritium Supply and Recycling
PO Box 3417
Alexandria, VA 22301

Dear Sirs:

I am basing my comments on study of the PEIS Summary, the oral presentation, and my partial understanding of the sites and technologies involved. The text of the Summary was quite readable, but I did have trouble understanding the long table. Any large differences among the numbers seem to depend on qualitative differences between the options. Maybe it would have been more helpful if these few crucial qualitative points had been brought together. Nevertheless, it appears the PEIS will nourish the insight needed to help untangle the options puzzle.

Maintaining the tritium inventory involves providing with very high certainty the capabilities projected to be needed, while recognizing that before 2010 those perceived needs will change. Most people hope that need for tritium will diminish, but I agree we must proceed as if the requirements were unchanging. The possibility of future change could be recognized by giving strong weight to the importance of any secondary applications for each production method, and to options which would open new possibilities for future projects. Unfortunately, the value of multiple functionality conflicts with the need for reliable and timely tritium production.

1/13.09.01 — Whatever supply option is chosen, I think upgrading the tritium recycle facilities at SRS should be chosen. I assume staff is available there from previous operations, staff perhaps best able to sense what equipment upgrades would be appropriate.

2/22.02 — I am skeptical that conversion of a commercial power reactor to tritium production would be rapid or trouble-free, even if a new and unused reactor were acquired. I recall the difficulties of emplacing small samples [for monitoring radiation damage] within commercial reactor pressure vessels. Moveover, I believe we should maintain the convention that military and civilian nuclear technologies should be kept separate even when the distinction is somewhat artificial. I did detect at the Oak Ridge workshop that the separation concept is not considered important by all. It is in any case proper to consider the backstop option of using commercial reactors.

3/13.01.01 If the quest to reduce uncertainty totally dominates the choice, a HWR built at SRS should be preferred. Low operating temperature eases safety, and experience with reactors of similar type and scale should facilitate program success.

4/13.05.01 To minimize off-site effects, INEL should be preferred for siting any of the other reactor types. However, it does seem unwise to increase the number of weapons-related sites. The small predicted off-site effects at the more populous sites are tiny compared with the carnage to the public that would occur should any of the tritium have to be applied in a nuclear conflict. Devastation would not be confined to the enemy.

5/13.04.14 A good way to assess uncertainty for high technology applications is to take a hard look at how much scale or technology change must occur to build each one of the options. I believe the APT option would suffer in such an analysis, if scale-up is considered in terms of average current or power. I believe almost all linear accelerators have had very small macroscopic duty factors. I am aware that high power linacs have been designed for some time, but not built and used. If the choice were APT, one would have to include in national plans some quick demonstrations of portons of the design; I am not sure how this would be done. I am willing to help think about how to provide design confidence, but I do not have the reference to the conceptual design report or its equivalent. The APT concept would score high on opening future options for use of spallation sources, and on being safe against accidents that would affect offsite populations. DOE does have plenty of spent fuel on its hands already!

If the APT is chosen, quite a bit of thought should go into the design of the tritium-producing target. The analysis tools are available or can be readily obtained. To me, it is not immediatily obvious why lithium would not be involved in an efficient design. [My physics and nuclear engineering backgrounds should allow me to understand the target.]

6/13.00.29 The "triple play" reactor concept sounds interesting. However, the extra complications of plutonium fuel fabrication and of multiple objectives makes this choice inappropriate. This conclusion might reverse if commercial power implementation of advanced LWR's seemed imminent; I do not expect such developments on the 2010 timescale.

In summary:

(a) Recycle tritium at the Savannah River Site (SRS).
(b) Build any heavy water reactor at SRS.
(c) Site any other type of reactor at INEL unless it is quite important to limit the number of weapons-related sites.
(d) Avoid the "triple play." We do not want to be "out."

(e) APT looks interesting, and it cannot have an accidental reactivity transient; however, quick demonstrations of some technical features would probably be needed.

Sincerely,
Robert Peelle
Bob Peelle
(615)483-8974

April 22, 1995
304 Manor Drive
Sautee, GA 30571

Rick Ford, Office of External Affairs
Department of Energy, Savannah River
1995 South Centennial Ave.
Aiken, S.C. 29803

To the Department of Energy
Concerning the Tritium Supply and Recycling Programmatic
Environmental Impact Statement

I was unable to attend the public meeting held in North Augusta April 20 and am submitting my concerns in writing:

While I understand that many of the people at the April 20th meeting were in favor of a new tritium production reactor, you do understand that their immediate concern is jobs. I respectfully urge that *you* consider the long term welfare of the nation and the integrity of our environment when deciding how to meet our tritium needs.

1/04.02.12 I submit this map of the tritium contamination at the Hanford Site and remind you that the same thing is happening at the SRS. Tritium from the SRS has contaminated wells in Georgia

2/18.01 I dispute the need for a new source of tritium in 2011 because we are committed by international treaty to a continual reduction of our nuclear stockpile and thus should not be planning production of new nuclear weapons.

3/13.04.01 However, if the U.S. does intend to continue its nuclear weapon production program, it can produce tritium from a linear accelerator. My reading indicates that this is a safer process than using a nuclear reactor.

4/20.01 Our first and highest priority should be containment and clean-up at the SRS. Until that is done and until the DOE has solved the problem of nuclear waste, no nuclear reactors of any kind should be built.

Sincerely,

Joan O. King

Joan O. King

From the DOE publication Closing the Circle Contamination and Cleanup

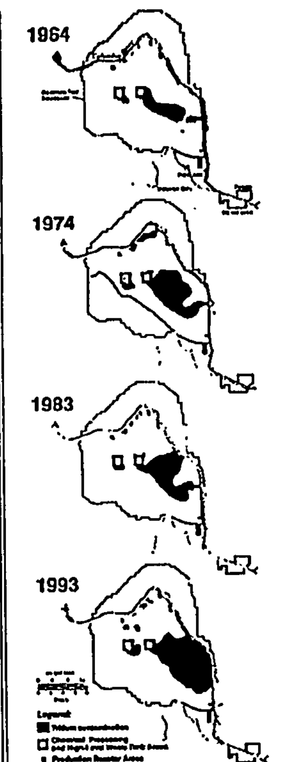
Dose Reconstruction: Estimating Past Human Exposures

Releases of radioactive materials associated with nuclear weapons production at sites throughout the weapons complex have aroused concern about potential public health consequences. No one knows exactly who among the general public was exposed to how much radioactivity during the Cold War or what actual health impacts resulted. The Department has undertaken "dose reconstruction" studies around several of its major facilities to gain a clearer understanding of potential radiation health effects through epidemiological research. Efforts begin with trying to determine how much radiation was received by citizens living near nuclear weapons sites.

One of the earliest and most extensive research efforts began at Hanford in Washington in 1986. After the DOE assembled hundreds of documents addressing the environmental impacts of its operations from 1945 to 1985, a committee of representatives from Washington, Oregon, the Yakima Indian Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe concluded that radioactive releases and biological pathways should be studied in order to "reconstruct" potential radiation doses to the public. The objectives of the Hanford Environmental Dose Reconstruction Project are to estimate the radiation doses that populations could have received from nuclear operations at Hanford since 1944, and to make public all the information used in the project. In order to obtain dose estimates from past radioactive releases, historical data are being identified, reviewed, and analyzed in order to understand atmospheric, river, and ground water conditions that affected the transport of radioactivity from operating facilities to offsite populations. The types and quantities of radioactive materials emitted by Hanford's operations are also being evaluated. As information on population distributions, agricultural practices, and eating habits is obtained, the migration of radionuclides through environmental pathways to regional populations will be modeled.

To provide independent technical direction to the effort, professors from area universities selected a Technical Steering Panel from a list of candidates. The technical steering panel currently has nine members and includes representatives from a range of organizations. All project reports that have been approved by the technical steering panel and references used in the reports are being placed in a local public reading room.

Dose reconstruction studies at Hanford and other sites will help build the informational foundations for sound risk assessment. The experience gained in these pioneering efforts should be valuable in a wide range of environmental projects.



Spreading tritium contamination at the Hanford Site in Washington. The shaded areas in these maps show how tritium contamination in concentrations above safe drinking-water standards has spread over time

73

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COMMENT LETTER
PAGE 1 OF 1

Sam Booher
4387 Roswell Rd
Augusta, Ga 30907
9 May 1995

US DOE

Subject: Citizen Input to the
Draft Programmatic Envir. Impact Statement

Dear Sir,

Though I am Retired, I am still concerned. Thus I wish to provide two comments concerning the Tritium Supply & Recycling at SRS (Savannah River Site).

1/06.16 1. SRS is the Largest *National Wildlife Research Site* in America. I am concerned that without a viable and defensible MISSION for SRS this Wildlife Site will be lost.
Tritium production at SRS would justify keeping the current wildlife buffer zone intact. What ever method of Tritum production is best, I do not feel qualified to comment on.

2/15.01 2. I am very pleased with DOE Public Input and Citizen Involvement Program at SRS.

Sam Booher

Voice / FAX (706) 863-2324

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May 11,1995

U.S. Department of Energy
Box 3417
Alexandria, VA 22302

Re: Tritium Supply and Recycling Draft'
Programmatic Environmental Impact Statement

Comments from Marcia Keevan

1) Reference enclosure, Figure 33-2, page 792 Metamagical Themas, reproduced by permission from Dr. Douglas R. Hofstadter
2) Opening Address
3) Deterrence?
4) National Shame
5) Environmental Comments
6) Selecting "Candidate" Weapons Systems
7) Job Security for Pantex Workers...
8) Record of Decision
9) Reference enclosures, pages 4,10,11, from The Stockpile Stewardship and Management Program, authored by the U.S. Department of Energy, May 1995

Marcia Keevan
RR 6
Box 251 E
Amarillo, TX
79124

Tritium comments, MK, page 2 of 10
(Reference enclosure)

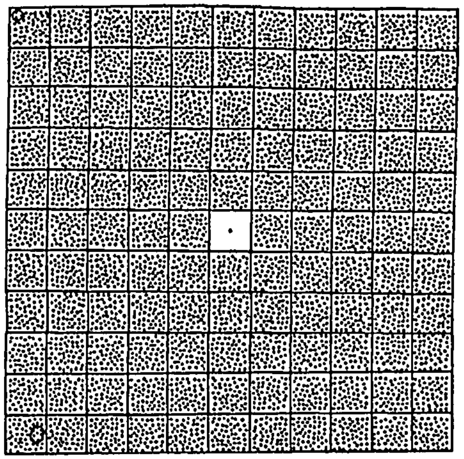

FIGURE 33-2. *A realistic view of the world armaments situation. The chart shows the world's current firepower in terms of the firepower of World War II. The dot in the center square represents all the firepower of World War II (including the atomic bombs dropped on Hiroshima and Nagasaki): three megatons. The other dots represent the world's present nuclear weaponry. This comes to 18,000 megatons, which equals 6,000 World War IIs. The U.S. (and allies) and the S.U. (and allies) share this firepower approximately equally.*

The top lefthand circle enclosing nine megatons represents the weapons on just one Poseidon submarine. This is equal to the firepower of three World War IIs and is enough to destroy over 200 of the Soviet Union's largest cities. We have 31 such submarines and ten smaller Polaris submarines. The bottom lefthand circle enclosing 24 megatons represents one new Trident submarine with the power of eight World War IIs: enough to destroy every major city in the Northern hemisphere. The Soviets have similar levels of destructive power.

Just two squares on this chart (300 megatons) represent enough firepower to destroy all the large and medium-size cities in the entire world. [Designed by Jim Geier and Sheryl Green in 1981.]

• Special thanks to Dr. Douglas Hofstadter for granting permission to reproduce this diagram.

Metamagical Themas, Hofstadter, page 702

Tritium comments, M.K., page 3 of 10

Opening Address

You, of the D.O.E., have welcomed comments concerning the location and construction of a new tritium producing facility. I must trust that you are sincerely interested in my response. I must also trust that this invitation is more than just a public relations formality designed to push a plan* that the D.O.E. intends to follow regardless of reasonable arguments to the contrary.

I do not stand to gain dollars based on the position I assume in these comments, and the time spent preparing them is at my own cost.

1/13.00.01

In truth, we all know that it does not require the quality called 'courage' to detonate a nuclear weapon over a civilian population. Some might even view such an act as cowardly, barbaric.

In truth, we know that the manufacturing of nuclear weapons does not require the quality called 'courage', but rather it involves an industry motivated by enormous dollar signs, ever perpetuated by playing on the fears of the populous.

In truth, we know that wars have continued to play themselves out directly under the noses of our powerful missiles, just as they always have.

Deterrence?

Wars fought out using conventional weapons in spite of our frightening arsenal... the have-nots and the have-gots continue to struggle with the must-have-yours. They shoot, burn, maim, kill, and destroy as though nuclear arsenals didn't exist at all (Korea, Vietnam, Iraq, Somalia) Why don't our big bombs scare these smaller nation into behaving themselves? Haven't they seen the pictures of Hiroshima? Nagasaki? What gives? (Besides our tax burdens).

*page 4, Stockpile Stewardship and Management Program-" The Department is also developing a contingency option for the production of tritium in the event of a national emergency"

Tritium comments, MK, page 4 of 10

Deterrence? cont.

1/13.00.01 continued

It is regrettable that the D.O.E.'s predecessors did not consult with me before Teller was commissioned to create the Hydrogen Bomb. I would have told them right then and there that the Atomic Bombs used against the Japanese people were overly convincing. Oh arsenal planners, did you fail to notice that just one bomb leveled an entire city? Women, children, men, plants, animals, structures, contamination for miles, the tortured unborn ... what kind of childish mentality encouraged these irresponsible developments to continue? To escalate?

Are we to be:

a) motivated by terror?

b) motivated by power?

c) motivated by vision?

Vision- a projection into the future. We could all do with a better vision now, couldn't we?

Our laws and our national conduct are reflections of our national soul. It is an irrational fear that has fed this hungry nuclear machine; a machine which operates with the blessing of sheer greed. An elite few rake in enormous profits by creating weapons that possess the potential to obliterate several planet 'Earths'. Our national soul? -a neglected orphan, informed just enough to be properly frightened into apathy and denial.

Please look at the enclosed diagram 33-2, taken from Dr. Douglas Hofstadter's book Metamagical Themas. Study it thoughtfully, and then ask yourself, "Is this a picture of an advanced civilization? Is this what sanity looks like?"

National Shame

In truth, we realize that the nuclear arms race has done more harm than we were permitted to know about during the Cold War. Possibly the greatest injury our national soul has sustained occurred when the human radiation studies were disclosed*. While cloaked in secrecy, paranoia, and mountains of dollars, the unthinkable became a reality. Sadistic medical experiments were conducted on American citizens (some still yet in the womb) without informed consent. The atrocities performed under Hitler fueled the fighting passion of the WWII soldiers and also helped establish the Nurémberg Code. What a disgrace to these men and every honor-bound citizen of America, to learn that this beloved land of the free and home

* released on the authority of Sec. Hazel O Leary, Fall-1993. God Bless you for your courage, Ms. Secretary

Tritium comments, MK, page 5 of 10

National Shame cont.

1/13.00.01 continued

of the brave actually paid its own government to practise such dirty deeds! Because so many of these Cold War criminals are dead, naming the culprits is one of the only options we have left. Certainly the names of every person who knowingly deceived the unknowing in these experiments deserves a black mark beside his name in history. If we, and our children, and our children's children could openly address the shame that the knowledge of these acts brings, and learn the names of the guilty, some justice could be served. Something must be done to quiet the internal rage boiling beneath the surface within our national soul.

Environmental Consequences

2/18.14

In truth, we are also learning just how dangerous the manufacturing of these weapons has been, is now, and will be. The nuclear weapons complex is a hornet's nest of environmental catastrophes. From the extreme environmental concerns of Hanford and Rocky Flats, to the somewhat less dramatic local Superfund site in Amarillo (Pantex), we see the damages for what they really are. Some of the damage within the complex is presently beyond our understanding to repair; mixed-waste tanks belching hydrogen, plutonium resting in ground water, explosives left scattered on farm land for over forty years, spontaneous plutonium fires, fuel fleas, it just goes on and on. Where clean-up is a possibility, the cost appears to be astronomical. And as for tritium, Pantex has had several tritium accidents (they call these 'releases'), and thank you very much, but-NO. Many trusting people have become ill or died as a result of environmental mistakes wrought by the nuclear weapons industry. This is an industry that creates products it never intends to use. It is just insane.

' Candidate' Weapons Systems

3/13.00.08

A package from you, of the D.O.E., just arrived today. (Stockpile Stewardship and Management Program, May 1995) In this booklet, on page four, it reads as follows:

"All of the candidate weapons for the Start II stockpile require tritium replenishment."

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COMMENT LETTER
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Tritium comments, MK, page 6 of 10

Candidate Weapons Systems cont.

3/13.00.08 continued

Who choose these candidates? Who voted in this election? People of the D.O.E., do not make the assumption that we will maintain a stockpile of weapons requiring tritium when no tritium producing facility exists.

The selections included in the 'non-enduring' stockpile * may become the new 'candidates' if a new tritium facility loses the 'election'. Does America need to finance more vastly expensive death factories? The average Atomic Bomb is not destructive enough? Must we maintain the explosive energy power of a star within our arsenal?

(pssst, the answer to that leading question is: no)

Job Security for Pantex Workers

Some people in Amarillo have been playing on the fears of Pantex plant workers concerning job security (it goes like this: if Amarillo doesn't get the new tritium facility the plant will close, we workers won't have any jobs). The Russian economy and government collasped a few years back, and securing their nuclear arsenal from theft and general corruption has been and still is a major concern.

If money must become more of an issue than honor and dedication in the safeguarding of our nuclear materials, we will end up in even deeper sewage than we are already. The last thing we need in the complex is a bunch of frightened workers, whose only pacifier is money.

4/08.12

The safeguards in place for securing American weapons grade materials appear to be adequate, but they are certainly not infallible. The unstable 'human' element will always be a factor. Thus, I can see no logical reason to encourage the workers to feel economically insecure. We Americans pay the Department of Energy well, and we expect outstanding performance in return. Regardless of whether or not jobs change, or facilities open or close, the caliber of employee within the complex should be beyond question. The very real issues being hashed out in the public forum can effect the civil servant, but such issues should not make them become overly concerned. It is dangerous to encourage people to think only with their pocketbooks. Trans-uranic elements and other actinides are just as dangerous at a dollar-a-nuke as they are at a-million-dollars-a-nuke.

* pages 10 and 11, Stockpile Stewardship and Management Program, May 1995

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Tritium comments, MK, page 7 of 10

Record of Decision

1/13.00.01 continued

In conclusion, I support none of the proposed sites or technologies presented for the consideration of producing tritium.* My vote is for the NO ACTION option, and my suggestion is for the D.O.E. to change the proposed stockpile 'candidates' accordingly.

Keep up the great job that you are doing taking these bombs apart. I will keep trying to make helpful comments for as long as the arsenal continues reducing and reducing and reducing.

Most Sincerely,
Marcia A. Keevan
Marcia A. Keevan

* I remain very interested in accelerator technology and its possible applications in transmuting the actinides into stable forms. I would like to see this possible answer to nuclear waste problems addressed more seriously.

All comments and conclusions in these papers are my own. Those named in reference may or may not share my conclusions concerning the future production of tritium.

Tritium comments, MK, page 8 of 10
(REFERENCE ENCLOSURE)
Critical Scientific and Technical Issues

Reducing the Vulnerability of the Smaller Stockpile to Single-Point and Common-Mode Failures

- A large stockpile, with over 20,000 weapons and more than 25 weapon systems, provided substantial protection against single-point and common-mode failures.
- A smaller stockpile, with fewer than 5000 weapons and 7 weapon systems, will be far more vulnerable to single-point and common-mode failures.
- Enhanced weapon and materials surveillance capabilities are necessary to detect potential problems earlier and lessen the vulnerability of the enduring stockpile to these failures.
- The strategy to address this critical issue is discussed under "Enhanced Weapon and Materials Surveillance Technologies" (p. 6).

Providing an Effective and Efficient Production Complex for the Smaller Stockpile

- In the past, a large weapon production complex of seven plant sites provided the capability and capacity to rapidly fix problems in the stockpile.
- Currently, only four plant sites are available (Kansas City, Pantex, Savannah River, and Oak Ridge). Nonnuclear functions are being consolidated and reestablished, and some nuclear functions are not currently available and will be difficult to reestablish. The existing production complex would be inefficient and ineffective for the smaller enduring stockpile.
- Advanced manufacturing and materials technologies must be developed to provide timely and flexible response in correcting stockpile problems. Research, development, and manufacturing must be highly integrated. The capacity-based production infrastructure of the past, which relied heavily on a production complex geared to continuous upgrading and renewal of a relatively large stockpile, must be replaced by a much smaller and more efficient capability-based complex supported by improved scientific understanding of nuclear weapons and their production processes.
- The strategy to address this critical issue is discussed under "Effective and Efficient Production Complex" (p. 7).

Providing for Long-Range Support of the Enduring Stockpile

- In the past, continuous development and production of new weapons maintained the scientific and technical knowledge and skills base essential for maintaining the safety and reliability of the stockpile.
- With no new weapons in development or production, budget reductions, and an aging staff with actual experience in designing, testing, and producing nuclear weapons, the knowledge and skills base unique to nuclear weapons will atrophy.
- A new, long-range planning strategy needs to be developed in conjunction with the Department of Defense. This strategy must allow for a weapons complex (design, development, and production) to maintain the U.S. nuclear stockpile and support the nation's nuclear deterrent in the future while meeting our obligation to maintain the safety and reliability of the stockpile while transitioning to a complex more appropriately sized and structured to ensure efficiency and effectiveness in supporting the nation's nuclear deterrent in the future. This long-range strategy should protect the national security option to develop new nuclear weapons.
- The strategy to address this critical issue is discussed under "Long-Range Stockpile Support" (p. 9).

Ensuring an Adequate Supply of Tritium

- All of the candidate weapons for the START II stockpile require tritium replenishment.
- No production source of new tritium currently exists.
- Although the projected START II stockpile and the mandated five-year reserve can be maintained until about 2011 by recycling existing tritium supplies, it will likely take 10 to 15 years to bring a new tritium production source on line. Reactor and accelerator technologies for producing tritium are currently being evaluated, and a decision as to the preferred approach is expected later this year.
- The Department is also developing a contingency option for the production of tritium in the event of a national emergency.
- The strategy to address this critical issue is discussed under "Tritium Production" (p. 10).

4

Tritium comments, MK, page 9 of 10
(REFERENCE ENCLOSURE)
Program Strategies

Example of Preventive Maintenance—Neutron Generator

- ***Repair:***
  - *–Correct detonator corrosion problem.*
- ***Life extension:***
  - *–Review tube life data annually.*
- ***Replacement:***
  - *–Develop new generator with improved reliability and durability (in progress).*

stockpile weapons to ensure their continued safety, security, and reliability. Indeed, one of the weapon systems slated for the enduring stockpile is currently being retrofitted at Pantex with safety, security, and reliability upgrades, and several other field and Pantex retrofits are planned for the next five years.

The Stockpile Stewardship and Management Program calls for new approaches to ensuring the ability to fix problems that will undoubtedly occur in the aging stockpile. To start with, safety margins will be increased (which may include modifications to primaries), use-control technology will be enhanced, and components produced with "sunset" technologies (i.e., products and processes that become obsolete because of, for example, increasingly stringent environmental or safety regulations) will be replaced. To accomplish these objectives cost effectively, we will conduct planned product-improvement programs that will significantly advance the safety, security, reliability, and/or maintainability of stockpile weapons. To extend the lifetime of weapon components without jeopardizing safety or reliability, we will use improved predictive capabilities, made possible by a combination of computational modeling and experimentation, to define age-related changes in materials properties and will engage in preventative maintenance (before a problem develops) of the stockpile. This approach has already been used successfully for such limited-lifetime components (LLCs) as neutron generators and tritium reservoirs, and it may be possible to extend this approach to entire weapon systems. Not only will these activities ensure and improve the safety and reliability of the enduring stockpile, but they will also exercise and sustain much of the skill base required for nuclear weapon development and production and thus help maintain the nation's nuclear competency.

Improvements to the stockpile must be made through a strategy that does not call for significant new weapons production or complete rebuilding of the candidate weapons for the START II stockpile. It is not cost effective, and perhaps not even feasible, to simply replace individual weapons when they reach the end of their original design lifetime (20 to 25 years, depending on weapon type). A new strategy will be developed in conjunction with the Department of Defense. It will rely extensively on preplanned lifetime extension projects and, whenever a major retrofit is not cost effective, on one-for-one complete system replacements. The retrofit/rebuild schedules will be phased to level the production and recertification workload and to ensure sustainable effectiveness of design, engineering, and production capabilities in every critical area.

Tritium Production

Tritium is required for all weapons in the enduring U.S. stockpile. This radioactive isotope of hydrogen has a half-life of 12.5 years and decays at the rate of about 5% per year. Tritium has not been produced in the U.S. since 1988. Stockpile tritium requirements are currently being met by recycling the tritium from dismantled weapons. Recycling will meet the tritium requirements of all of the weapons in the START II stockpile, including a five-year reserve, until about 2011. Clearly, some means of tritium production will be required to support the stockpile after that time.

Various tritium production technologies are being evaluated by the Department of Energy, and the preferred technology will be selected in the near future. The following technologies for producing tritium are being considered: accelerator, advanced light-water reactor, heavy-water reactor, and modular high-temperature gas-cooled reactor. Candidate sites for tritium production and recycling are the Idaho National Engineering Laboratory, the Nevada Test Site, the Oak Ridge site (Tennessee), the Pantex Plant (Texas), and the Savannah River Plant (South Carolina). It is estimated that, regardless of the technology and site chosen, it will take 10 to 15 years to establish a new tritium production capability. The current plan provides for a technically proven contingency supply of tritium, based on a commercial light-water reactor, to respond in the event of a national emergency.

The tritium recycle and supply proposal has its own programmatic environmental impact statement. A record of decision on the technology and siting is scheduled for this year.

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Tritium comments, MK, page 10 of 10
(REFERENCE ENCLOSURE)

Program Costs

BUDGET projections derived from a preliminary analysis of the Stockpile Stewardship and Management Program strategies are illustrated in Figure 2. The rise in funding shown for the next several years is the investment that would be required to implement this science-based Stockpile Stewardship and Management Program in the absence of the Department's reinvention efforts to improve efficiency and reduce costs.

Stockpile stewardship costs include all research and development activities at the weapons laboratories to implement the program strategies and maintain the Presidentially directed test-readiness posture at the Nevada Test Site. The stockpile stewardship cost estimate includes the proposed new experimental test facilities (the Dual Axis Radiographic Hydrodynamic Test Facility, the Contained Firing Facility, the Atlas Facility, the National Ignition Facility, and the Process and Environmental Technology Laboratory; see the Appendix, p. 14, for descriptions of these facilities). Stockpile management costs include a new tritium production facility and the activities associated with dismantling the nonenduring stockpile, with maintenance and surveillance of the enduring stockpile, and with the implementation of new manufacturing and surveillance technologies to support the enduring stockpile.

These budget projections do not include the following: worker retraining, science education support at public schools, or national economic competitiveness not critical to nuclear weapons. Neither do they include the cost of decommissioning and decontaminating facilities, direct funding for nonproliferation and arms control activities, or the cost of storage and disposition of excess nuclear components and materials after fiscal year 1997.

Our preliminary cost analysis suggests that, in the absence of a series of ongoing and planned program and management improvements in the way the Department of Energy operates, the Stockpile Stewardship and Management Program

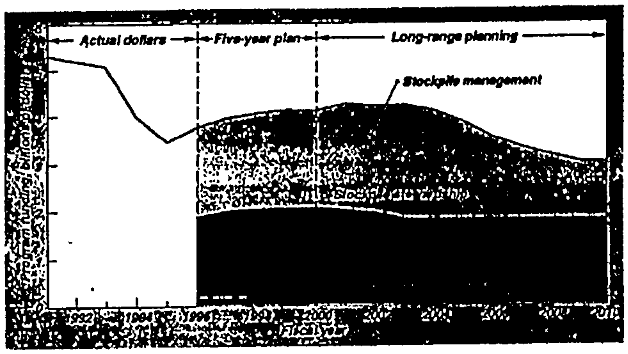

Figure 2. Budget projection for the Stockpile Stewardship and Management Program in budget-year dollars for the fiscal years 1991 through 2000 before reinvention (costs for 2001 and beyond are in constant fiscal year 1996 dollars). It is anticipated that the Department's initiatives will reduce the funding required for fiscal year 1997 and beyond. Costs for the various elements of the program are cumulative.

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U.S. Department of Energy
Box 3417
Alexandria, VA 22302

May 10, 1995

Re. Tritium Supply and Recycling Draft
Programmatic Environmental Impact Statement

Dear Sir:

1/13.08.03 For many years I have been following the events at Pantex. It is not suitable for tritium supplu and recycling because of the lack of water in the area, it is small in size and surrounded by good farm land and people; and we do not need to waste money on such an unnecessary project.

2/19.01 The poor, children and the elderly are doing without. Surely money on an unnecessary defense project is an expense we cannot afford if we are to care about the future, not to mention have a conscience. Lets think of the whole country and the long term. We have much greater priorities, even in the Defense Dept. May God guide you well and give you the reward you deserve!

Sincerely in Christ,

Jerry Stein

Rev. C. G. Stein

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COMMENT LETTER
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WESTERN NC PHYSICIANS FOR SOCIAL RESPONSIBILITY
99 EASTMOOR DRIVE
ASHEVILLE, NC 28805-9211
May 8, 1995

U. S. Department of Energy
P.O.Box 3417
Alexandria,VA 22302

Subject: PEIS proposal for resuming production of TRITIUM

Greetings,

1/11.00.12 This letter is in response to your assertion that additional TRITIUM must be available by the year 2016 "to maintain an effective nuclear deterrent". In order to have a 5 year reserve, DOE proposes building a TRITIUM production facility & having it in operation by 2011. We understand that TRITIUM is a radioactive gas with a half-life of 12 years, used to boost the explosive power of nuclear bombs. It also has the potential for causing cancer & birth defects.

2/18.01 We understand that TRITIUM recycled from dismantled bombs is currently used to replace the decayed TRITIUM in the active arsenal. This recycling technology is presently available and is much safer and less costly than producing new TRITIUM. Although actual proposed requirements are classified, TRITIUM needs are likely based on current agreements between Russia and the U.S. to reduce their nuclear warheads from 20,000 to about 5,000-8,000 by the year 2003. Even these agreements are much higher than most arms control specialists feel are needed to maintain national security. It should be anticipated that by 2003 the U.S. and other countries will have negotiated greater cuts, further reducing our need for this dangerous material.

Additional production of TRITIUM could sour nuclear non-proliferation efforts. As the United States is negotiating for an extension of the Nuclear Nonproliferation Treaty, many nations will interpret our pursuit of a large nuclear arsenal well into the next century as not being serious about nuclear arms control. This would be counterproductive to our efforts to stem the spread of nuclear weapons.

3/19.01 In addition, new production of TRITIUM is fiscally irresponsible. Over a 15 year period the full cost of such a proposal would be in the billions of dollars.

2/18.01 continued Perhaps the greatest deficiency in the current debate is DOE's silence about the effect further arms reduction would have on the need for TRITIUM production. Rather than focusing our energies on production of TRITIUM, we as a nation should seek quick ratification of the START II Treaty, negotiate deeper cuts in the nuclear arsenals of the U.S. and Russia and encourage the other members of the nuclear club to reduce their reliance on nuclear weaponry. This would make the world a safer place

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and greatly reduce the need for TRITIUM.

Furthermore, Physicians For Social Responsibility advocates the eventual establishment of a nuclear weapons free world. We encourage our leadership to move relentlessly in that direction. This message is also being conveyed to the President & our Congressional representatives.

Sincerely yours,

Lewis E. Patrie, M.D.

Lewis E. Patrie, MD, MPH (704) 299-1242
Chapter President

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COMMENT LETTER — PAGE 1 OF 1

Verne & Rosemary Cooperrider
2007 Manorview Circle NW
Salem, OR 97304
(503) 585-8540

May 9, 1995

Stephen Sohinki, Director
Office of Reconfiguration
U.S. Dept. of Energy
PO Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki,

As a longtime advocate of no nukes I am concerned about the current plans to restart the machinery of the nuclear arms race. At a time when the Cold War is over, the US and Russia have signed the Strategic Arms Reduction Talks and all the declared nuclear powers except China are observing a testing moratorium, now is not the time to start a tritium facility covered by the DOE's draft PEIS with four possible facility designs and five possible locations.

1/13.00.01 I urge you to choose the "no action" option on the tritium PEIS. We shouldn't be rearming when we are negotiating for non-proliferation. Now is the time to act as if we are coming out of the nuclear arms race, not to be now heating it up.

Thank you for your consideration of this most urgent matter.

Sincerely,

Verne Cooperrider

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COMMENT LETTER — PAGE 1 OF 1

Texas Corn Growers Association

218 E. Bedford
Dimmitt, Texas 79027
Phone (806) 647-4224

May 14, 1995

U.S. Department of Energy
Box 3417
Alexandria, VA 22302

Re: Trituim supply and recycling draft programmatic environmental Import statement.

I am a Family Farmer in the Texas Panhandle and I am very concerned about the activities at the Pantex Plant near Amarillo, Texas. I wish to address your recent announcement to consider Pantex as a site to make trituim.

1/04.02.01 We are very concerned about our only water supply as it has dropped as much as 6 feet in some places this past year. We don't have enough available water for a new industry of this size. The present industries are cutting back on water usage where ever possible. I cannot stress enough how we have to protect our only source of of water as it is the life blood of this whole area.

2/13.08.03 The Pantex Plant is the smallest of all sites being considered. I fee it is much too close to farm land and adequate security couldn't be provided because of it's size.

3/18.01 I don't understand why we are even considering making new trituim at this time. We have enough to last 20 years. I would hope our nation would be a leader in down sizing nuclear trituim. We are under budget constraints and it seems it would be prudent to try to down size every operation at least until it is known that trituim is needed.

I support a No action decision at this time because of the reasons stated above.

Thank you for your consideration.

Sincerely,

Lois

Lois Wales

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COMMENT LETTER **PAGE 1 OF 2**

Saturday.
5-13-95

U.S. Department of Energy,
Box 3417,
Alexandria, Va. 22302

Re Tritium Supply & Recycling Draft Programmatic Environmental Impact Statement

No good for Texas!

1/15.01 You haven't extended open invitations to all Texans in the State to your hearings, this isn't fair, and many feel omitted. You should be holding these hearings on Pantex here at the State Capitol in Austin, not in an area where you can wield the fear of economic depression over the Amarillo Community.

2/13.08.03 We don't need to be preparing new weapons, or expanding the Pantex plant into a Rocky Flats or Savannah, or Oak Ridge, or Hanford, we all know, or should know, what toxic poisoning has occurred from these facilities; & they'll keep poisoning for a long time to come. (Sorry to hear about the unfortunate DOE inspector who was dosed at Rocky Flats prior to its closure, Karma? who is next?)

I now as a longtime resident of 14 years nearly, in Texas, rely on the bountiful grain (over)

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COMMENT LETTER **PAGE 2 OF 2**

2/13.08.03 continued harvests that are produced in and around Hereford Texas in Deaf Smith County, adjacent to Potter County, where sits Amarillo & Pantex. They both are situated over the Ogallala aquifer, a watershed that helps the people in the Panhandle & adjoining states to the north, to enliven their existence as food producers, & excellent quality producers; radiation & food sources don't mix.

I grind my own grains (whole grains), from this region to make fresh breads etc., & I know there are thousands & thousands more who could be affected by this risky business the DOE wants to keep alive, you better cover your back-side for possible liabilities that will surely come to litigations as is only right.

No to Nukes!

Stop nuclear weapons production, You've been slowly killing Americans from the weapons production & testing (explosions), you say will be a deterrent & protection from a supposed or more likely imagined enemy. Hasn't this been a bit too loony & ludicrous?

Sincerely,
John Dolley, Austin, Texas
PPTC (People Preventing a Texas Chernobyl.)

TEXAS NUCLEAR WASTE TASK FORCE
Texas Corn Growers-STAND of Tulia-POWER of Vega
POWER of Hereford-Texas WIFE (Women Involved in Farm Economics)
Texas Chapter of the National Association of Social Workers
Texas Conference of Churches
Northwest Texas Conference of United Methodist Women
Amarillo Church Women United

May 11, 1995

U.S. DOE
P.O. Box 3417
Alexandria, VA 22302

Reference: Draft PEIS for Tritium Supply and Recycling

Submitted by: Texas Nuclear Waste Task Force
Rt. 1, Box 310
Hereford, TX 79045

1/14.02 * The plutonium storage issues should be resolved and the existing contamination cleaned up at the Pantex site prior to any decision for production of tritium. The Panhandle will be ask to take more than a fair amount of environmental and terrorist risk with the amount of plutonium pits stored at the Pantex facility.

2/04.02.01 * The amount of water use for tritium recycling or production should be identified and of primary consideration. The amount of water available for municipal and farming use is limited. Continued municipal demand and the ongoing drought are drawing down the aquifer substantially without the water use by tritium reactors and the electrical demands incurred by the reactors.

3/15.09 * We should not be asked to comment on a draft PEIS when we do not yet know what the specific technology for tritium production will be. The individual impacts of the preferred technology should determine the location, if national interests require the construction of a tritium production facility.

4/18.01 * National activities aimed at a specific amount of tritium production at this time could affect negotiations for further arms reduction agreements. Plans for an identified amount of tritium could look as though we are reluctant to comply with future additional arms reduction agreements.

5/20.01 * The DOE environmental management budget should not be cut in the shadow of plans for tritium production. Environmental concerns have taken a back seat to production through out the Cold War, causing contamination to be ignored and cleanup put on hold. The Task Force would like for the DOE to establish trust in the environmental and health areas by putting an emphasis on budget and personnel for related cleanup activities. Proper

cleanup and management must be demonstrated before the public will trust the DOE to manage tritium differently than in the past.

6/10.20 * Currently Pantex does not generate high-level radioactive waste. Three of the tritium production reactors would create high-level waste, forcing the Panhandle to shoulder the storage of both plutonium and high-level radioactive waste. This is unacceptable to the residents because there is no permanent storage facility licensed or reasonably ready to store such wastes.

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COMMENT LETTER — **PAGE 1 OF 1**

PUBLIC HEARING FEEDBACK FORM

1. Location of the Meeting Sunset Convention Center
2. Date of the Meeting April 20, 1995

Please Circle The Appropriate Number

	Very Good				Poor
3. Level of Knowledge about the Project before the Meeting	5	4	3	2	1
4. Level of Knowledge about the Project after the Meeting	5	4	3	2	1
5. Timing and Date of the Meeting	5	4	3	2	1
6. Location of the Meeting	5	4	3	2	1
7. Understandability of Displays and Handouts	5	4	3	2	1
8. Understandability of Presentations	5	4	3	2	1
9. Relevancy of Issues and Concerns Addressed	5	4	3	2	1
10. Opportunities for Discussion	5	4	3	2	1
11. DOE Officials' Ability to Listen	5	4	3	2	1

1/15.08 12. How did you like the discussion group as a meeting format? I felt the discussion group as a meeting format was not effective. The purpose of the meeting was supposed to be an opportunity for citizens to express concerns and ask questions to the DOE, instead the meeting seemed biased in a way that the AEDC, SPS, DOE etc. were pursuing it based on their economic views.

13. How could the meeting and format be improved? The 5 minute sessions at the podium were more effective in allowing citizens to voice their concerns and opinions without interruption from opposing parties. Each party was able to state their views and have it heard and recorded by the DOE.

2/10.29 14. What did you gain from the meeting? A strong feeling of disgust concerning the way the AEDC, SPS and other entities conduct business. The AEDC offered DOE 5 million $ to build pipeline etc. Are they planning to bribe the DOE into locating the tritium supply facility at Pantex?

PLEASE CONTINUE ON THE OTHER SIDE IF YOU RUN OUT OF SPACE

THANK YOU - YOUR FEEDBACK IS IMPORTANT TO US

Printed on recycled paper

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COMMENT LETTER — **PAGE 1 OF 1**

May 16, 1995

To: Stephen Sohinki, Director
Office of Reconfiguration
U. S. Department of Energy
P. O. Box 3417
Alexandria, VA 22302

From: James W. Dunn
3710 Clearwell
Amarillo, TX 79109-4226

Re: Comments for Stockpile Stewardship and Management (SS&M)

In order to follow the law and fulfill the mission of the DOE, it seems to me that we must strike a balance between (a) deterrence (b) the environment (c) health and (d) safety of people. Deterrence should, if possible, be simply enough to prevent a nuclear war without killing innocent civilians several miles away from military targets in a war. Reports indicate that both the former U. S. S R. and the U. S. A. may have more nuclear weapons than are needed for deterrence or are safe in the event of a war.

1/18.08 Therefore, I respectfully ask that you estimate the maximum amount of nuclear material (equivalent to millions of tons of TNT) if exploded within a short period of time, which would not reasonably be expected to destroy life "as we know it" in the northern hemisphere.

If the nuclear weapons in the world total more than the estimate, attempt to reduce the size and/or number accordingly through treaties and/or unilateral leadership. Perhaps the size of a weapon that contains tritium could be reduced significantly by not replacing the tritium in the warhead.

If we salvage material from weapons that we are disassembling, we should not need to make any more for years and do not have as much of a disposal problem.

Sincerely yours,
James W. Dunn
James W. Dunn

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COMMENT LETTER

PAGE 1 OF 1

LOS ALAMOS COUNTY

COUNTY ADMINISTRATOR
James M. Flint

P.O. Box 30   Los Alamos, New Mexico 87544   505-662-8080   FAX 505-662-8079

May 15, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

RE: Prescoping Comments for Nuclear Stockpile Stewardship

Dear Mr. Sohinki:

On May 12, 1995, we received your letter dated May 2, 1995, regarding the notification of a pre-scoping workshop scheduled for May 19, 1995 in Washington, D.C.

As a local unit of government directly impacted by DOE related operations in Los Alamos County, we are interested in DOE's plans for the Laboratory as they may apply to the Nuclear Stockpile activities.

1/15.03 While your notification was sent too late to make the necessary trip arrangements, we do plan to provide comments during the public scoping meetings or in writing as appropriate. We would encourage more advanced notice from your agency on hearing schedules.

We will be looking forward to receiving additional information as your scoping process develops.

Sincerely,

Alex Georgieff

Alex Georgieff
Deputy Administrator

cc: Los Alamos County Council
James M. Flint, County Administrator
Fred Brueggeman, Community Development Director
Roger Bagley, Support Services Director
Mary Iclnerny, County Attorney
Larry Kirkman, Area Manager, Los Alamos Area Office

"A Consolidated City and County Government"

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COMMENT LETTER

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United States Department of Agriculture

Soil Conservation Service

3244 Elder Street
Boise, Idaho 83705

May 15, 1995

U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

We have reviewed the Draft Environmental Impact Statement for Tritium Supply and Recycling, NRCS Environmental Document No. 1793. The document has been reviewed by our Water Quality Specialist in the State Office and by our District Conservationist in our Idaho Falls Field Office. We have no comments related to this document.

Thank you for the opportunity to provide comments.

Lee E Brooks for

LUANA E. KIGER
State Conservationist

cc:
Gary Nordstrom, Acting Director, Ecological Sciences Division, NHQ, Washington, DC

The Soil Conservation Service is an agency of the Department of Agriculture

AN EQUAL OPPORTUNITY EMPLOYER

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
761 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072

May 12, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
US Department of Energy
PO Box 3417
Alexandria VA 22301

Dear Mr. Sohinki

Document NEPA Review -- "Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling, DOE/EIS-0161, Dated February 1995"

The Tennessee Department of Environment and Conservation, DOE Oversight Division has received the above subject document. Review was conducted in accordance with the requirements of the National Environment Policy Act (NEPA) and implementing regulations of 40 CFR 1500-1508 and 40 CFR 1021.

We request the attached comments on the above document be given full consideration in the preparation of the Final Programmatic Environmental Impact Statement for Tritium Supply and Recycling.

If you have any questions, please contact Dale Rector at (615) 481-0995 or Steve Nisley at (615) 481-0163.

Sincerely

Earl C. Leming

Earl C. Leming, Director

Enclosure
cc w/Encl
Brian Kelly, Governor's Office
Patricia W. Phillips, ORO NEPA Compliance Officer
Amy McCabe-Fitzgerald, LOC
Elgan Usrey, TEMA Nashville
Ralph Hutchison, Oak Ridge Environmental Peace Alliance

Tennessee Department of Environment and Conservation/DOE Oversight Division

Comments on Document DOE/EIS-0161, *"Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling"*.

General Comments

1/13.00.47
1. Volume 1, Summary pg S-5. Provide information on the source and amounts of Plutonium that would be processed as reactor fuel and how criticality and transportation issues would affect such an operation.

2/02.04
2. Volume 1, Summary, Pp S-7 - S-8. Provide more information on the energy requirements of the accelerator technology and what environmental impacts would be associated with the secondary production of electricity to supply power to that accelerator.

3/13.07.03
3. Volume 1, Summary pp S-7 - S-8. Provide details of the impact on safety and tritium production if the Watts Bar Nuclear Reactor does not come on line as anticipated, or if Watts Bar shuts down during accelerator operations.

4/13.04.15
4. Volume 1, Summary pp S-7 - S-8. Provide a comparison between currently operating accelerator technology and the projections for the APT in terms of amperage, downtime, waste, spent target production, and potential radiological impacts to the public,.

5/13.00.48
5. Volume 1, Summary pg. S-8. Provide in "Alternatives Considered but Eliminated from Detailed Study" an analysis of using reactors of United States naval vessels to produce the required tritium. How much tritium could be produced without modifying refueling schedules and/or increasing spent fuel production?

6/22.02
6. Volume 1, Summary pg S-10. Provide an analysis of the modifications necessary to convert a functioning reactor to tritium production and discuss the prospect of converting a commercial reactor to tritium reduction in more detail, with relation to costs, engineering feasibility, and public health and environmental issues.

7/10.21
7. Volume 1, Summary. Provide information on the amount of low level waste generated for each technology, maintenance frequency, and other required maintenance.

Specific Comments

8/18.09
1. Volume 1, Chapter 2, Section 2.1. Provide an explanation or history of the nation's nuclear weapons stockpile adjustments (i.e., the impact of recent treaties, the fall of the Soviet Union, the projected threat, and other associated factors that would affect future tritium needs).

9/22.01
2. Volume 1, Chapter 3, Section 3.1.3. Provide in Chapter 3 of the PEIS an explanation of the specific rules or policies that preclude the possibility of purchasing

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9/22.01 continued — tritium from foreign sources and the use of existing commercial reactors for tritium production. Reducing the stockpile of foreign tritium while increasing our own would alleviate the need for a tritium facility within the time frame illustrated in the PEIS. Furthermore using or acquiring commercial reactors for tritium production would be expeditious because the NRC permitting would be easier and the burden to the taxpayers less.

10/16.14 — 3. Volume 1, Chapter 3, Section 3.6. Provide in Chapter 3.6 of the PEIS an analysis of the cost associated with each of the alternatives to include, direct cost of construction, projected maintenance costs, research and development costs, and other indirect costs

11/06.08 — 4. Volume 1, Chapter 3, Table 3.6.1, Biotic Resources, Pg 3-62, ORR Column, 2nd Paragraph. Remove the phrase "however this type of habitat is abundant in the area." This phrase appears to lessen the environmental impact of removing several hundred acres of nesting and foraging habitat of four State of Tennessee listed raptors.

12/10.22 — 5. Volume 1, Chapter 3, Table 3.6.1, Radiological and Hazardous Chemical Impacts During Normal Operations, Pg 3-71, ORR Column, 2nd Paragraph. Clarify whether there would be any liquid releases associated with Tritium Supply and Recycling operations at the ORR. As tritium is already found in the ground water at the Oak Ridge National Laboratory, along with other radionuclides.

13/09.10 — 6. Volume 1, Chapter 3, Table 3.6.1, Intersite Transport, Pg 3-95, ORR Column, 1st Paragraph. Clarify why no intersite transport of LLW would be required.

14/13.04.20 — 7. Volume 1, Chapter 3. a.) Provide complete data on the viability of the project, its life, and the operational requirements associated with the accelerator production of tritium.

b.) Provide an analysis of the amount of spallation -induced by-products, along with the used target materials, special storage and disposal methods of this mixed waste.

c.) Provide an analysis of the cost for repair or replacement of targets which may melt from a continuous and/or uncontrolled proton beam.

d.) Provide information on the nature of the spallation -induced lithium and products type and extent of distribution between the by-products. Include information about spallation products particular to the target materials considered. Compare spent targets to spent fuel in terms of hazards and radiological characteristics. Include a discussion on the significant annihilation radiation associated with spent targets. Include the quantity, and mass of spent targets which will be produced.

e.) Provide information on special maintenance and training dealing with worker health and safety in and around the plant area in the event of a sub- system failure of the APT as a large amounts of mixed low level waste may be produced.

15/10.23 — 8. Volume 1, Chapter 3, Section 3.6. Provide information from the Nuclear Regulatory Commission on the nature of fission by-products from nuclear reactors and

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15/10.23 continued — spallation -induced products from APT Compare the radiological waste haracteristics with regard to each alternative.

16/13.04.15 — 9. Volume 1, Chapter 3, Section 3.6, Table 3.6-1. Provide other analysis in the efficiencies which compares acreage and power requirements for the APT.

17/03.07 — 10. Volume 1, Chapter 4, Section 4.4.3.3. Provide a cost structure for the possibility of lowering the airborne emissions for each tritium supply technology.

18/04.01.02 — 11. Volume 1, Chapter 4, Table 4.4.2.4-1, Pg 4-185. Explain how the "Average Water Body Concentration" values were derived

19/04.01.02 — 12. Volume 1, Chapter 4, Section 4.4.2.4, Pg 4-186, 1st Paragraph. In the paragraph "Surface Water Rights and Permits" include the following:

13. "Dependent on intake location, construction may require a 26A permit from Tennessee Valley Authority, review by the Watts Bar Inter-Agency Working Group, State Aquatic Resources Alteration Permit, or a Corps of Engineers 404 permit with State 401 certification."

20/04.02.11 — 14. Volume 1, Chapter 4, Section 4.4.2.4, Pg 4-186, 2nd Paragraph.

a) Provide more detailed information on the flow of groundwater in the vicinity of the proposed TSS.

b) Identify sources of information used in the groundwater section.

c) Clarify where the "classes" of aquifers originated.

21/08.16 — 15. Volume 1, Chapter 4, Section 4.4.2.6, Pg 4-188, 2nd Column, 2nd Paragraph. Provide an analysis of the effects on the local economy, (i.e., recreational sports, Tennessee Wildlife Resources license and permit sales), from displacing game animals from several hundred acres of regularly hunted land and possibly forcing those animals toward more contaminated areas of the ORR.

22/10.18 — 16. Volume 1, Chapter 4, Section 4.4.2.10, Pg 4-201. Clarify where the LLW disposal area would be located and if acreage has been committed for the amounts of excess LLW waste identified in the table (3.6.1) under waste management. Assuming that Low Level Waste disposal facilities will be available on the ORR, discuss waste disposal siting options by the NRC.

23/10.36 — 17. Volume 1, Chapter 4, Section 4.4.2.10, Pg 4-201, 2nd Column, 3rd Paragraph. In "High-level Waste," describe the relationship that the proposed Tritium Supply and Recycling Facility would have with NRC regulations. Spent nuclear fuel produced by the proposed facility should be defined and regulated as high level waste by NRC.

24/06.10 — 18. Volume 1, Chapter 4, Section 4.4.3.4, Pg 4-221, 2nd Column, 2nd Paragraph. Provide details of biological and environmental impacts associated with introducing Tritium from proposed TSS operations into waters that already have measurable amounts of Tritium.

25/06.07 — 19. Volume 1, Chapter 4, Section 4.4.3.6, Pg 4-224, 1st Column, 3rd Paragraph. Provide information regarding the relationship between the number of threatened and endangered species at a proposed site and the ranking of the site in the selection

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process. (e g., If a site has the potential to displace more threatened or endangered species than another site, is it ranked lower in the site selection process?)

26/06.12 20. Volume 1, Chapter 4, Section 4.4.3.6, Pg 4-226, 1st Column, 2nd Paragraph. Provide details of the effect of sediment mobilization and changes in aquatic resources on CERCLA operable units in the area of the proposed TSS.

27/10.27 21. Volume 1, Chapter 4, Section 4.4.3.10, Pg 4-252. Clarify whether the new storage facility for spent nuclear fuel and the new treatment facility would be placed on the Tritium Supply and Recycling site or existing facilities at ORNL.

28/10.18 22. Volume 1, Chapter 4, Table 4.4.3.10-1, Pg 4-254, Transuranic (solid) Row, Disposal Method Column, 2nd and 3rd Statements. Since the status of events cannot be accurately projected as to the opening of such a repository remove the phrase "Federal repository in future" for all applicable portions.

29/13.00.50 23. Volume 1, Chapter 4, Section 4.10.1, Pg 4-469, 2nd Column, 1st Paragraph. Explain the reason for the increase in spent nuclear fuel production. Can reactors that produce 245% SNF be reconfigured or engineered to produce Tritium while maintaining normal (100%) SNF production?

30/17.04 24. Volume 1, Chapter 5, Table 5.3-4, Pg 5-14, "Water Resources Row," Potential Applicability/ Permits Column. Rephrase as follows.

A permit may be required prior to any modification of waters of the State including stream alteration for the construction of intakes, discharges, bridges, submarine utility crossings, etc.

31/08.17 25. Volume II, Appendix D. Provide a comparison of the cost advantages of labor versus the cost of supporting the laid off workers, as some workers may be in pre-retirement years. In such cases, the newer employees would have to be hired and trained

32/11.00.22 26. Volume II, Appendix E. Provide information on why the Oak Ridge Reservation is a viable option having the highest risk associated with working on the site, and also to the public calculated on an annual dose basis (to the maximally exposed member) as compared with other sites.

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COMMENT LETTER

64 Erie Ave.
Newton, MA 02161
May. 10, 1995

Stephen Sohinki
Director
Office of Reconfiguration
Box 3417, DOE
Alexandria, Virginia 22303

Dear Mr. Sohinki:

1/13.00.01 I am writing to state my feelings that the DOE should choose the NO ACTION alternative to tritium supply. Especially at this time when the US is negotiating an international treaty for nonproliferation, we should NOT be seeking ways to build up our nuclear arsenals!

Thank you for your consideration.

Sincerely,

Janet Zerlin Fagan

Janet Zerlin Fagan

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COMMENT LETTER
PAGE 1 OF 1

May 18
1995

US DOE
PO Box 3417
Alexandria VA 22302

Dear DOE

It would send a bad message to our allies who are already nuclear weapons states and to the non-nuclear weapons states for us to build a new reactor to produce tritium. Although tritium is a short half life we have a lot of it and will have much more when START II is ratified. Proliferation must be prevented.

1/18.01 We can deter without tritium. We can't afford the money or the environmental destruction that a new tritium reactor would cost.

Think of our people
Think of our future
Think of our planet
For God's sake, don't do it

Dot Sulock
UNC Asheville Math Dept
Asheville NC 28804

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COMMENT LETTER
PAGE 1 OF 1

April 26, 1995

Dear Sir:

1/13.09.01 The purpose of this letter is to express my support for siting the new Tritium Source at the Savannah River Site (SRS). SRS has many advantages over other potential sites. These advantages include:

1) major cost savings as a result of existing support infrastructure that is not present at other potential sites,

2) 40 years experience in producing and packaging tritium safely and on schedule,

3) a new modern tritium facility (Replacement Tritium Facility) which provides an excellent anchor around which the new Tritium Source could be consolidated,

4) an unequaled record of successfully performing difficult production missions while leading DOE and industry in safety performance, and

5) unmatched local public and political support for new nuclear work.

2/13.00.05 I would also like to express my support for the ALWR "Triple Play" reactor. This tritium production method would solve at least three problems simultaneously:

1) utilize a safe, proven method to produce tritium,

2) provide a preferred method of disposing plutonium, and

3) produce power for a rapidly growing area (Aiken-Augusta and Greenwood-Greenville) instead of consuming power.

Another potential plus is that at least one utilities consortium has offered to build and operate a "Triple Play" reactor unit at SRS which could reduce DOE's costs and liabilities.

In conclusion, when all the facts are considered, I believe SRS has to be the logical choice for the new Tritium Source.

Sincerely,

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COMMENT LETTER

PAGE 1 OF 1

BOSTON • ARCHITECTVRAL • CENTER

(617) 536-3170

Stephen Sohinki
DOE

Dear Mr. Sohinki

1/13.00.01 Please choose the "no-action" alternative on tritium supply. We are far enough ahead & safe enough in nuclear arms buildup now.

Sincerely
Curt Lamb

320 NEWBURY STREET • BOSTON, MASSACHUSETTS 02115-2703

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COMMENT LETTER

PAGE 1 OF 1

Anne Fitzmaurice
2909 Curtis Street
Berkeley, California 94702
510 (415) 843-8133

May 14, 1995

Stephen Sohinki, Director
Office of Reconfiguration
U.S. Dept. of Energy
P.O. Box 3417
Alexandria, VA

Dear Mr. Sohinki;

1/13.00.01 I am writing to urge you to vote the "No action" option on the tritium facility Programmatic Environmental Impact Statement. To approve a facility and location sends the wrong message at the wrong time. The Comprehensive Test Ban is being negotiated in Geneva. The meeting at the U.N. of 174 nations discussing the reauthorization of the Nuclear Non-Proliferation Treaty is underway. The U.S. must not open the tritium facility at this time.

Sincerely,
Anne Fitzmaurice

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COMMENT LETTER
PAGE 1 OF 1

Dennis Donnelly
56 Tulane Ave.
Pocatello. Id 83201

May 17, 1995

USDOE
PO Box 3417
Alexandria VA 22301

Dear Sirs,

Please accept my following comments on DOE's Tritium Supply and Recycling Draft Programmatic Environmental Impact Statement.

1/15.03 First, the comment period should be extended to 6-8 months on such a complex document as this. When addressing a planning horizon of 20-50 years, there is no legitimate reason to rush.

2/13.04.01 Given the existence of nonfission technologies for tritium production, I am surprised to see the continued presentation of production schemes which involve nuclear reactors for this purpose. I note that the 50-year history of the atomic age tells us we do not know how to safely dispose either the fission products or the activation products of these devices.

Thus we should immediately rule out nuclear reactor construction in any DOE plans. For planning purposes, the accelerator option alone should be pursued, and its implementation can be delayed at least ten years, according to the stockpile plans currently published.

I feel the various reactor plans repeatedly put forth by DOE, and the schedules published for their implementation are not consistent with any national goals. Instead, they represent the persistent, outdated nuclear-engineering orientation of DOE which serves no one but DOE.

3/10.19 I do have one specific question about the information in this Draft PEIS. On page 4-208, it states that the radioactivity limits for Class L1 wastes (below regulatory concern), are 560000 Curies per cubic yard. Is it possible that this value is correct? Of course I feel that NO amount of radoactive material that is produced in this program, however diluted, is 'below regulatory concern.' I urge you, against all hope, to act responsibly in the matter of waste disposal. This means denying yourselves the endlessly abusable pathway of diluting the wastes down to a level declared to be 'below regulatory concern.'

Sincerely,

Dennis O. Donnelly

Dennis O. Donnelly

c.c. Phil Batt, governor
Beatrice Brailsford, Snake River Alliance

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COMMENT LETTER
PAGE 1 OF 4

May 17, 1995

289 Angell St.
Providence, R.I. 02906

Stephen M. Sohinki, Director
Office of Configuration
U. S. Department of Energy
1000 Independence Ave. (S.W.)
Washington D. C. 20585

Dear Steve,

I was pleased to run into you in the PEIS on tritium, on which I wrote the enclosed comment. With so much coming and going, relocating, etc., it is good to know the world is not so large that everyone is encountered but a single time.

I have just recently tried to get in touch with the nuclear thing again after about 6 years, and noticed this. I don't even know what ever happened to J. Wolff, Linenberger, etc., but hopefully they are not confronting anymore characters such as myself or Mr. Scott!

Trust things are going well, as this appears a good responsibility.

Sincerely,

John F. Doherty

John F. Doherty

U.S DEPARTMENT OF ENERGY
OFFICE OF RECONFIGURATION
1000 Independance Avene (S.W.)
Washington D.C. 20585
RE: Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling (DOE/EIS -0161), Feb. 1995.
Comments by John F. Doherty, 289 Angell St., Providence, R.I. 02906, are as follows:

1/13.01.01

The choice of tritium producing technology as explained in Appendix A of the PEIS should be the Heavy Water Reactor (HWR). This production alternative is superior because the nation's intense experience with electricity production from nuclear power reactors shows that the use of high temperatures and high pressures in this process has created unexpected problems in materials used in the reactors, mainly metals. In many cases these problems were the results of components being exposed for long durations to high temperatures and pressures.

In many design features of the pressurized and boiling water reactors these problems were unexpected. Many of these problems resulted in long shutdowns and heavy expense to the operating utilities. The surge of reactor building and design changes of the 1970's, when newly ordered reactors reached power at the 1000 mega-watt (electric) level) meant many reactors came on line with little true operating experience. That there were problems while rushing into a more complex technology with higher pressures and temperatures in the face of a national "Energy crisis" seems hardly surprising today. Indeed, the lesson is plain - a new technology rushed into production in many cases by inexperienced fabricators, working at the outer limits of the physical limits of their materials, is likely to have serious problems.

With the problem of tritium production, the Department of Energy should apply the lessons of the nuclear energy period (1975 - Present) and use the Heavy Water Reactor (Appendix A, Page A-32, et seq.) This device, "... would be based on a low

1/13.01.01 continued

pressure, low temperature application. . . specifically designed to produce tritium." (Emphasis mine) The low temperature and low pressure operation (even of long duration) would greatly decrease the possibility of unexpected metallurgical problems. It would also decrease the complexity of required safety systems (no need for a High Pressure Core Injection or High Pressure Core Spray, with pumps, etc. as in the usual production reactor) reducing construction requirements.

In addition, the DPEIS (at Page A-32) points out much of the vessal, cooling system and cooling loops would be, "...similar to that used in commercial LWR nuclear power technology." Vital experience has been obtained in this technology. This experience gives confidence that an Heavy Water Reactor would be operated with little shutdown time and worse events such as radioactivity releases from cracked piping or tubing could be minimized.

Of the other nuclear reactor designs described in the DPEIS, there are problems which for this mission of the Department of Energy make them particularly undesirable. These reactors are the Advanced Light Water Reactor (ALWR) and the Modular High Temperature Gas-Cooled Reactor (MHTGR).

2/13.00.55

These systems in as much as they are envisioned as "triple play" systems are more risky to the Department of Energy's mission than the Heavy Water Reactor. The Heavy Water Reactor, because it will produce tritium in a new way is somewhat uncertain, but the "triple play" systems offer more problems through interaction of three separate functions. Instead of three objectives, the Department of Energy needs to focus on getting the job of tritium production accomplished. The source of a vital material for national defense should not become in absolutely any way dependant on producing electricity or destroying waste material, regardless of the perceived urgency of these latter goals. Electricity generation is not required in greater capacity

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John P. Doherty, Comment, Page 3

2/13.00.55 continued

today, with increasing uses of conservation and alternative energy sources. Nor should the tritium producing technology be connected in any way with plutonium disposal. The Heavy Water Reactor according to the DPEIS produces no plutonium. Plutonium is a substance that trouble follows. Its destruction should not be taking place simultaneously with the production of a vital defense item.

The "triple play" idea looks to be a trap for an unwary Department of Energy to lose vital independance for the tritium production mission.

In addition, both the ALWR (in either boiling or pressurized water design) and MHTGR are high temperature, high pressure systems which because there is little true operating experience, may prove (as did the early and later 1000 MWe nuclear power plants) unreliable until much is learned during costly shutdowns, deratings, SCRAMS, etc.

1/13.01.01 continued

The Heavy Water Reactor system, the one most likely to operate without mishap, has a possible environmental advantage. That is, its higher reliability will tend to have less environmental impact than an unreliable apparatus.

In closing, given the experience of the nuclear energy producers and with so many accidents possible with all the various reactor types presented in the DPEIS, using a reactor with as little new technology as possible and low pressure and low temperature operation comes the closest to assuring the Department of Energy mission to produce tritium has little consequence on the environment of any locale.

Thank you very much for the opportunity to comment.

John F. Doherty

John F. Doherty
289 Angell St.
Providence, R.I. 02906

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PAGE 1 OF 4

GREENPEACE

PLANS FOR NEW TRITIUM SOURCE REVEAL U.S. HAS NO INTENT TO DISARM

Greenpeace International,
Non-Proliferation Campaign
May 1, 1995
Nuclear Non-Proliferation Treaty (NPT) Review Conference
United Nations, New York

Current plans to construct a new billion-dollar facility for production of tritium, the radioactive gas which fuels thermonuclear and boosted fission weapons provide a strong confirmation that the United States has no intention to eliminate its nuclear arsenal, as required by the Article VI nuclear disarmament provisions of the Non-Proliferation Treaty (NPT). Fifty million dollars have been included in the Fiscal Year 1996 U.S. Department of Energy (DOE) budget for development of the facility.

It appears that the United States is planning for future tritium needs on the basis of maintaining its nuclear arsenal at START II levels of strategic warheads (around 3000-3500), with an additional 5000-5500 non-strategic warheads, until the year 2050. In contrast, nuclear reductions, for example to a level of 500 strategic warheads, would postpone any perceived need for new tritium sources until around that same date.

1/18.01

The DOE, the U.S. agency charged with construction and maintenance of the US nuclear weapons arsenal, is now engaged in a public planning process aimed at the building of the new tritium source by the year 2009. The DOE, in its "Draft Programmatic Environmental Impact Statement on Tritium Supply and Recycling", released in March 1995 for public comment, states that "an assured long-term tritium and supply capability will be required" for the "enduring stockpile." The public comment period on this document ends on May 15, just days after the close of the NPT Review Conference. A decision on a new tritium source has been put on an extremely fast track by the US Government and is expected to be made in November 1995. This decision must be deferred.

The U.S. has had no active tritium-production source since 1988, though the K-Reactor at the DOE's Savannah River Plant remains on "cold-standby" and could resume production given a 2-3 year period of reactivation. Tritium, which the U.S. and Russia have produced in dedicated military reactors, has a radioactive half-life of 12.3 years, resulting in a 5.5% annual decay of that non-fissile material. Russia has two remaining tritium production reactors. Tritium facilities remain outside the scope of talks over a cut-off of other fissile material produced for military purposes such as plutonium.

1436 U Street, NW • Washington, DC 20009 • Tel (202) 462-1177 • Fax (202) 462-4507 • Tlx 89-2359

At an April 5, 1995, public meeting in Washington, DOE officials admitted (in response to questioning by Greenpeace) that current plans for a new tritium source are based on START-II stockpile levels, with production capacity at the START-II level to be maintained until the year 2050. DOE officials confirmed that planning for the new tritium production facility ignores both the disarmament requirements of Article VI of the NPT as well as the impact of any disarmament negotiations beyond START-II levels. Thus, future disarmament beyond START-II weapons levels has been eliminated from the planning scenario.

NUCLEAR WEAPONS STOCKPILE PLAN

Each year, the U.S. President approves the Nuclear Weapons Stockpile Plan (NWSP), a classified document which authorizes the level of nuclear weapons and nuclear and other materials required for the chosen size of the nuclear arsenal. After input by the Departments of Energy and Defense and the National Security Council, President Clinton approved on March 7, 1994, the NWSP establishing weapons levels through fiscal year 1999. The plan to produce tritium for a START-II level of weapons is contained within that document and serves as a basis for the tritium Environmental Impact Statement (EIS).

In addition to production of tritium at START-II levels, DOE is instructed via the NWSP to include a five-year reserve margin of tritium above the START-II planning basis. According to DOE, no new tritium for the START-II level is needed until 2016, but the five-year reserve requirement dictates that the facility be in a production phase by the year 2011. DOE has further stated that it has no plans to redesign the stockpile to operate on less or no tritium.

Given that no tritium production is currently taking place in the US, the DOE is relying on recycling of tritium to fuel weapons in the active stockpile. The tritium recycling facility at Savannah River receives tritium canisters from both retired weapons as well as weapons undergoing maintenance. This facility purifies and stockpiles tritium and recharges tritium canisters for redeployment. Under the plan being considered, this existing facility would either be upgraded and maintained or a new tritium recycling and storage facility would be constructed.

FEDERAL SUBSIDIES FOR NEW TRITIUM SOURCE

Under consideration in the planning document for tritium production are a linear accelerator (Accelerator Production of Tritium - APT), Advanced Light-Water Reactor (ALWR), Modular High-Temperature Gas-Cooled Reactor (MHTGR), and a Heavy Water Reactor (HWR). It is believed that the linear accelerator and ALWR lead the options.

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Due to financial subsidies in the multi-billions of dollars, private companies are vigorously lobbying in Washington for their particular tritium source, with ABB-Combustion Engineering advocating its ALWR design and General Atomics triumphing the MHTGR. Those in favor of utilizing "surplus" weapons plutonium in mixed oxide fuel (MOX) have recently been presenting a tritium-production reactor as a "triple play" reactor which could not only produce tritium but also "burn" plutonium and generate electricity. In addition to upwards of $5 billion for construction costs, such a scheme would also require construction of a MOX facility at approximately $1 billion, though DOE is keeping all cost estimates hidden from the public. Construction of such a reactor and MOX facility would give an impetus to the international plutonium industry, thus presenting a new proliferation risk.

For planning purposes, DOE is considering five of its weapons sites for the location of the new tritium source: Savannah River Plant (South Carolina), Oak Ridge Reservation (Tennessee), Pantex Plant (Texas), Nevada Test Site (NTS), and the Idaho National Engineering Laboratory (Idaho). Of all of these sites, only Savannah River has earlier been engaged in tritium production. The Pantex Plant is the site of assembly, disassembly and maintenance of nuclear weapons and is where plutonium "pits" from retired weapons are being stockpiled on an interim basis.

NPT MAIN COMMITTEE I MUST ACT

That the U.S. Department of Energy is actively engaged in planning for a new tritium source as the NPT Review Conference is taking place demonstrates a total lack of good faith in respect to Article VI obligations. In discussions in Main Committee I, the US must be held accountable as to its intentions concerning the future level of its nuclear weapon stockpile and plans to construct a new nuclear weapons facility in the form of a new tritium source. Current planning towards the construction of a new tritium production source reveals an on-the-ground decision to ignore the U.S.'s Article VI disarmament obligations.

1/18.01
continued

In Main Committee I (Disarmament), the following points must be addressed:

o the U.S. must be called on to give a full accounting of its projected weapons stockpile and reasoning for a new tritium source;

o the U.S. should be directed to halt all plans to construct a new tritium source;

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o the US should present a time-line for phase-out of operation of the tritium recycling facility at the Savannah River Plant; and,

1/18.01 continued

o Russia, France, Britain and China should also confirm the status of tritium production in their countries and present plans for cessation of operation of any tritium-production reactors and phase-out of tritium recycling operations.

For More Information: Tom Clements, Greenpeace International Non-Proliferation Campaign, 1436 U Street NW, Washington, DC 20009 USA; tel. 1-202-319-2506, fax 1-202-462-4507; Internet: tom.clements@green2.greenpeace.org

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BOB MILLER
Governor

STATE OF NEVADA

JOHN P. COMEAUX
Director

DEPARTMENT OF ADMINISTRATION
Capitol Complex
Carson City, Nevada 89710
Fax (702) 687-3983
(702) 687-4065

May 15, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration, DP-25
U.S. Department of Energy
1000 Independence Avenue SW
Washington, D.C. 20585

Re: State of Nevada Comments -- U.S. Department of Energy, Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling

Dear Mr. Sohinki:

Thank you for providing the State of Nevada the opportunity to comment on the Draft Programmatic Environmental Impact Statement (PEIS) for Tritium Supply and Recycling. As we understand the proposed action, the U.S. Department of Energy (DOE) is contemplating the following decisions to reestablish the capacity for supplying tritium to support the nations' nuclear weapons stockpile:

- Whether to build new tritium supply and new or upgraded tritium recycling facilities;
- Where to locate tritium supply and recycling facilities; and
- Which technology to employ for tritium supply.

The Draft PEIS assesses two separate technologies for supplying future tritium to support the nuclear weapons stockpile, and it evaluates five separate sites for constructing a new tritium supply and recycling facility. The sites under consideration are the Oak Ridge Reservation (ORR) in Tennessee, the Idaho Engineering Laboratory (INEL), the Pantex Plant near Amarillo Texas, the Savannah River Site (SRS) in South Carolina, and the Nevada Test Site (NTS) in Nevada. The technologies being investigated for producing tritium include three reactor types and a linear accelerator. The draft PEIS also addresses certain contingencies for meeting emergency tritium needs, such as use of a commercial reactor, and assesses a combination technology for simultaneously producing tritium, while burning weapons-grade surplus plutonium (i.e., the "triple play" reactor option).

The State's specific comments on the draft PEIS focus on the programmatic decisions outlined in the document and on environmental concerns relevant to the Nevada Test Site. Our specific comments are followed by general conclusions and recommendations.

I. SPECIFIC COMMENTS:

__Programmatic Decision One__: Whether to build a new tritium supply and new or upgraded tritium recycling facilities:

1/08.02 In reference to this decision, it seems the DOE is obligated to ensure a national tritium supply to support the nuclear weapons stockpile plan. This is particularly relevant since the United States has based its strategic nuclear weapons on designs that demand a continuous supply of tritium.

2/12.06 __Programmatic Decision Two__: Where to locate tritium supply and recycling facilities:

In making this decision, State officials in Nevada believe DOE should focus on equity issues, human health and socioeconomic risks (both actual and perceived), as well as significant, unavoidable environmental impacts.

3/09.09 **Human Health and Socioeconomic Risks:** To address both human health and socioeconomic risks, DOE should consider collocating the tritium production facility with the tritium

3/09.09 continued recycling facility. Significant risks to public health and the environment are associated with the transportation of dangerous substances, such as special nuclear materials, radioactive wastes, and hazardous chemicals. And while some transport of these materials is inevitable, collocation of tritium production with recycling will likely reduce both perceived and calculated risks.

For example, if the DOE selects the Nevada Test Site for tritium production, but decides to locate the recycling facility at another DOE site, the DOE will need to transport tritium continuously from Nevada to the other DOE site. Regardless of actual risks involved, including actions taken by DOE to educate the public about the calculated risks, transporting significant amounts of tritium gas, nuclear fuel, hazardous wastes, etc., will intensify risk perception for the people living near transportation routes. And yet, risk perception, as an issue, is not addressed in the PEIS.

In a related matter, the assessment of human health risks should not rely solely on past transportation safety records to support risk analysis findings. To the contrary, a programmatic decision involving the transportation of large quantities of dangerous materials should address both perceived risks as well as calculated risks. Thus, by reducing transport of these materials, which could be achieved through collocation of tritium production with recycling, perceived risks would be minimized.

Equity Issues: To date, the NTS has been used for the disposal of about 17 million cubic feet of low-level radioactive waste (LLW). About half of this amount has been shipped to the site from other DOE facilities across the country. Currently, virtually all of the LLW being disposed of at NTS is shipped from off-site generators. Equity issues are concerns for Nevadans since the DOE has stated that the NTS could become the largest burial ground in the DOE complex for defense-related radioactive waste[1]. In fact, the Agency's recently published 1995 Baseline Environmental Management Report (BEMR) suggests that the NTS will continue to receive up to 700,000 cubic feet of LLW each year. (This volume is based on current annual disposal rates.) And for

4/21.01

planning purposes, the BEHR suggests that NTS has the disposal capacity to accept 1 million cubic feet of LLW each year, for a period of 100 years. In addition, the site is slated to receive up to 200,000 cubic feet of mixed LLW annually, with annual shipments lasting up to 40 years[2].

Clearly DOE has embarked on a subtle but consistent program to transform NTS into a national disposal ground for radioactive waste and other nuclear materials. It should be noted that virtually every major type of radioactive waste is planned for storage or disposal at the NTS. In addition to other forms of defense waste, Yucca Mountain, which is located on the southwestern boarder of the site, is being studied for the disposal of up to 70,000 tons of civilian spent reactor fuel and 50,000 canisters of defense high-level waste. The NTS is also being considered for the disposal of waste classified as Greater-than-Class C, disposal of other forms of defense LLW, and long-term storage of up to 8,000 plutonium pits from DOE's nuclear weapons dismantlement program.

While the PEIS includes an assessment of the potential cumulative impacts associated with some of these activities, it fails to consider the civilian spent reactor fuel. This waste, if disposed at the NTS, would constitute most of the radioactivity at the site, posing the greatest risks to long-term human health and the environment. Hence, State officials contend that the PEIS fails to provide any real discussion or assessment of the real waste management risks and equity issues important to Nevadans.

5/13.06.04 **Environmental Impacts:** As noted in the PEIS, the "siting, construction and operation of a tritium supply and recycling facility at INEL, NTS, ORR, Pantex, or SRS would result in adverse environmental impacts[3]." While we concur with this statement, the potential for significant and largely unavoidable impacts at the NTS suggests that none of the alternatives evaluated in the document could support a programmatic decision for tritium production at the Test Site. In fact, given the depth of information and analysis presented in the PEIS, none of the reactor technologies or a linear accelerator should be

5/13.06.04 continued located at the NTS. The two major environmental concerns for the NTS are:

- Limited groundwater to support either phased or full accelerator application; and
- Seismic constraints for both reactor-based and accelerator technologies;

6/04.02.02 **Groundwater:** The PEIS discusses the limited availability of groundwater at the NTS to support the accelerated production of tritium. The document states that "withdrawals (of groundwater) during operations of full APT (accelerator) exceed the lowest estimated recharge rate by 19 percent, but would not be expected to impact offsite springs[4]." The detailed discussion in the document[5], however, suggests that by operating the full accelerator at 3/8 level for 5 years, followed by an operating period at 3/16 level for 30 years and then stopping operation for 5 years, would allow water usage to fall below a 40-year recharge rate at the Test Site. While the numbers and calculations presented to support this discussion are convoluted (see pages 4-107 and 4-137), the basic assumption that desert ecosystems receive average recharge rates over specific time periods is simply unrealistic. For example, a recent drought cycle in Nevada lasted nearly a decade.

Besides the water availability issue, State of Nevada water law requires permits for the diversion and use of groundwater from sources within Nevada. The issuance of these permits largely depends on potential impacts to affected water bodies, including down-gradient springs. And, if reasonable evidence does not exist to support an assessment of potential impacts to affected water sources, the State Engineer may require such evidence to be acquired before a permit is issued. This is a significant issue, since there is no conclusive evidence to support the suggestion that groundwater withdrawals would not adversely impact Ash Meadows (an offsite spring down-gradient from the NTS).

Statements in the PEIS note that "estimates vary as to how much groundwater flow recharges Ash Meadows from the subbasins of NTS, but it may be as much as 30 percent[6]. (Ash Meadows is important since it contains a water-filled cavern know as Devil's Hole where the endangered pupfish Cyprinodon resides.) Because of past litigation and subsequent judicial oversight of the water level in Devil's Hole, a more detailed analysis of impacts caused by large groundwater withdrawals at NTS would likely be required if DOE selects NTS and the linear accelerator technology for tritium production.

Finally, while the State Engineer's Office has not historically pursued compliance with Nevada water law at the NTS, such compliance would be sought for significant changes in the use of the site. This is based on the assumption that Congress reserved sufficient water to support the mission of the NTS. That mission is confined to nuclear testing and related research and development activities only[7], as opposed to the production of special nuclear materials like tritium.

7/05.06 **Seismicity:** Because of the seismic conditions at NTS, State officials doubt that either a reactor technology or the linear accelerator concept could be located at the Test Site. The location of existing faults, the history of local and regional earthquakes, and the potential unknown effects of future nuclear testing or faulting activities, could individually or cumulatively cause substantial ground motion at the site. This means that significant and largely unpredictable ground movements (i.e., ground acceleration and/or shaking) at the designated tritium production site on the NTS should not be dismissed as a potential disqualifying factor. In fact, the level of analysis presented in the PEIS concerning seismic risks may well preclude the Secretary's ability to make a reliable programmatic decision for siting tritium production facilities at the Test Site. As stated in the PEIS, "Possible magnitude, intensity, and acceleration of earthquakes along the Yucca and Carpetbag faults have not been estimated[8]." Both of these referenced faults are within close proximity to the proposed tritium supply facility site.

The Nevada Bureau of Mines and Geology has found that, on average, the Great Basin (which includes the NTS) could experience a magnitude 6-7 earthquake. Under these conditions, tritium production and recycling facilities at the NTS would need to meet high safe shutdown earthquake requirements. Based on known data and faulting in the area, an earthquake could generate a vibratory ground motion ranging from 0.6g to 1.0g, depending on depth of the quake, slip-motion on existing faults, and the proximity of an event to the tritium production site. Under these condition, maintaining a safe shutdown requirement for a tritium production facility (reactor or accelerator) may not be achievable at the NTS.

Further and as stated earlier, the proposed site is in close proximity to the Yucca and Carpetbag faults. The PEIS is silent on the potential for future surface fault rupture associated with these close-in faults. While some small reactors have been designed to accommodate small fault displacements, large displacement reactor designs are beyond current engineering feasibility.

Complicating the seismicity issue is the fact that the PEIS failed to identify any studies conducted to detect the presence of blind or previously unknown faults in the vicinity of the tritium production site. Such faults could generate higher acceleration levels than stated facility design levels and could produce ground surface displacements resulting in significant structural damage. The 1992 magnitude 5.6 Little Skull Mountain Earthquake at the NTS occurred on a fault which was unknown prior to the event.

8/05.03 **Seismicity & Nuclear Testing:** Although the moratorium on nuclear testing has been extended indefinitely, the Administration's current defense policy requires the DOE to retain the capability to resume nuclear testing. (The President's FY 1996 budget includes $206 million to support the nuclear testing readiness program at the NTS[9].) Given this situation, any major programmatic decisions affecting the NTS, such as siting a facility for tritium production, must be considered in

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the context of retaining the ability to safely conduct underground nuclear tests[10].

8/05.03 continued

In terms of seismic-induced impacts, however, the PEIS failed to address the relationship between nuclear testing and tritium production at NTS. This is important for at least two reasons. First, the distribution of aftershocks caused by an underground nuclear test typically follows pre-existing geologic structures in the vicinity of the test area. Second, ground motion from an underground nuclear test often causes displacement along pre-existing faults, with vertical offsets at ground-surface approaching 3 feet. This displacement can extend a few hundred meters to a few kilometers along the fault line[11]. The potential for seismic-induced impacts caused by underground nuclear explosions are particularly relevant, given the proposed location of the tritium supply site at the NTS. As indicated in the PEIS, the proposed site would be located in the vicinity of the Yucca and Carpetbag faults. Thus, the location of the proposed tritium facilities could constrain future nuclear test locations at the NTS.

In a related matter, if the NTS were chosen for tritium production, the required site specific National Environmental Policy Act (NEPA) document would need to address the relationship between future testing and tritium production. Specific buffer zones would need to be defined to ensure that seismic-induced ground motion and shaking would not exceed design limits for tritium production facilities. Determining these zones would require analysis of certain variables such as the distance to emplacement holes, maximum yields of nuclear devices, depth of burials, and surrounding geologic media.

__Programmatic Decision Three:__ Which technology to employ for tritium supply.

9/16.08
10/22.02

State officials believe that a cost-benefits analysis should be developed to support a programmatic decision concerning which technology to employ for tritium production. In addition, a decision to support tritium supply choices using a commercial reactor or the "triple play" reactor option must be weighed

DOE DPEIS
TRITIUM SUPPLY
May 15, 1995
State Clearinghouse
SAI # 95300109

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10/22.02 continued

against U.S. policies that promote the non-proliferation of special nuclear materials.

Cost-Benefits Analysis: While NEPA regulations do not specifically require a cost-benefits analysis, agencies are compelled to balance costs of a proposed action against the action's economic and technological benefits. Thus, according to the Council on Environmental Quality regulations covering cost-benefits (CEQ CFR Part 1502.23), "an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision." Selecting a tritium supply technology is clearly a major programmatic decision that will have significant cost implications. Accordingly, by preparing and disclosing a cost-benefits analysis to support a tritium technology decision, DOE would continue to implement policies that promote openness and public participation in major public policy decisions.

Assumptions: Outside of the initial capital investment, construction, and operational costs, other assumptions must be considered for the reactor and accelerator options. These other assumptions must be considered for developing a truly comparative life-cycle cost analysis for the respective tritium production technologies. The life-cycle costs for production materials, waste management operations, energy consumption, and decommissioning are obvious examples. In the case of production materials, the life-cycle cost for manufacturing, storing, and disposing of nuclear fuels must be considered. (Cost estimates should assume no reprocessing, the cost of wet and dry storage, and cost of geologic disposal.) Comparatively, the cost of production materials for the accelerator option should include storage, treatment, and disposal of targets and other accelerator-used materials expended in the tritium production cycle. Since energy consumption will be a significant factor for the accelerator option (556 MWe), it must be considered in a comparative analysis for tritium production technologies.

DOE DPEIS
TRITIUM SUPPLY
May 15, 1995
State Clearinghouse
SAI # 95300109

Site Specific Costs: A comparison of significant cost factors among the five alternative sites should also be considered. For the Nevada Test Site, rail access and upgrades to power transmission systems may prove significant.

II. GENERAL CONCLUSIONS AND RECOMMENDATIONS:

As mentioned above, to address the broader programmatic decisions posed in the PEIS, Nevada officials believe DOE should focus on human health and socioeconomic risks (both actual and perceived), equity issues, and on the significant, unavoidable environmental impacts at each of the five candidate sites.

In terms of equity, the PEIS fails to consider the broader, cumulative impact of both potential and planned radioactive waste disposal activities at the NTS. The potential for disposal of civilian reactor fuel at Yucca Mountain, for example, was not considered. Yet, this waste would constitute the most significant risk to human health and the environment.

Collocating the tritium production facility with the tritium recycling was also suggested as a way to reduce perceived risks associated with transport of dangerous materials. In terms of environmental issues, both the limited groundwater recharge capability and seismic constraints for either the reactor or accelerator technologies are the suggested key environmental disqualifiers at the NTS. The ability to overcome these disqualifiers, in the wake of limited information, may preclude DOE from making a programmatic decision that selects NTS for the tritium supply function.

Finally, State officials believe that a cost-benefits analysis should be developed to support a programmatic decision for tritium production and recycling. If such an analysis is not developed and disclosed in the public arena, DOE would be perceived as reverting back to a culture that relied on secrecy, the culture that left the country with the legacy of widespread radioactive contamination.

We appreciate the opportunity to comment on the draft PEIS. If you have any questions about these comments, please contact me or Mr. John B. Walker, NWPO 702-687-3744.

Sincerely,

Julie Butler

Julie Butler, Coordinator
State Clearinghouse

JB\jbw
cc: Governor Bob Miller
Nevada Congressional Delegation
Robert R. Loux, NWPO
Lew Dodgion, Nevada Division of Environmental Protection
Leo Penne, State of Nevada, Washington Office
Thomas K. Gallagher, Nevada Division of Water Resources
Les Bradshaw, Nye County
David Tomsovic, EPA\SF
Terry Vaeth, Joseph Fiore, Don Elle, DOE/NV

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NOTES

1. U.S. Department of Energy, Environmental Restoration and Waste Management Five-Year Plan, Fiscal Years 1994-1998, page 122.

2. U.S. Department of Energy, March 1995. Estimating the Cold War Mortgage, The 1995 Baseline Environmental Management Report, Volume II DOE/EM-0232, pages NV 11 and NV 13.

3. PEIS Volume I page 4-471, section 4.11.

4. PEIS Volume II Appendix I, page I-24.

5. PEIS Volume I, page 4-137 Section 4.3.3.4.

6. PEIS Volume I page 4-107

7. U.S. Department of Interior, Bureau of Land Management, Nevada State Office, 1983: Withdrawal Review of the Nevada Test Site. The document contains the following Public Land Orders: 805 dated February 19, 1952; 1662 dated June 20, 1958; 2568 dated December 19, 1961; and 3759 dated August 3, 1965. These land orders limit use of the NTS to atomic testing and scientific research activities only. Moreover, under these orders [see #2568], the Secretary of Interior retains the authority to permit other uses of the NTS.

8. PEIS Volume I, Section 4.3.2.5, page 4-110.

9. U.S. Department of Energy, April 4, 1995. Statement of Hazel R. O'Leary before the Committee on Armed Services, United States Senate, page 9.

10. This statement is made without regard to existing mission constraints stipulated in the NTS land withdrawal orders, see note number 6.

11. Energy Research & Development Administration, 1977. Final Environmental Impacts Statement, Nevada Test Site, References 40, 41 and 42.

958 West Outer Drive
Oak Ridge, TN 37830
April 30, 1995

Stephen M. Sohinki
Director, Office of Reconfiguration
Department of Energy
Washington, DC 20585

Dear Sir:

I participated in the April 5, 1995 public hearings in Oak Ridge on Tritium Supply and Recycling DPEIS. The comments below were mostly reflected in discussion items at the meetings, but are restated to document them for your use and the record.

1/11.00.20

1. Many problems and some errors were found on cursory reviewing of the Draft PEIS regarding safety and environmental results and comparisons of the alternate technologies. A particularly bad example was the material in Table F.2.2.3.5, Vol. 2, p F-29–"Advanced Boiling Water Reactor Low to Moderate Consequence Accident....", which shows 1500 cancer fatalities in Oak Ridge for such an accident. Clearly that is fiction. Probably that data was intended for the high consequence accident scenario. Several points:

a. *It is inexcusable to be so careless with such numbers even in the draft statement.*
b. I cannot believe the numbers are realistic even for high consequence accidents. No-one would permit such a reactor to be used anywhere.
c. I am no expert in nuclear accident scenarios, nor exactly how these are described and presented to the public, but for the BWR, methods used by the NRC are well known and understood by the public. DOE should follow similar methods, so that anyone who examines and compares the results would recognize that risks are essentially identical for present power reactors and the proposed DOE production reactor. Any other approach will only create interminable problems for DOE as reviews are undertaken.

2/13.04.07

2. The overall plan for choosing the preferred alternative appears to be flawed. If all material in the draft PEIS was correct and accurate, the APT concept would be chosen without question. However, with the present status of accelerator technology (including all the uncertainties with actual tritium production–target type, etc.) there appears to be no way to make meaningful comparisons with the other alternates which represent much more proven technology. Many points came out which validate this point:

a. The inappropriate ways in which the reactor accident scenarios were presented as noted above.
b. Other apparent errors in comparing risks–where APT risks were not fully developed.
c. Points made at the meeting that costs are always underestimated when sizeable develop\demonstration steps are required prior to production.

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2/13.04.07 continued

d. An understanding on the part of several at the meeting that the DOE decision maker was felt to be attempting to steer the decision to the ATP alternative.

3/13.00.05

3. The loose coupling between this program and the ongoing one examining options for disposal of weapons plutonium was briefly described. It would appear that there should be a much more direct tie between these programs. Clearly if the choice for weapons plutonium disposal is by burning in power reactors (which I strongly support), the direct coupling is self evident. It would appear quite straightforward to combine the programs where a single reactor could handle both missions.

Most in Oak Ridge would expect one of the more remote sites, not Oak Ridge, to be chosen as the preferred site for this production program. However, the program could be done here safely without undo risk to the public, and I would support it if the DOE made such a decision.

Sincerely,

William D. Burch

William D. Burch

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THE TEXAS OFFICE
OF STATE-FEDERAL RELATIONS

122 G Street, N.W., Suite 200
Washington, D.C. 20001
(202) [illegible]
Fax [illegible]

201 E. 14th Street, Suite [illegible]
Austin, Texas 78701
(512) [illegible]
Fax (512) [illegible]

April 27, 1995

Mr. Stephen M. Sohinki
Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

RE: TX-R-95-03-13-0007-50-00
DRAFT PROGRAMMATIC EIS-TRITIUM SUPPLY & RECYCLING

Dear Mr. Sohinki:

Your environmental impact statement for the project referenced above has been reviewed. No substantive comments were received.

We appreciate the opportunity afforded to review this document. Please let me know if we can be of further assistance.

Sincerely,

T. C. Adams

T. C. Adams, State Single Point of Contact

TCA//yjy

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COMMENT LETTER

PAGE 1 OF 6

The Real Estate Shoppe, Inc.

408 Silver Bluff Road
Aiken, S.C. 29803
(803)648-SOLD

6-1-95

Mr. Sotinke

I have enclosed a letter showing you what I believe should happen at SRS in Aiken, SC.

1/13.09.01

I wanted you to know the Aiken Community fully supports the Tritium Replacement Facility. In my business, I have witnessed and helped clients leaving Aiken, or in limbo with their jobs. The Replacement Facility would encourage families in Aiken that they do have a future.

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The Real Estate Shoppe, Inc.

408 Silver Bluff Road
Aiken, S.C. 29803
(803)648-SOLD

6-1-95

1/13.09.01 continued

I have family myself, and find Aiken a lovely charming place to raise a family. I hope my family, along with my clients and customers, can stay in Aiken, and contribute to its future. Before selling Real Estate, I worked for both Westinghouse and on a Nuclear Project in Michigan (Midland Nuclear Plant). I have experienced exactly what the families in Aiken are going through. Please help Aiken at a time we really need it, Bring the Replacement Tritium Facility to SRS. If I can help in any other way. Please call on me.

Pam Griffin

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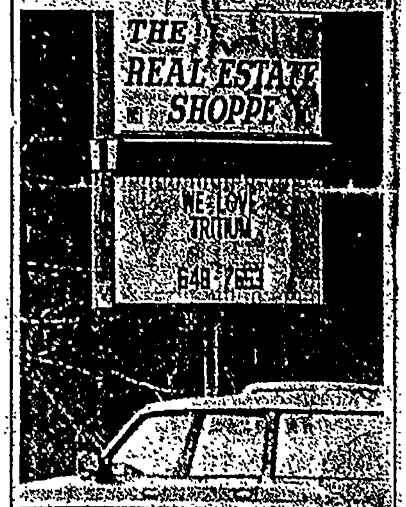
Mr. Sohinki
This is a Newspaper ad from the Aiken Stndr. showing my Company's support
Pam Griffin

Get The Message?



Staff Photo by Scott Webster

The Real Estate Shoppe leaves no doubt where its sentiments lie in the current crisis at the Savannah River Site. It could be argued the company has a vested interest in the pending layoffs and the threat of a weak real estate market.

PAM GRIFFIN
"Putting People First"
Lic. Member, MLS of Aiken Co.
The REAL ESTATE SHOPPE
165 Silver Bluff Rd.
Aiken, SC 29803
Res. 803-648-7663
Bus. 803-648-7663

REALTOR

(c) Aiken Standard, Aiken, S.C., Friday, March 3, 1995

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Mr. Sohinki
This is an article showing my client taking early voluntary separation
Pam Griffin

Aiken Standard

Saturday
April 15, 1995

Vol. 128, No. 105 · 25¢ · Aiken, South Carolina

Risking It All
Newlyweds Look For Greener Pastures

SRS Layoffs

[illegible]

(See RISKING, Page 14)

... Risking
(Continued From Page 1A)

[illegible]

Staff Photo By Shannon Boynton

Tom Bergeloh and Sue Olsstetter are two of about 2,000 who accepted voluntary separations packages at Savannah River Site. The two will search the country this summer for a new business and a fresh start.

[illegible]

The **Real Estate Shoppe, Inc.**

April 28, 1995

408 Silver Bluff Road
Aiken, S.C. 29803
(803) 648-SOLD

Mr. Stephen M. Sohinki
Office of Weapons Complex Reconfiguration, DP-25
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

SUBJECT: Comments on Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS)

Dear Mr. Sohinki:

2/13.00.05 These comments are an endorsement of a Tritium Supply and Recycling Alternative utilizing a reactor technology at the Savannah River Site (SRS).

As is confirmed in the PEIS, the SRS is the only site where tritium recycling from retired weapons continues at the new Replacement Tritium Facility. As a result of the rigorous reviews of this facility prior to beginning operation in 1993, it meets current standards for safety and seismic design thus requiring minimal upgrades. This fact alone should weight the siting decision toward selection of SRS. Building only one new facility has significantly less environmental impacts than construction of two facilities as would be required at any of the other four sites being considered.

1/13.09.01 continued The SRS also offers a significant savings in construction impacts and cost resulting from the ability to use the newly constructed cooling tower designed to mitigate thermal discharge impacts from the now retired K-Reactor production facility. The natural draft tower was built by Marley, the leading U.S. constructor of similar utility cooling towers, and will perform effectively for a reactor in the 1000 megawatt range. In addition, the proposed location for the new tritium supply source (near N Area) is ideally situated to tie in with the existing 10 miles of cooling water discharge pipe running from K-Reactor to the Savannah River. Only 4 miles of new piping would be required.

Another advantage of the SRS is due to the long-term support of the public officials and government agencies as evidenced by the excellent cooperation in both Georgia and South Carolina for the SRS and Vogtle Power Plant emergency preparedness programs.

2/13.00.05 continued The "triple play" could be extended to a "quadruple play" at SRS since co-generation of process steam from a reactor could replace the antiquated onsite supplies used for transferring fluids,

MLS

REALTOR®

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heat transfer, and building heat requiring an average of approximately 750,000 pounds per hour. The site's electrical needs now supplied through the offsite grid could also be met.

Lastly, co-location of the nation's new tritium supply source at the SRS could be the determining factor in locating the International Thermal Experimental Reactor in the United States. A sufficient power supply and new tritium handling capabilities would make the SRS site much more attractive than the French or German sites.

2/13.00.05 continued The basis for our support for use of a reactor technology is very straightforward. It is the only option which can provide the multiple benefits of producing tritium efficiently, provide needed electrical power, and destroy weapons grade plutonium. A "triple play" reactor meets all of the stated goals of the Department of Energy (i.e., replenishing the stockpile requirements for tritium, encouraging economic development and technology transfer in the vicinity of DOE sites, partnering with the private sector to "test-drive" the streamlined commercial licensing processes, and reducing the likelihood of nuclear weapon proliferation). Further, we believe an advanced light water reactor using proven technology is in the economic interest of all taxpayers. While research and development of the possibility of using a linear accelerator would be an intriguing scientific effort, the nation simply cannot afford the luxury of pursuing unknown, unproven technologies. Much like the once promising and now prohibitively expensive fusion power and super collider technologies, the accelerator looks good on paper but may not be ready in time or at a capacity to meet the country's vital need for a new tritium supply.

For these reasons, our view is that an advanced light water reactor located at the Savannah River Site is the optimal path forward.

Very truly yours,

Fam Griffin

Office of Reconfiguration
Department of Energy
Washington, D.C. 20585

May 1, 1995

To Whome It May Concern:

This letter serves as my comment upon the DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR TRITIUM SUPPLY AND RECYCLING.

1/13.00.01 I guess I support the no action alternative more than any other. I feel we have enough tritium already. ~~I would support, though, upgrading the tritium supply and recycling facility at the [illegible]~~ Thank you.

Sincerely,

Patricia A. Herbert

Patricia A. Herbert
P.O. Box 95966
Seattle, WA 98145

May 3, 1995

Stephen M. Sohinki, Director
Office of Weapons Complex Reconfiguration, DP-25
United States Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Re: Submittal of Walter D. Blair comments on Draft Programmatic Environmental Impact Statement (PEIS) for Tritium Supply and Recycling

1/13.00.19 Your draft PEIS is in error in that you state no source of a new tritium supply is available. Your Implementation Plan (IP) (DOE/EIS-0161I PREV) on the PEIS page ES-8 states in part ...Of the existing DOE reactors that are currently not being operated, <u>only the Fast Flux Test Facility (FFTF) at the Hanford Site in Washington has the potential for producing any significant quantities of tritium. However, in 2010, it will already be 10 years past its 20-year design life. Therefore, relying on the ability to modify and operate this facility well into the middle of the next century is not a reasonable alternative.</u>

Your IP is also in error in that under Department of Energy (DOE) direction the FFTF life has been extended to 30 years (Attachment 1 and 2). The DOE has not considered utilizing the FFTF for political purposes only. A proper evaluation of FFTF on its merits and cost effectiveness will show the FFTF can meet this nations tritium needs well into the future.

Mr. Clinton Bastin, President of the National Treasury Employees Union representing federal employees at the DOE Headquarters at Germantown, Maryland, NTEU Chapter 228, letter to the Secretary of Energy, dated April 4, 1995 (Attachment 3) also states the draft EIS is badly flawed regarding the FFTF. Mr. Bastin states:

2/13.00.07 1. The United States should have now and should maintain a capability for production of nuclear materials-especially tritium. Relying on recycle tritium which is mixed with deuterium in unsuitable concentrations could jeopardize our deterrent.

2. The Fast Flux Test Facility is the only modern reactor capable of producing significant amounts of tritium and other nuclear materials that might be needed by the United States, thus plans to layaway this facility should be stopped, and actions be started to convert FFTF to produce tritium. The draft EIS rejects use of FFTF because of its 20 year design life. This is an arbitrary limit that could be extended through recertification, which was well underway at the time FFTF operation was suspended. The Experimental Breeder Reactor 2 at the Idaho National Engineering Laboratory was operated for over 30 years and was intended to operate at least forty years. The FFTF could be operated safely through at least the year 2030.

Mr. Clinton Bastin had lead responsibility for this nations tritium supply during the period of maximum build up of our strategic nuclear deterrent.

TSR-M-172
COMMENT LETTER

PAGE 2 OF 8

Stephen M. Schinke, Director
Page 2
May 3, 1995

I am also submitting all three attachments as comments for the official record.

The decommissioning of the FFTF should stop immediately and the Hanford 400 area returned to defense to supply this nations tritium supply.

Benefits

- Save 300 million of environmental restoration funding.
- Save 2.5 billion not building new tritium production reactor or accelerator.
- Privatize this nations tritium supply utilizing the FFTF and the entire 400 area at Hanford.

If the DOE is serious about privatization on a national scale, the supply of tritium should be privatized. I am a member of the Hanford Advisory Board (HAB) as the primary alternate, on the Westinghouse Hanford Company (WHC) non union non management seat and a member of the HAB Health, Safety and Waste Management Committee. I am personally against the production of more defense fissile materials. However, if tritium is needed for our national defense, Hanford utilizing the FFTF should be utilized. To not consider utilizing the FFTF in this time of tight national budgets is fraud waste and abuse.

I have considered contacting the DOE, Inspector General (IG) and reporting this flawed PEIS as fraud waste and abuse.

You are requested to include all of above as officially submitted comments.

Sincerely yours,

Walter D. Blair
Walter D. Blair

Address:

Walter D. Blair B2-16
Westinghouse Hanford Company
P. O. Box 1970
Richland, WA 99352

TSR-M-172
COMMENT LETTER

PAGE 3 OF 8

TBW XC Wirth, CGM, HC Bowman

United States Government — Department of Energy
Richland Field Office

memorandum

Attachment 1

DATE: OCT 4 1993
REPLY TO ATTN OF: OTD:KAB

SUBJECT: FAST FLUX TEST FACILITY (FFTF) THIRTY YEAR LIFE EVALUATION

TO: R. A. Hunter, Director
Office of Facilities, Fuel Cycle
and Test Programs, NE-47, HQ

Attached is a package containing documentation evaluating the 30 Life Extension of FFTF plant components you requested during your August visit to the FFTF. The Operations and Transition Division (OTD) of the Richland Operations Office (RL) has reviewed the documents and concur with the Life Extension.

If you have any questions concerning this issue, please contact K. A. Benguiat of the Operations and Transition Division, Reactor Programs Branch on (509) 376-8025.

J. E. Mecca
J. E. Mecca, Director
Operations and Transition Division

Attachment

cc w/o attch:
J. F. Baker, NE-472
J. C. Midgett, WHC
N2-51

RECEIVED
OCT 8 1993
J.C. MIDGETT

TSR-M-172
COMMENT LETTER
PAGE 4 OF 8

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

Attachment 2

JAN 28 1991

President
Westinghouse Hanford Company
Richland, Washington

Dear Sir:

LEVEL 1 TECHNICAL SPECIFICATION CHANGE EXTENDING FFTF REACTOR INTERNAL COMPONENT LIFETIMES FROM 10 YEARS TO 30 YEARS

DOE-RL has reviewed and evaluated the documentation presented by WHC for approval of the Impact Level 1 Engineering Change Notice (ECN) 108897 to the Technical Specifications (Tech Specs), Final Safety Analysis Report (FSAR), Safety Design Description (SDD) 31 Reactor, and WHC-CM-6-15 FFTF Surveillance and In-Service Inspection (SISI) Requirements. An indepth review of the RDT Standards F9-7, F9-8 and F9-9, which provide rules for high fluence components and their stress allowables was conducted. Also, a review of the eight supporting WHC analyses was made, utilizing RDT Standards and guidelines. DOE-RL hereby approves the Impact Level 1 ECN 108897 for Extending FFTF Reactor Internal Component Lifetimes from 10 years to 30 years.

If you have any questions, please contact D. A. Brown of my staff on 376-7660.

Sincerely,

J. E. Mecca

J. E. Mecca, Director
Operations Division

OPD:DAB

cc: D. J. Newland, WHC
C. G. McCargar, WHC

RECEIVED
JAN 30 1991
C.G. McCARGAR

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COMMENT LETTER
PAGE 5 OF 8

NTEU
Chapter 228

Attachment 3

Clinton Riszin, President

The National Treasury Employees Union Representing Federal Employees at the Department of Energy Headquarters at Germantown, MD

April 4, 1995

The Honorable Hazel R. O'Leary
The Secretary of Energy
Washington, DC 20585

Dear Mrs. O'Leary:

We hope that a partnership drive for quality can begin soon; it's sorely needed. There is so little quality in DOE today, and it's important that there be real quality if we are to convince The Congress that DOE should continue to exist.

I have worked with quality organizations for much of my Federal Service - with DuPont during the early years and with the Japan Power Reactor and Nuclear Fuel Development Corporation since 1982. The most important characteristic of a quality organization is to obtain best possible input from knowledgeable persons prior to embarking on any venture.

The Department of Energy does not do that, and wastes a lot of money because it does not.

DOE maintenance of nuclear weapons through its Program for Tritium Supply and Recycling is a good example.

I had lead responsibility for tritium supply and recycle during the period of maximum build of our strategic nuclear deterrent. This deterrent is now in potential jeopardy because we do not have an assured supply of tritium. DOE has made two previous, seriously flawed attempts to provide a new supply and has just embarked on a third attempt; my assessment is that this latest attempt may be even more flawed.

In a response to my letter to you of February 5, 1995, Deputy Assistant Secretary Larry Weiner forwarded the "Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling" (February 1995) for my information, adding "Your comments concerning that document are invited during the public comment process, which will extend until May 15, 1995."

Madame Secretary, I commented during the public comment process for the last EIS for Tritium Supply, stating that the document was seriously flawed, and recommending that the Draft EIS be withdrawn and redone. I received a note of thanks for my comments, but the review process continued, undaunted. Later, Secretary Watkins obtained a copy of my comments and announced a delay in decision on the EIS, and later announced suspension of the program. Details of this were provided to you in my letter of February 6, 1995.

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COMMENT LETTER
PAGE 6 OF 8

Mr. Weiner's response to me also said that the "Department's decision to terminate operation of the FFTF at the Hanford Site...was made only after the evaluation of all the potential future uses of the FFTF including the production of defense nuclear materials, and an evaluation of the costs and benefits of the fast breeder reactor program." Mr. Weiner added "These decision involved the consideration of many factors including the potential payback from the program in a climate of major decreases in funding for the Department, impact on nonproliferation initiatives, etc., and were not taken lightly."

I have the following response to Mr. Weiner's remarks:

1. Ground rules for the evaluation of potential future uses of FFTF were developed in such a way as to limit usefulness of this facility - in deference to the Integral Fast Reactor. The FFTF is the world's most modern and most highly instrumented nuclear test reactor; it is a "facility of excellence" reflecting an investment of several billions of dollars. Plans to layaway FFTF should be reversed.

2. Costs and benefits of the fast breeder reactor program have never been appropriately addressed by the United States in the context of the total nuclear fuel cycle which includes ultimate disposal of radioactive waste. The proposed Yucca Mountain repository would contain plutonium sufficient for manufacture of about 100,000 nuclear weapons. This plutonium becomes readily accessible through simple chemical processing steps after decay of short-lived fission products, and it remains available for potential diversion - unsafeguarded, for half a million years. This is not an appropriate example for other nations. The only feasible alternative is to recover and use this plutonium in thermal reactors and future fast reactors.

3. The huge costs in DOE are associated with so called "cleanup and disposal" of nuclear material, and this program should be reduced. Nuclear material will not be "cleaned up" or "disposed of" through present plans of DOE; it can only be moved from place to place, i.e., Colorado to Idaho, Washington to Nevada, South Carolina to New Mexico, etc. Plan and actions to move radioactive waste have resulted in expenditures of large sums of money and radiation exposures to personnel, and in most instances there is little benefit.

4. Nuclear material has accumulated from twenty years of a moratorium on development and use of nuclear technology in the United States; this moratorium resulted from the reversal of nuclear policies laid down by Presidents Truman, Eisenhower, Kennedy, and Johnson. These original policies were developed through quality processes, were supported by The Congress throughout those administrations, and formed the basis for U.S. agreements with other nations.

5. The largest expenditures for "cleanup" of nuclear wastes are at Hanford and Savannah River. "Layaway" of Hanford and Savannah River sites should be discontinued, and appropriate nuclear programs should be resumed. Personnel responsible for appropriate nuclear programs at these sites could assure isolation of nuclear materials from the biosphere, and the combined programs could be conducted for far less than is being expended for the futile attempts to "clean-up" the sites.

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COMMENT LETTER
PAGE 7 OF 8

6. Most of the present nonproliferation initiatives of the United States are in direct conflict with the nuclear Non-Proliferation Treaty (NPT), are confrontational to our important allies (Britain, France, and Japan), and are counterproductive to good nonproliferation practice because they fail to address ultimate disposition of plutonium in spent fuel.

7. Plans for a repository for disposal of spent nuclear fuel and plutonium should be discontinued. DOE should accept spent fuel at reactor sites and store it in dry casks at reactor sites until arrangements are made for appropriate management and eventual use of the contained nuclear material. Design studies by DuPont for a spent LWR Fuel Recycle Facility provide best system for good management of this material.

The history of the development of nuclear technology forms an excellent base on which to move forward - but history in so many recent DOE documents is revisionist history, is misleading, and supports our continued backward thrust. Flawed environmental review processes are substituted for good decision-making processes, and seldom lead to proper course of action. Edwards Deming's first rule for quality, "Commit to continuity of purpose," does not exist in DOE or in most of its contractors, thus there is no strength to reject the many extreme challenges from outside DOE - such as the articles on radioactive waste by Bob Alvarez and Arjun Makhijani in MIT's *Technology Review* and *The Washington Post* which led to waste of so many billions of dollars.

Our labor-management partnership is here, but it's over two years late; DOE's Strategic Plan was prepared without us and is seriously flawed, but is being used as a basis for strategic alignment. Let's hope that we can turn DOE around or develop a good replacement so that this nation can again move forward with appropriate energy technology, and that we will have credibility with our nations leaders. We have far to go.

Sincerely

Clinton Bastin

PS: The enclosed comments on the report *The ORNL Chemical Technology Division 1950-1994* should provide useful information on appropriate (and inappropriate) roles of "National" Laboratories. Los Alamos Scientific (National) Laboratory, Hanford Engineering Development Laboratory (operated by Westinghouse) and the Savannah River Laboratory were the most successful of DOE/ERDA/AEC Laboratories because leaders of these laboratories had good understanding of their appropriate roles.

cc: See attached page.

TSR-M-172
COMMENT LETTER **PAGE 8 OF 8**

I have browsed through the present draft EIS and have major concerns. However, DOE's Environmental Review Process is badly flawed, so I thought it appropriate to provide the following comments directly to you.

1. The United States should have now and should maintain a capability for production of nuclear materials - especially tritium. Relying on recycle tritium which is mixed with deuterium in unsuitable concentrations could jeopardize our deterrent.

2. The Fast Flux Test Facility is the only modern reactor capable of producing significant amounts of tritium and other nuclear materials that might be needed by the United States, thus plans to layaway this facility should be stopped, and actions be started to convert FFTF to produce tritium. The draft EIS rejects use of FFTF because of its 20 year design life. This is an arbitrary limit that could be extended through recertification, which was well underway at the time FFTF operation was suspended. The Experimental Breeder Reactor 2 at the Idaho National Engineering Laboratory was operated for over 30 years and was intended to operate at least forty years. The FFTF could be operated safely through at least the year 2030.

3. The Secure Automated Fabrication (SAF) line in the Fuels and Materials Examination Facility (FMEF) at Hanford should be refurbished and placed into operation for fabrication of plutonium driver assemblies for FFTF. This would be the first opportunity to begin a process to reduce plutonium vulnerability that has resulted from the twenty year moratorium on advancement of nuclear technology in the U.S.

4. Existing facilities at the Savannah River Plant should be utilized for tritium recovery from targets, processing, and reservoir loading, and tritium and reservoir recycle. Only after these facilities are in satisfactory operation should any attempt be made to design, build, and operate newer facilities that might provide superior containment. Good experience is an essential base for an improved facility.

5. Appropriate action should be started for a new heavy water moderated reactor to be built at the Savannah River Plant for production of nuclear materials including tritium. A heavy water moderated reactor is preferable, because best production experience has been with heavy water cooled and moderated reactors, and unit of production per unit of radioactive waste and other adverse environmental consequences is much greater. A heavy water production reactor could be designed and built for dual purpose, i.e., production of electricity as well as nuclear material, but dual purpose reactors have conflicting missions and in general should be avoided.

6. Accelerator production of tritium is an interesting concept - but not, by itself, a viable alternative for maintenance of the U.S. strategic nuclear deterrent, pending further development and demonstration of the technology on a sustained basis, and thorough evaluation of technology based on that demonstration.

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COMMENT LETTER **PAGE 1 OF 3**

ENERGY
RESEARCH
FOUNDATION

May 15, 1995

Mr. Steve Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
PO Box 3417
Alexandria, VA 22302

Re: Draft Programmatic Environmental Impact Statement (PEIS) for Tritium Supply and Recycling

Dear Mr. Sohinki,

1/15.02 Our comments below address key policy issues which are not adequately explained or evaluated in the draft PEIS. This lack of information in the current draft makes it impossible to conduct a meaningful public review and discussion of the alternatives listed in the document. Consequently, the Department of Energy (DOE) should respond to our and others' concerns in a revised draft PEIS which is then circulated for additional public comment.

How Much Tritium Do We Need and When? The most fundamental question is whether any of the alternatives are needed. The two-page chapter entitled "Purpose of and Need for the Department of Energy's Action" does not adequately answer this question. The brief discussion contained in the draft PEIS leaves out several important factors, including:

2/18.12
- What would actually be the consequences of failing to supply tritium by 2011?
- What would be the impact on the arsenal in 2016 if a tritium supply source is not immediately availible?

3/18.15
- What impact would additional arms control agreements have on the need for tritium production?

4/18.01
- How are any of the alternatives consistent with US nonproliferation policy and US commitments made during the recently completed conference on the Nonproliferation Treaty?

5/13.00.09
- Why does DOE assume 15 years are required to bring a tritium source on-line when the construction schedule ranges from five to nine years?

6/15.05 In sum, DOE continues to use classification of the tritium stockpile and requirements to avoid a meaningful discussion of the need for its action. This is unacceptable. DOE should declassify the tritium inventory and requirements

637 Harden Street
Columbia, South Carolina 29205
803-256-7298

ERF Comments on Draft Tritium PEIS, May 15, 1995, page 2

6/15.05 continued — or, at the very least, provide the most complete discussion possible of the need for future tritium production within the PEIS.

7/13.00.05 — *Multi-Fallacy Reactor.* There is strong political pressure on DOE to build a so-called Multi-Purpose, or "Triple Play," Reactor at the Savannah River Site (SRS). DOE should, in the PEIS or elsewhere, thoroughly respond to this proposal. Included in its response should be such factors as:

- The proposal conflicts with the longstanding US policy separating commercial and military nuclear operations.
- Using a single facility to burn plutonium under international safeguards and to produce tritium under the veil of national security and secrecy would exaggerate conflicting practical considerations and policy choices.
- There has been no meaningful discussion of whether the proposal makes sense in terms of national energy policy or regional electricity needs. It is clear, however, that utilities and other parties are unwilling to construct a reactor at or near SRS without substantial additional government subsidy.
- At least one of the related proposals asks for a package of government assurances and subsidies that would almost guarantee inefficient and wasteful operations. ABB/CE seeks tens of millions of dollars and three years just to determine whether their proposal is workable. Among the criteria for workability are DOE guarantees that the venture will be profitable, considerable infrastructure support at no cost to the utilities and reactor vendors, and exclusion from any costs associated with future government regulatory decisions.

There are other concerns with the multi-purpose reactor proposal, and all of these should be publicly addressed by DOE.

8/12.05 — *Analysis of Alternatives.* The draft PEIS contains very little information to meaningfully distinguish among alternatives. This is because the analysis relies on often very uncertain modelling and makes potentially unrealistic assumptions about the quality of operation. Also, in the case of economic analysis for example, the draft provides insufficient detail to interpret the data (e.g., there is no indication in which years construction employment will peak).

9/16.22 — *Conclusion.* DOE is being politically pressured into making a premature and unnecessary decision. The draft PEIS does not fully reflect this fact, but it also does not contain adequate analysis to allow an informed decision. We strongly encourage DOE to insist on completion of a thorough and open analysis and discussion of this matter before any decision on future tritium production is made. At the very least, we request that whatever decision DOE makes is sufficiently flexible to accommodate future arms control agreements without wasting billions of taxpayer dollars on

ERF Comments on Draft Tritium PEIS, May 15, 1995, page 3

unnecessary or under-utilized facilities.

If you or others have any questions please contact us at 803/256-7298. Thank you.

Sincerely,

Brian Costner
Director

TSR-M-176
COMMENT LETTER

PAGE 1 OF 1

U.S. Department of Energy
Box 3417
Alexandria, VA 22302

May 11, 1995

Re: Tritium Supply and Recycling Draft
Programmatic Environmental Impact Statement

Dear Sir,

1/13.08.03 Thank you for listening to us citizens about these things that will affect our families and descendents for centuries. The Pantec Plant is not suitable for trtium supply nor recycling at all. Almost the only water in the area is from the Ogallala aquifer. There is little recharge to it and we are using more than we should be right now. Also, Pantex is the smallest site being considered. Many private farmers live close to it and grow food there. We don't need to threaten them nor our food system for a very dubious defense need. It costs way too much, besides. As we hear all the time, we must consider our national debt and not spend where unnecessary. More nuclear capability is needed less than almost anything.

Your decision will affect many people now and far into the future. Please consider carefully all the risks and the few real benefits, if any. I trust you too will see that tritium production here would be a disaster...and probably would any place.

Sincerely,

Darryl Birkenfeld

Rev. Darryl Birkenfeld

TSR-M-177
COMMENT LETTER

PAGE 1 OF 1

Tritium Supply and Recycling
Draft Programmatic Environmental Impact Statement

Comments:

1/13.08.01 I would like to see the tritium project come to Pantex. I think the idea would be well accepted and supported by the community. Pantex has a reputation for environmental concerns. A water supply is present and has been offered for the project. This supply will not deplete the aquifer used for personal or irrigation purposes.

The medical complex would benefit from the local production of radioisotopes.

I will appreciate your serious consideration of Pantex for the location of the tritium production site.

Thank you.

TSR–M–178
COMMENT LETTER

PAGE 1 OF 1

April 26, 1995

Dear Sir:

1/13.09.01

The purpose of this letter is to express my support for siting the new Tritium Source at the Savannah River Site (SRS). SRS has many advantages over other potential sites. These advantages include:

1) major cost savings as a result of existing support infrastructure that is not present at other potential sites,

2) 40 years experience in producing and packaging tritium safely and on schedule,

3) a new modern tritium facility (Replacement Tritium Facility) which provides an excellent anchor around which the new Tritium Source could be consolidated,

4) an unequaled record of successfully performing difficult production missions while leading DOE and industry in safety performance, and

5) unmatched local public and political support for new nuclear work.

2/13.00.05

I would also like to express my support for the ALWR "Triple Play" reactor. This tritium production method would solve at least three problems simultaneously:

1) utilize a safe, proven method to produce tritium,

2) provide a preferred method of disposing plutonium, and

3) produce power for a rapidly growing area (Aiken-Augusta and Greenwood-Greenville) instead of consuming power.

Another potential plus is that at least one utilities consortium has offered to build and operate a "Triple Play" reactor unit at SRS which could reduce DOE's costs and liabilities.

In conclusion, when all the facts are considered, I believe SRS has to be the logical choice for the new Tritium Source.

Sincerely,

TSR–M–179
COMMENT LETTER

PAGE 1 OF 1

81 Francis St
Brookline MA 02146
May 9, 1995

Stephen Sohinki
Director, Office of Reconfiguration
P.O. Box 3417, DOE
Alexandria, Virginia 22302

Dear Mr. Sohinki –

1/18.01

I am hastening to write during the public comment period to urge that we not fund a tritium-producing facility! We should be phasing out our nuclear weapons steadily, in support of non-proliferation which will be threatened if we maintain our arsenals, build new ~~nuclear~~ weapons fuel plants, and increase our ~~nuclear~~ weapons program spending!

Please note my very strongest vote in favor of "no action" and against the tritium facility construction.

Thank you
Myra Bergman Ramos

TSR–M–180
COMMENT LETTER

PAGE 1 OF 1

Peace Resource Project
P.O. Box 1122
Arcata, CA 95521
(707) 822-4229
Fax (707) 822-6202

May 10, 1995

Stephen Sohinki
Office of Reconfiguration
US Dept of Energy
PO Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki:

We do not need another Tritium facility.

This is the time to dis-arm, not re-arm.

1/13.00.01 DOE should choose the "no action" option on the tritium PEIS.

Sincerely,

Rick Levin
Sherri Green
Peace Resource Project

TSR–M–181
COMMENT LETTER

PAGE 1 OF 1

STATE OF SOUTH CAROLINA,)
) RESOLUTION.
COUNTY OF BARNWELL.)

WHEREAS, the Town of Williston has always been supportive of DOE projects at the Savannah River Site; and

WHEREAS, there is a possibility of the location of a new tritium supply and recycling program, which could possibly be located at the Savannah River Site; and

1/13.09.01 WHEREAS, the location of said program at the Savannah River Site would be of great economic benefit to the citizens of the Town of Williston and the County of Barnwell, as well as to the State of South Carolina and the United States of America.

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Williston that the Town of Williston, acting through its Town Council, fully supports the location by the Department of Energy for the new tritium supply and recycling program to be located at the Savannah River Site, based upon the Town of Williston's knowledge of the past operations performed at the Savannah River Site, the past safety performance obtained by the Department of Energy and its operators at the Savannah River Site, and the commitment of the Department of Energy and its operator to the community and the public in general.

DONE IN COUNCIL, this 8th day of May, 1995.

Mayor

Councilmember

Councilmember

Councilmember

Councilmember

Councilmember

Councilmember

ATTEST:

Clerk

TSR–M–182
COMMENT LETTER

PAGE 1 OF 1

STATE OF SOUTH CAROLINA,)
) RESOLUTION.
COUNTY OF BARNWELL.)

WHEREAS, the City of Barnwell has always been supportive of DOE projects at the Savannah River Site; and

WHEREAS, there is a possibility of the location of a new tritium supply and recycling program, which could possibly be located at the Savannah River Site; and

1/13.09.01 WHEREAS, the location of said program at the Savannah River Site would be of great economic benefit to the citizens of the City of Barnwell and the County of Barnwell, as well as to the State of South Carolina and the United States of America.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Barnwell that the City of Barnwell, acting through its City Council, fully supports the location by the Department of Energy for the new tritium supply and recycling program to be located at the Savannah River Site, based upon the City of Barnwell's knowledge of the past operations performed at the Savannah River Site, the past safety performance obtained by the Department of Energy and its operators at the Savannah River Site, and the commitment of the Department of Energy and its operator to the community and the public in general.

DONE IN COUNCIL, this 1 day of MAY, 1995.

H. C. Sanders
Mayor

Herman L. Black
Councilmember

Edward Simon
Councilmember

Albert P. Black
Councilmember

Charlie L. Seay
Councilmember

Councilmember

Councilmember

ATTEST:

Kim Marie Vargo
Clerk

TSR–M–183
COMMENT LETTER

PAGE 1 OF 2

Congress of the United States
Washington, DC 20515

May 12, 1995

The Honorable Hazel R. O'Leary
Secretary
United States Department of Energy
Washington, D.C. 20585

Dear Secretary O'Leary:

Thank you for this opportunity to express our support for retention and expansion of the Pantex Plant through the proposed draft Tritium Supply and Recycling Programmatic Environmental Impact Statement issued by the U.S. Department of Energy ("DoE"). We would like to compliment you and the Department of Energy for holding this important hearing to ensure both that public concerns and views are fully considered and that Pantex remains a vital, environmentally sound facility for decades to come.

1/13.08.01 First and foremost, we are adamant that any current and future functions at Pantex will be conducted in a safe and environmentally sound manner. Our first priority is to ensure any expansion at Pantex be implemented in a way that does not impair the health or safety of area residents or have an adverse affect on the environment. These goals serve as a prerequisite to any current or future activities at Pantex, including expansion.

We endorse the siting of new activities at Pantex as described in the PEIS, given adequate assurances that such activities are safe and environmentally sound. We would support a new tritium facility at Pantex, if DoE chooses Pantex as the preferred site. Pantex is an ideal site for any new functions because of the unparalleled local and statewide support enjoyed by the plant, lower labor and utility cost, lower cost to DoE through environmental soundness at Pantex and other factors. Given the fiscal constraints faced by the federal government, cost-effectiveness, efficiency, and environmental soundness—all adding up to lower costs, especially when capital outlays to transfer functions are factored in— should be of paramount importance in decision-making processes such as these. Pantex, because of its efficiency, cost effectiveness, and existing capital plant, should be an obvious choice for expanded functions, and remain a vital part of the Nuclear Weapons Complex, as well as an active participant in fissile materials storage and disposition activities.

2/14.09 Finally, we believe that all of these goals can best be met through the inclusion of research in DoE's decision-making process. We strongly support the recent establishment of the Amarillo

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COMMENT LETTER **PAGE 2 OF 2**

2/14.09 continued National Resource Center at Pantex with adequate funding to examine these increasingly critical issues. In addition, we support the formation of the Higher Education Consortium by the Texas A&M University System, Texas Tech University, and The University of Texas System to manage the Amarillo National Resource Center. This consortium offers a wealth of resources to assist DoE in addressing these issues which are of the utmost importance to our national security.

Thank you for the opportunity to express our views. We look forward to working with you on these vital issues.

Sincerely,

Kay Bailey Hutchison
U.S. Senator

Larry Combest
U.S. Representative

TSR–M–185
COMMENT LETTER **PAGE 1 OF 2**

NYE COUNTY

April 4, 1995

The Honorable Secretary Hazel O'Leary
The Secretary of Energy
Washington, D.C. 20585

RE: Location of Proposed New Tritium Production Facility at Nevada Test Site

Dear Secretary O'Leary:

The Nye County Board of Commissioners is aware that the U.S. Department of Energy is considering several sites for the location of a new tritium production facility. The Board urges that the proposed new production facility be located at the Nevada Test Site in Nye County, Nevada.

1/13.06.01 Since the late 1940's Nye County has been the host jurisdiction for the Test Site which has become an integral part of the social and economic fabric of Nye County and southern Nevada. The Nye County Board of Commissioners has historically supported new projects at the Nevada Test Site. As the historical mission of the Test Site changes, the Nye County Board of Commissioners desires that the Test Site remain an integral part of the nation's defense production facilities. Because of its large size, remote location, deep groundwater table and climate, existing infrastructure, and skilled work force the Nevada Test Site is the ideal location for the new tritium production facility and other new projects which may arise in the future.

We hope that you will seriously consider the Nevada Test Site as the most appropriate location for the tritium production facility.

COUNTY OF NYE • P.O. BOX 153 • TONOPAH, NEVADA 89049 • (702) 482-8191

TSR–M–185
COMMENT LETTER **PAGE 2 OF 2**

The Honorable Secretary O'Leary
April 4, 1995
Page Two

The Board's comments on the Draft Tritium Supply and Recycling Programmatic Environmental Statement (PEIS) have been forwarded under separate cover to Mr. Steve Sohinki.

Sincerely,

BOARD OF COUNTY COMMISSIONERS OF THE
COUNTY OF NYE, STATE OF NEVADA

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cc: Mr. Victor Reis, Assistant Secretary for Defense Programs
Mr. Steve Sokinki, Director,
Office of Weapons Complex Reconfiguration
Senator Harry Reid
Senator Richard Bryan
Congresswoman Barbara Vucanovich
William L. Offutt, Nye County Manager

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COMMENT LETTER **PAGE 1 OF 2**

CITY OF AMARILLO

KEL SELIGER
MAYOR

April 28, 1995

Office of Reconfiguration
PD-25
U S. Department of Energy
P.O. Box 3417
Alexandria, Virginia 22302

Dear Secretary O'Leary:

1/04.02.01 As you are aware, previous letters from many elected and non-elected Amarillo area community leaders (including the undersigned) have expressed support for the current DOE mission at the Pantex Plant and for the proposed tritium supply and recycling facility being evaluated by the DOE. We would like to reiterate that support as well as address the particular issue of cooling water requirements for the accelerator production of tritium option at Pantex as evaluated in the Tritium Supply and Recycling Draft Programmatic Environmental Impact Statement (PEIS).

The draft PEIS identifies a maximum need of approximately 2.6 billion gallons per year for the "Full APT" (accelerator) option for tritium production. That translates to around 7.2 million gallons per day of needed cooling water. The draft PEIS concludes that if this water were supplied from groundwater sources, aquifer levels might be adversely affected. We believe that the draft PEIS should take into account the method by which other facilities in the region around Pantex meet cooling needs similar to those that would be required for a tritium production accelerator. For example, approximately 12.0 million gallons per day of treated wastewater from the City of Amarillo's River Road Wastewater Treatment Plant is currently used by Southwestern Public Service Company (SPS) to meet cooling needs at two coal-fired electric generating plants in the area. This technology for cooling has been used successfully for 35 years by SPS.

We believe that the final PEIS for Tritium Supply and Recycling should take into account the fact that the City of Amarillo's Hollywood Road Wastewater Treatment Plant currently produces more than 7.0 million gallons per day of treated wastewater that meets the latest EPA surface water discharge standards. By the year 2010, the City estimates that this plant will reach its present maximum capacity of 12.0 million gallons per day of treated wastewater. This amount exceeds the maximum requirement for cooling water for an accelerator and is available for use by the DOE.

During the workshop hearings for the draft PEIS held in Amarillo on April 20, 1995, Mr. Eric Schweitzer, Deputy Director of the DOE's Office of Reconfiguration, assured those in attendance that the use of treated wastewater from on-site or off-site sources would be evaluated as a source of cooling water for an accelerator if the DOE was formally offered an adequate supply of treated wastewater. Therefore, on behalf of the City of Amarillo and the Amarillo Economic Development Corporation, we formally offer to the Department of Energy

P.O. BOX 1971 AMARILLO, TEXAS 79186-0001 806/378-3010 FAX 806/378-3018

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2/13.08.01 adequate supplies of treated wastewater for cooling if an accelerator for tritium production is built at the Pantex Plant. Further, please note that the City of Amarillo would not charge the
3/04.02.01 DOE for the treated wastewater, and the construction of facilities to transport wastewater to the Pantex Plant would be provided by the Amarillo Economic Development Corporation.

4/13.08.04 Once again, we thank you for allowing us to participate in the PEIS process through the provision of written comments on the draft document. We recognize that tritium production is essential to maintain the nation's nuclear deterrent, and we believe that Pantex is the best site for a tritium production facility. By an overwhelming majority the citizens and local elected officials of our area, and the Texas congressional delegation share our belief that Pantex should be selected as the site for tritium production and recycling. We look forward to seeing the final PEIS with the thorough evaluation of the use of treated wastewater to meet cooling requirements for a tritium production accelerator.

Sincerely,

Kel Seliger
Mayor

John Q Ward
City Manager

George Raffkind
President
Amarillo Economic Development Corporation

Michael R. Boum
Executive Director
Amarillo Economic Development Corporation

cc: Hon. Phil Gramm
Hon. Kay Bailey Hutchinson
Hon. William "Mac" Thornberry
Mr. Eric Schweitzer, DOE
Ms. Terri West, Tetra Tech, Inc.

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NEVADA ALLIANCE FOR DEFENSE, ENERGY AND BUSINESS

P.O. Box 97775
Las Vegas, NV 89193-7775
702-895-1442
Fax: 702-895-1847

July 19, 1995

Charles J. Beers, Jr.
Rear Admiral U.S. Navy
Deputy Assistant Secretary for
Military Application and Stockpile Support
United States Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Admiral Beers:

On June 23, 1995, the Nevada Alliance for Defense, Energy and Business sponsored a Technical Symposium on Tritium Accelerator Technology. The symposium was followed the next day, June 24, with the Nevada Test Site Community Forum. Both events brought together the political contingent, the state and local governments, and the business and university communities in support of new and expanded missions at the Nevada Test Site. Both days' events showed strong unified support by these entities for locating the tritium accelerator at the Nevada Test Site.

In your letter of May 12, you encouraged us to supply you with any relevant comments that resulted from these activities. Enclosed is a "Summary of Technical Symposium" that summarizes the purpose of the Technical Symposium and the conclusions reached during those proceedings. We ask that you include this Summary as part of the record of public input to the Tritium Supply and Recycle Draft Programmatic Environmental Impact Statement (PEIS).

Thank you for your consideration in this matter.

Sincerely,

Troy E. Wade
Chairman

Enclosure

SUMMARY OF TECHNICAL SYMPOSIUM

June 23, 1995

The Technical Symposium on the Accelerator Production of Tritium (APT) was hosted by the Nevada Alliance for Defense, Energy, and Business to evaluate the technical issues of this new important DOE mission. This effort is part of the Nevada Alliance's ongoing effort to help acquire major, federal government missions for Nevada. It is hoped this process will result in Nevadans getting our fair share of the peace dividend that we helped earn.

Unified support can only be attained by having all affected elements of the state (suppliers, designers/owners, and stakeholders) agree that there are no technical "show-stoppers" that would preclude bringing the APT mission to Nevada. The Technical Symposium panel consisted of representatives from the U.S. Department of Energy; Department of Energy, Nevada Operations; Los Alamos National Laboratory; University of Nevada, Las Vegas; as well as those representing power, water, business, labor and state, county, and city government.

The Technical Symposium began with discussions including:

- What is tritium?
- Why do we need tritium?
- What is an accelerator?
- How is tritium produced?
- What effects would the APT have on the surrounding area and the surrounding people?

A question and answer session followed the discussions. Both sessions defined a national need for tritium. There are five candidate sites for the tritium production mission of which Nevada is one. The project could start at the chosen site as early as 1998. Environmental safety, health, power, water availability, and supporting infrastructure were discussed.

1/13.06.01

The NTS was found to be fully capable of supporting this mission:

- Power - There is an existing surplus of power in the southwestern grid. Power lines running to the NTS would have to be upgraded. This upgrade would take approximately three years to accomplish.
- Water - The water usage of the accelerator has been studied for many variants of wet and dry cooling. The conclusion is that the amount of water necessary for cooling is far below the capacity of the NTS. In short, water usage is not a significant issue.

1/13.06.01 continued

- Environment, safety, and health - This project is judged to be safe and environmentally sound. Transportation was described as the shipment of approximately six 55 gallon drums per year.
- Infrastructure - The existing NTS infrastructure is robust and fully sufficient to support a project of this size and nature.
- Solar - The solar initiative, C-STRR, is both compatible with and complementary to the APT mission.

Nevada is ready.

- People - The Nevada workforces in Nye, Clark, Esmeralda, and Lincoln Counties have both the requisite skills and experience to properly support this mission.
- University and Community College System of Nevada - Many benefits to the system would accrue should this mission be sited at the NTS.
- Economic benefits - Beyond the obvious direct benefits (over 3,000 construction jobs; 2.5 billion dollars spent in Nevada), this project would create essential economic diversity in southern Nevada. It would generate over 1,000 highly technical, quality jobs.

The panel pointed out other states are in competition for this mission. If Nevada wins the competition and the accelerator is sited at the NTS, it would bring diversification of the economic base, millions of dollars, and hundreds of jobs to Nevada. Accelerator production of tritium is a mission that is complementary to the scientific and technical expertise of the state and is compatible with the environmental and safety concerns expressed by the community.

Partnerships between the governor's Community Reuse Organization, USDOE, and the community and DOE's new open access policy, create a perfect opportunity for new ventures such as the APT. The synergism is key to the economic diversification of the community and the state.

This technical symposium's results demonstrated the NTS is the technical anchor of the State of Nevada. The APT and similar business ventures are crucial to that anchor.

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COMMENT LETTER PAGE 1 OF 1

PAHRUMP ECONOMIC DEVELOPMENT TASK FORCE
P.O. Box 3395
Pahrump, Nevada 89041
(702) 727-8652

July 27, 1995

The Honorable Hazel Rollins O'Leary
Secretary of Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585-0001

SUBJECT: LOCATION OF THE PROPOSED NEW TRITIUM PRODUCTION FACILITY

Dear Madam Secretary:

1/13.06.01 After reviewing information on the Department of Energy's proposed new Tritium Production Facility, the members of the Pahrump Economic Development Task Force wish to express their support for the location of the new facility at the Nevada Test Site in Nye County, Nevada.

It is the consensus of the group that this facility would be in keeping with the economic goals of the Pahrump community and Nye County.

Sincerely yours,

Ann Ward
Chair

AW:fd

cc: ~~Mr. Victor Reis, Assistant Secretary for Defense Programs, U.S. DOE~~
[redacted], U.S. DOE
Senator Harry Reid
Senator Richard Bryan
Congresswoman Barbara Vucanovich
Mr. William L. Offutt, Nye County Manager
Mr. Les W. Bradshaw, Project Mgr., Nye County Nuclear Waste Repos. Project Office

TSR–P–001
PHONE TRANSCRIPT PAGE 1 OF 1

MS. CAIN: Cain, C-A-I-N, 3765 Marlboro Drive in Tucker, Georgia 30084.

1/18.01 I wanted to let you know that I oppose opening of any new supply facilities for tritium. This has a negative impact on the environment and does not show good faith to other countries.

I understand why you all think we need new tritium, but you don't seem to understand why other people think we don't need new tritium. Thank you.

[Recorded 4/14/95 at 5:00 p.m.]

TSR–P–002
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. FRISCOE: Ruth C. Friscoe, 1551 Masonville Road, Northeast, Atlanta, Georgia 30329.

1/18.01 I very definitely oppose opening of any new supply facilities for tritium. My reasons are environmental concerns. Also, I feel that we should set by our example the model for other countries.

2/13.09.04 We expect them to curtail their activities, and I think we should do the same. If they decide to find a new place for this tritium, I am strongly opposed to using it in any way at the Savannah River plant in Augusta, Georgia.

[Recorded 4/14/95 at 9:43 a.m.]

TSR–P–003
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. DRIEBE: This is Norma M. Driebe, 1026 North Cliff Drive, Northwest, Atlanta, Georgia 30318-1642.

1/12.02 I am calling to oppose the opening of new supply centers for tritium. I feel that it will have a negative impact on the environment, and would like to register my strong opposition.

[Recorded 4/14/95 at 11:41 a.m.]

TSR–P–004
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. ADAMS: Susan Adams, 4213 Lake End Drive, Northwest, Kennison, Georgia 30144-5172.

1/18.01 I am opposed to the opening of any new supply facilities for tritium. I don't believe that is in good faith with the spirit of noproliferation treaties. 2/20.01 I think that tritium has a negative impact on the environment, and I am very opposed to any increase in tritium production.

[Recorded 4/14/95 at 10:23 a.m.]

TSR–P–005
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. MOSELEY: My name is Dennis Moseley, 3906 Ozark, 79109.

1/13.08.01 I want to make a comment. I feel that new tritium supply recycling facilities should be established at the Pantex plant in Amarillo, Texas. This area has good transportation access, rail, international airport, and Interstate 40. A lot of land is available for additional facility expansion. This area has good workforce availability. Additionally, the Pantex plant has good community support.

[Recorded 4/14/95 at 2:46 p.m.]

TSR–P–006
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. FREDERICK: Helen P. Frederick, 1559 Tamarack Trail, Decatur, Georgia 30033.

1/20.01 I am calling to say that I am opposed to the opening of any new facility for the development of tritium because of the negative impacts on the environment. I am totally opposed.

[Recorded 4/14/95 at 10:23 a.m.]

TSR–P–007
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. STEIN: My name is Jamie Marie Stein, 7011 Kirkwood, Fairfield, Iowa 52556.

I think our only security is in not having nuclear weapons. Please keep me on the mailing list.

[Recorded 4/14/95 at 1:42 p.m.]

MS. STEIN [Continuing]: My name is Jamie Marie Stein, 7011 Kirkwood, Fairfield, Iowa 52556. I have been repeatedly cut off by your message, but I would like to say that I would suggest that no more tritium be produced anywhere, as we can't even take care of what we have already. So I would suggest that none of the sites be used, and that we completely quit production of all nuclear weapons. 1/18.01

[Recorded 4/14/95 at 1:46 p.m.]

TSR–P–008
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. GLACCUM: My name is Ellen Glaccum. My address is Box 4090, Ketchum, Idaho 83340.

1/15.01 Yes. I just have one initial comment, and that is in your revised schedule of activities for tritium supply and recycling PEIS, I do not see any time for a hearing. Is there not going to be a public hearing? We certainly would like one here in Idaho. Probably it would be best to be in Twin Falls, Idaho Falls, and Boise, so that people who are impacted in southern Idaho have a chance to comment. I hope this was just an oversight; at any rate, I definitely recommend that you hold public hearings in Idaho, and probably all the other sites that you are considering.

[Recorded 4/14/95 at 8:00 p.m.]

TSR–P–009
PHONE TRANSCRIPT **PAGE 1 OF 2**

MR. DEBOW: Brad Debow, 1338 Saratoga, 83201-2254.

I think it is very important that the Idaho National Engineering Laboratory be considered at the very top of the list for location of future sites because of its record. In the area of handling waste and safety, INEL is potentially losing funds because of its own very good past record. The current indications are that funds will be spent on other sites that have been sloppier and have caused more waste, and therefore are in more immediate danger of having problems, therefore slighting the INEL and in effect punishing it because of its doing it right the first time.

1/13.05.01 Therefore you have a site with a record of doing it right the first time, and I think it is very important that that record be considered in siting any new locations for either tritium work or stockpile stewardship or any other form that the weapons program may take. I believe that the INEL is the best site for this type of work, based on its history and record and also based on the fact that it is apparently going to be losing funding -- as I said, being punished for doing a good job in the past, while the other sites who have been a lot sloppier and have a lot more dangerous and potentially incident-causing waste problems will be the recipient of most of the cleanup funds. Therefore it is only logical that INEL receive the funds for new sites.

2/15.04 In closing I would like to make it very clear that there are anti-nuclear groups in Idaho. I have checked some of these groups out. They are extremely small in number. They are very vocal; they make it sound like they are quite large, but they are an extremely small minority of people. Unfortunately, our Governor has also been anti-DOE. Please be aware, our Governor has been voted out of office by the people of Idaho.

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PHONE TRANSCRIPT **PAGE 2 OF 2**

2/15.04 continued

We do not want him, we do not agree with him, and we do not agree with his anti-DOE staff. It is very important that these political considerations not be held against Idaho. We do have a new Governor coming in and we are looking forward to working -- we, the people of Idaho -- are looking forward to working with DOE at the Idaho National Engineering Lab more and more in the future.

TSR–P–010
PHONE TRANSCRIPT **PAGE 1 OF 2**

MS. MANLEY: Rita Manley, P.O. Box 3683, Pensacola, Florida 32516.

1/14.04

My comment is concerning the stockpile stewardship and management PEIS. I think that it is very important that when they consider storing any of these nuclear weapons or any of the fissionable material -- tritium or uranium or any of that -- to use for nuclear weapons upgrades, they have to be much more careful than they have been in the past to store them in containers that would be on top of concrete or something like that, and not outside, exposed to the elements, and not in -- they used to store a lot of the uranium and tritium and things like that in containers that were in just, like, sand pits. And the problem is, a lot of that has leaked into the groundwater.

I am seriously concerned for the health of people living in the areas immediately around the weapons sites because EPA has found uranium-235 and tritium and strontium and lead and mercury in the groundwater and in the drinking water, right next to these nuclear weapons plants, which means that the people or the population in the general vicinity is going to be drinking water that's slightly radioactive.

Now, the health consequence of this is that there have been several studies in science magazines, the New England Journal of Medicine and other journals, that have documented that exposure to low levels of radiation, have caused cancer and leukemia, especially in children exposed to low levels.

My concern is that they store any fissionable material more efficiently, that it's like stored on top of concrete and in really good containers, protected from the weather, and also hopefully that

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PHONE TRANSCRIPT **PAGE 2 OF 2**

1/14.04 continued

DOE is also going to address the cleanup of some of these public water systems for the sake of the children and the families living in those areas.

I had written a letter to DOE where I suggested that they pump water from nearby towns to the people living in those areas so that they're not drinking radioactive water; either that, or get desalinization plants closer to the ocean and pump water that way to those people so that they have a water supply that doesn't have lead or mercury or uranium or strontium or plutonium in it, because it has been documented in many scientific papers that this causes leukemia and cancer if you ingest anything radioactive.

So that's my major point of concern. If you want more information on the specific journal articles concerning the health of people exposed to low-level radiation, I have tons of research articles that I can send to the Department of Energy if they would like.

[Recorded 4/14/95 at 3:19 p.m.]

TSR–P–011
PHONE TRANSCRIPT **PAGE 1 OF 2**

MR. PIERCY: Piercy, Ron. 244 Harrow Circle, Aiken, South Carolina 29803.

1/13.09.01

I would just like to register a comment. I would like to see the Department of Energy or the Department of Defense, whoever it is that will be deciding the need for tritium and operating the plant -- I would like them to consider Savannah River Site and all the expertise which is out here, whether it's going to be a new reactor or if it's going to be the other linear program, but there's acceptance in the community around here, around the CSRA, the Augusta-Aiken area. Like I said, there is expertise. The public is behind us here, and I wish that all the Congressmen and Senators would stay behind us and help support us. I grew up here in Aiken and never even worried about drinking the water or whatever. There are no problems associated with the water here. In fact, there was a commercial on television recently; it may have been advertising this seminar, this meeting for this PEIS, but it was kind of ridiculous. I think the Department of Energy actually put it out, and it was really -- it made the plant look bad. It's a commercial about a woman and a man standing in a kitchen, and they're going through the groceries, they're getting ready to go buy groceries, and she says, "Oh, buy bottled water." He says, "Why? We've got good tap water." She says, "No, we live near Savannah River plant. I'm not sure if the water is good to drink." To me, that was not a very smart thing to put on TV because people -- maybe this is your research foundation group. They'll just feed right off of that and say, "Look, you don't even trust the thing yourself." I don't think that was a very good thing to do. But then again, it's a typical Government operation, so --.

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PHONE TRANSCRIPT **PAGE 2 OF 2**

1/13.09.01 continued | Anyhow, I hope everybody will consider SRS in the future for any new reactors or new technology for tritium production.

[Recorded 4/14/95 at 11:55 a.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. BOWEN: My name is Mary Ellen Bowen, and my address is 14 The Farm, Summertown, Tennessee 38483-9626.

I am speaking for The Farm Energy Project of [inaudible] in Summertown, Tennessee.

1/18.01 | Hi. I just want you to know I do not want the tritium reactor funded. Please, no more tritium, no supply. Please do not fund it. This is not a good idea.

[Recorded 4/14/95 at 5:03 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. BONWITT: -- Bonwitt, 4 Holly Berry Lane, 29928.

1/13.09.04 I request that you do not build a new tritium production reactor at the Savannah River Site. Instead, work at ratifying Start-II
2/18.01 treaty and finding safe ways to eliminate nuclear contamination to the environment.

[Recorded 4/14/95 at 2:54 p.m.]

TSR–P–015
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. [name inaudible]: I am calling with --

321 Broxton Lane, 91007-2455.

1/13.06.01 I would like to support the recycling of tritium to Nevada Test Site, since we have the basic [inaudible] area, away from the public, and the ability of the engineers, the scientists available at the site. It would be extremely desirable and suitable in support of the national programs. We have been supporting the national program for years, and this is a very valuable project to the Nevada Test Site, and I am sure that we would be able to support it in a very cost-effective way, to support the tritium separation program.

[Recorded 4/14/95 at 9:59 a.m.]

TSR–P–016
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. [name inaudible]: 805 Rock Springs Drive, Unit 101, Las Vegas, Nevada 89128-4232.

1/13.06.01 I have been a southern Nevada resident for almost 29 years, and I know that the Nevada Test Site has had a major influence on the local economy. I have been an employee of Ricoh for almost four years. No matter who is the contractor at the NTS for next year, many people have lost and will lose their jobs with the current downsizing. A major project, such as the tritium facility, at NTS would boost our local economy and provide jobs for many people.

[Recorded 4/14/95 at 12:06 p.m.]

TSR–P–017
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. KANIES: Hello, this is Judith Kanies, 3125 Earhart Road, 37076-3708.

1/18.01 No new tritium facilities, please. No nuclear anything of any kind. We don't know how to take care of it.

[Recorded 4/14/95 at 7:22 p.m.]

TSR–P–018
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. MC DONALD: Karan McDonald, 4772 South Sheppard Drive, Las Vegas, Nevada 89122.

1/13.06.01 Yes. I believe that the titanium [sic] facility would be very good for the test site. I am also very concerned about closing down the test site and feel that any facility -- other than the nuclear waste depository -- would be good for the State. I believe that we should keep this facility working, and I believe that by having other things there, as we do now, that when and if the time comes that we need to use the rest of the facilities because of other countries, then we will have the test site available. I don't have the trust in the rest of the world that our leaders in Washington seem to have, and I think this titanium [sic] would be very good, and use the facilities that are already there and maybe not have to completely build new ones.

[Recorded 4/14/95 at 2:26 p.m.]

TSR–P–019
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. ALBRIGHT: My name is Galen Albright, Post Office Box 625, Indian Springs, Nevada 89018.

1/13.06.01 I would just like to say that I feel that the Nevada Test Site would be the best place for the tritium facility, regarding the fact that the minimal waste -- if there is any -- we have personnel out here who are trained to deal with radioactive substances; we have the area, and it's already a known and proven fact that we know how to handle radioactive materials.

[Recorded 4/14/95 at 5:36 p.m.]

TSR–P–020
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. KOURIK: My name is Howard Kourik, 1508 Cliff Ranch Drive, Henderson, Nevada 89014-0300.

1/13.06.01 I wish to record the fact that I am pro for the tritium facility and other facilities that are planned for use at the Nevada Test Site area. I have a major reason why I am for these activities. It is because they are situated well away from a major metropolitan area, approximately 60 miles away. It is a well-guarded and well-protected area and it's an ideal location for these types of functions. Other facilities that may be planned for these types of functions, specifically the tritium function, are must closer to population centers than the Nevada Test Site center is.

I wish to make a strong appeal to bring this type of operation, specifically the tritium operation, into the Nevada Test Site, as it would mean keeping a well-trained workforce that we currently have in place, functional and in jobs, and would mean that this Government expenditure that has to be made anyway would prevent the loss of a lot of jobs.

[Recorded 4/14/95 at 8:45 p.m.]

TSR–P–021
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. HINCHEY: My name is Bill Hinchey [phonetically]. I am calling from Boise, Idaho. 1315 West Justin Street, #3, Boise, Idaho 83702-5321.

1/20.01 My comment is that I have reviewed the proposed reasons for building the tritium plant. I cannot find a good reason. It seems to me political; the people want it in their State, so they try to inflate some need. I cannot see a need for it. I do not think a plant needs to be built, and that is my considered view.

[Recorded 4/14/95 at 8:55 p.m.]

TSR–P–022
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. [name not recorded]: -- observer.

Just wanted to share with you that on a public service announcement on WMAL on Monday, April 3rd, at approximately 1:47 p.m., the announcement came on and spoke of "TRITE-ium," not tritium, and I just thought that it was particularly ignorant-sounding, anyway, and if you might want to try to correct that public service announcement so that people who knew something about it weren't offended or laughing about the announcement itself, for whatever it's worth.

[Recorded 4/14/95 at 2:52 p.m.]

TSR–P–023
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. RUSH: Hello. This is Molly Rush. I am calling from Pittsburgh, at the Thomas Merton Center in Pittsburgh, Pennsylvania, 5125 Penn Avenue, 15224.

The Thomas Merton Center is part of the Western Pennsylvania Campaign for a Comprehensive Test Ban, and our position is that we need to not only have a comprehensive test ban and a nonproliferation treaty, but we need to get to the point of zero nuclear weapons. The first step would be to sign a CTB, to support the efforts for a NPT, and not undermine them by demanding that we continue production while we expect others not to have production of nuclear weapons.

1/18.01 Finally, we believe that we should discontinue the production of nuclear weapons unilaterally. It is absolutely absurd to keep making tritium and to keep making plutonium for nuclear weapons. I think it is quite clear that there is no real need for these and that they produce a tremendous amount of radioactive waste, that produces more problems for DOE.

So in your own behalf and on behalf of the people of Pittsburgh and western Pennsylvania who are part of our coalition, I would like to say that the Thomas Merton Center asks that you please do not consider any further production of tritium.

[Recorded 4/14/95 at 7:44 p.m.]

TSR–P–024
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. OGILVIE: My name is Richard Ogilvie, 6908 Vivian Circle, 89128.

1/13.06.01 I feel that the tritium plant needs to be constructed here in Nevada. I feel that we have adequate personnel, trained through the local unions, to handle that work. After all, it's an ideal situation as a location for the plant to be built here. Give it great consideration. Again, I feel it should be placed here. Bye.

[Recorded 4/14/95 at 12:11 p.m.]

TSR–P–025
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. WOLF: Good morning. My name is Deborah Wolf, 327 Fuente Drive, Henderson, Nevada 89014.

1/08.02 Good morning. I am a resident of Las Vegas, Nevada, and I want to add my support for the location of the tritium plant here at the Nevada Test Site. I feel that the jobs and the scientific technology are important to the State. And finally, they will be doing something a lot safer than waste recycling. These types of jobs are vital to the Las Vegas tax base. I think they will find a lot of support as long as they can assure the public that tritium transportation and production will be fairly safe.
2/13.04.01 The new linear accelerator is a much more environmentally safe, scientific method for producing the tritium.

We are looking forward to your picking the NTS as a national resource, and I feel that they will find the support here from the community if they can just assure safety.

[Recorded 4/14/95 at 11:28 a.m.]

TSR–P–026
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. VALENCIA: -- Valencia, 430 Madge Lane, Las Vegas, Nevada 89110.

1/13.06.01 Hello. I think that the tritium facility would be a good thing for the Nevada Test Site. The Nevada Test Site is already -- they have been testing there for years and years, so they are already set up for nuclear-related items. They already have buildings. They have a large amount of land that could accommodate a project like the tritium facility. Since they've stopped the testing, it would be good to have a project come in there that would give people jobs that we've lost since the testing was stopped.

I think the Nevada Test Site would accommodate this project very well.

[Recorded 4/14/95 at 8:26 p.m.]

TSR–P–027
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. PATTON: -- Fasco, 2722 South Highland, 89109.

1/08.02 Yes. This is Bob Patton with Fasco, and we are very much in favor of the DOE recyclying titanium plant at the Nevada Test Site. We are a vendor of the Nevada Test Site and would like to see it out here for the economy of Las Vegas.

[Recorded4/17/95 at 4:47 p.m.]

MR. EXNER: My name is Greg Exner, 209 North Apple Street, 83352.

1/04.02.04 Yes. My comment is, I think it is a terrible idea to construct tritium weapons above the Snake River aquifer in an earthquake highly seismic-prone area. This is our drinking water in southern Idaho. There are mountain ranges to the west of the INEL. 2/05.01 There are five major mountain ranges, all of them seismic active. One of the largest earthquakes in the lower 48 States has taken place there in the last 20 years. It's dead over the drainage that these mountains drain into, the aquifer that these mountains drain into. I think if you chose a site that was the absolute worst in the United States, probably this would have been one of them. I don't understand how your studies are done, etc., but I do understand by living here, on the routes where the nuclear waste is being sent right now, that it is a terrible, terrible place. I mean, it doesn't take a nuclear scientist to figure this out.

3/09.04 Also, going through the town that I live in, Shoshone, is a railroad line that is carrying the nuclear waste, and there have been four derailments of trains on this line in the last six months, four derailments. What will happen when one of your trains, that you send nuclear waste through our town at 60 miles an hour, wrecks in our area? How safe are these casks?

Also, I would like to say that the earthquake danger is significant in this area. If you have seen any film footage or personal footage of the earthquake in Japan and what it did to the structures that were supposedly earthquake-resistant and built to withstand earthquake damage and see what it did to them, then you try to explain to the people of Idaho how safe these casks

are in a severe earthquake of that magnitude, which is not a far-fetched idea in the area where the INEL is situated.

I think you people need to study a little more and be more honest in your selection of storage sites and your nuclear study and production, and I think if you would study it honestly and compassionately you would see that Idaho National Engineering Laboratory is not a very safe or correct place to put this nuclear waste or to do your development of your new weapons material.

[Recorded 4/16/95 ago at 8:08 p.m.]

TSR–P–029
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. [Name not recorded]: There is a location in upper east Tennessee, in Hawkins County, that was the former headquarters for the International Printing Pressmen's Union, and is now

1/13.00.11 called "Camelot." This has several acres located rurally, out away from a lot of congestion, a lot of people, and it would be ideal to build something like this. It is accessible, does not have anything other than road-accessible trucks, that sort of thing. But this is something that a lot of the public is not familiar with and it's an ideal place for something like you are proposing in the paper today.

It is located approximately 12 miles from Rogersville, and anyone in the Rogersville area of Tennessee would be familiar with this. Having lived there for several years in the operation of the Printing Pressmen's Union, I strongly would advise this. It's located in a valley, and it would be a very good place for a structure of this type.

[Recorded4/19/95 at 8:08 a.m.]

TSR–P–030
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. HUGHES: This is Lou Hughes. My address is 331 East 12th Street, Hempstead, Pennsylvania 15120.

1/18.01 I am completely opposed to the new tritium production plant. We don't need tritium. We don't need nuclear weapons. The arms race is supposed to be over, and I'm very disgusted with the National Emission Facility out in Livermore Lab. I don't know what's wrong with Hazel O'Leary, but she seems very hypocritical to me.

Stop this bloody arms race and start giving money to people's needs.

[Recorded 4/18/95 at 3:24 p.m.]

TSR–P–031
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. GUILBEAU: This is Marcelle Guilbeau, 233 37th Avenue North, 37209.

1/13.00.01 Do not build any more tritium facilities.

[Recorded 4/18/95 at 11:01 a.m.]

TSR–P–032
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. MULKEY: My name is Margery Mulkey, 2106 North 35th Street.

1/13.05.02 I am very much against any waste being sent to Idaho, as this storage depot is over the aquifer. We want to keep our water
2/04.02.04 clean, and there is nothing stated that they will promise that it won't leak. Let the foreign countries take care of their own, and the people who want it to come to this country, I say, send it to their States, such as Energy Secretary Hazel O'Leary. I think the President wants it sent here, but please don't send it to our State. They've stored it in our State long enough, right over an aquifer.

[Recorded 4/18/95 at 10:50 a.m.]

TSR–P–033
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. BOYLES: -- Boyles, 1714 North 7th Street, 83702.

1/18.01 I was shocked. I couldn't believe that we're trying to have more tritium to make more waste which we can't handle already. I'm definitely against more tritium anyplace in the United States, or any other place. Please don't make more tritium. We don't need it.

[Recorded 4/18/95 at 12:26 p.m.]

TSR–P–034
PHONE TRANSCRIPT **PAGE 1 OF 1**

1/20.01 MS. [Name not recorded]: Hello. I would like you to not open the tritium plant.

[Recorded 4/18/95 at 12:39 p.m.]

TSR–P–035
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. THOMPSON: Hello. My name is Julia Thompson, and my address is 5225 Blackbird Way, Boise, Idaho 83703.

1/18.02 I am just actually making a verbal comment in regards to the U.S. Department Energy's finding information on whether or not we are interested, in the State of Idaho, in having the U.S. produce more bomb production and nuclear material. I don't think tritium needs to be made. I think we should be ceasing any production of nuclear waste. My father-in-law spent his entire life working for nuclear plants in Idaho Falls, and he said that we are so far from finding a positive use for this waste that we should be ceasing any production of it, and I just think we're being irresponsible, producing more nuclear weapons. So I appreciate your attention on this matter.

[Recorded 4/18/95 at 6:47 p.m.]

TSR–P–036
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. YORK: My name is Mike York, 1556 North Garfield, 83201.

1/13.05.01 I think the tritium project would be a very good thing for south-eastern Idaho, and it would boost our economy greatly.

[Recorded 4/18/95 at 7:39 p.m.]

TSR–P–037
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. WATSON: This is Natalie Watson, 5025 View Drive, Meridian, Idaho 83642.

1/04.02.04 I would just like to protest having this nuclear material factory here in Idaho, the reactor, at the Idaho National Engineering Laboratory. I'm afraid it would get into our water system and ruin our way of life. I'm sure my husband feels the same way. We'd rather not have it in Idaho.

[Recorded 4/18/95 at 7:47 p.m.]

TSR–P–038
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. ROBINSON: Scott Robinson, 5th and D Avenue, Fort Hall, 83203.

1/18.01 My comment is this. When are we going to stop making nuclear weapons? We have enough, and if we don't have enough, wouldn't it make more sense to buy them from Russia rather than loan them all that money? Then we won't have to worry about Third World countries getting hold of their nuclear surplus. It's completely insane to keep making nuclear weapons. It's like we're in gasoline up to our waist, arguing over who has the most matches. How many times do we need to be able to incinerate the world before we stop this insanity?

[Recorded 4/18/95 at 7:47 p.m.]

TSR–P–039
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. DONIVAN: Patrick Donivan.

190 South Samson Trail, 83638.

According to the article in the newspaper, the Idaho National Engineering Laboratory is being considered for a reactor that
1/13.05.01 would produce tritanium [sic]. I believe that that is a good thing for Idaho. It creates jobs, I believe, that a lot of the controversy is conflicting, overblown, and conceals a lot of hidden agendas
2/18.06 that are just trying to kill nuclear power. So I think it's really a reasonable way to go, given the state of technology that we have today. So I'm in favor, as a Nation, of going ahead with a nuclear program, and I'm in favor of being an Idaho resident of the Idaho National Engineering Laboratory being considered for the possible permanent site.

[Recorded 4/18/95 at 9:00 p.m.]

TSR–P–040
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. PETTICHORD: My name is Martin Pettichord, 1249 West, 7200 South, Drexburg, Idaho 83440.

1/08.06 Yes. I'm all for building the tritium laboratories. We need technology that we can bring into the State. We will build jobs and build our economy. We have the technology to handle nuclear waste --

[Recorded 4/19/95 at 12:08 a.m.]

TSR–P–041
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. SMITH: My name is David Smith. My address is 1473 Austin Avenue, Idaho Falls, Idaho 83404.

1/13.05.01 I feel that the tritium program would be an excellent addition to INEL work and I hope to see it happen.

[Recorded 4/19/95 at 12:12 a.m.]

TSR–P–042
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. CORGATELLI: Clint Corgatelli, 1066 Yellowstone, Pocatello, Idaho, No. 32, 83201.

1/13.05.01 Yes. I would just like to say I feel the INEL laboratory in Idaho deserves to have the tritium project brought here due to the necessity and need of new projects brought on to the INEL. We are in desperate need for some new projects in this area. I have a deep concern that without getting new projects, the INEL is in great danger of a great number of layoffs and the whole southeastern Idaho economy would be affected, as well as Idaho economy. I feel that the tritium project would be accepted well here. We have a good group of people at INEL and a good workforce that could provide the service needed for this. We would be very happy to enter this project. I feel that this would benefit the whole southeastern Idaho area and help the economy as well as create and save existing jobs at the INEL.

As I said before, we are in great need of a project at this site, and I feel that it's time that one was finally brought in. We have gone many years without having any new projects out here and it's time that one did come here.

[Recorded 4/19/95 at 3:03 a.m.]

TSR–P–043
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. WEST: Our name is Phil and Eileen West, Post Office Box 15123, Boise, Idaho 83715.

1/13.00.07 Comments: We are in favor of developing tritium --

[Recorded 4/18/95 at 7:18 p.m.]

TSR–P–044
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. GOULDTHORPE: My name is James Gouldthorpe, 350 Moonlite Drive, No. 5, Idaho Falls, Idaho 83402.

1/13.05.01 I just wanted to state my approval for the tritium reactor project in Idaho.

[Recorded 4/18/95 at 11:52 a.m.]

TSR–P–045
PHONE TRANSCRIPT — **PAGE 1 OF 1**

MR. MEYER: This is Richard Meyer, Box 627, Sun Valley, Idaho 83353.

1/18.01 I do not wish to see this tritium reactor implemented. We can't take care of our waste as it is; why do we have to create more? And why do we have to be a threat to the world by -- I believe that we will make a statement to the world that we are still building nuclear bombs by implementing this tritium reactor. I am totally against it. We should concentrate on the waste problems because they don't seem to be ever going away and we have no solution for them yet, and that's where our concentration should be. I am all in favor of perhaps even shutting down the military and private reactors until the waste problems can be solved.

[Recorded 4/18/95 at 12:17 p.m.]

TSR–P–046
PHONE TRANSCRIPT — **PAGE 1 OF 1**

MR. DRAKES: This is Harold J. Drakes, 263 Harper, Driggs, Idaho 83422.

1/13.05.02 We do not need any more atomic nonsense in the State of Idaho. We were overblessed with the INEL, and we do not need no more, period.

2/14.02 They haven't cleaned up the last mess yet, and you keep shipping more of it to Idaho. I'm mad. Let's get rid of it, period.

[Recorded 4/18/95 at 1:14 p.m.]

TSR–P–047
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. MESIANO: Bill Mesiano, 1786 Grandview Drive, 83402.

1/08.06 I just feel it would be a good asset to go ahead with this operation to help out unemployment in the area.

[Recorded 4/18/95 at 2:27 p.m.]

TSR–P–048
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. CANTRILL: Cantrill, 249 South Evans, Pocatello, 83201.

I have nothing technical to say, other than I am against tritium production. I feel like someone being chased by a "guard goose." Every time I turn my back, the Department of Energy is coming up once again with the same old plan. The same people who have made money on our nuclear industry want to make more money on it. The DOE is there to accommodate them. 1/18.15 We do not need, in the world we have today, with Russia breaking up, with other countries in need of conventional protection, we do not need more bombs in any form. We don't want them in Idaho. We don't want them anywhere. Give it up.

[Recorded 4/24/95 ago at 12:23 p.m.]

TSR–P–050
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. WALLACE: This is Elise Wallace, 3002 Waterway Boulevard, 29451.

1/18.01 I would like to vote no against producing tritium. I believe that creating any radioactive matter is dangerous.

[Recorded 4/26/95 at 9:18 a.m.]

TSR–P–052
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. DILLEY: My name is Leslie Dilley, and my address is 731 Deerfield Drive, Haley, Idaho 83333, PO Box 1007.

1/14.04 I believe the DOE needs to devise safe options for long-term storage of radioactive waste. I am very concerned about what's
2/04.02.04 happening at the INEL. I am concerned about the threat of radioactive contamination that tritium production would pose to Idaho's land and water. I am against shipping -- or making these
3/09.04 shipments to INEL.

[Recorded 4/26/95 at 12:55 p.m.]

TSR–P–053
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. SKELTON: This is Joe Skelton, Post Office Box 232, Canyon, Texas 79015.

2101 7th Avenue, Canyon, Texas 79015-0232.

1/08.05 I am in favor of the tritium supply and recycling program at Pantex. I am a taxpayer in the Amarillo area and this program will help boost our economy. The employees and the payroll at Pantex are an asset to the Panhandle's economy.

[Recorded 4/26/95 at 4:12 p.m.]

TSR–P–054
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. ORUCH: The last name is Oruch. My address is 2509 Henry Street, Augusta, Georgia 30904.

1/15.01 This is more of an administrative comment to your voice mail system. I was trying to pre- register for the PEIS, and the message wasn't clear -- it wasn't clear whether the North Augusta PEIS meeting was full or not, based on the message. It spoke of one of the comment meetings being full, but that might have been the Pantex one, I suppose, and then it went on to say, "try to attend the North Augusta one." So that wasn't clear, and I just thought I'd give you that little bit of feedback. Maybe that can be fixed today if you get this message today, which is Wednesday. That's really about it.

[Recorded 4/26/95 at 9:53 a.m.]

TSR–P–055
PHONE TRANSCRIPT PAGE 1 OF 3

MR. DOWDS: My name is James Dowds. I live at 714 Nora Lane, Mount Pleasant, South Carolina 29464-4934.

1/18.01

Thank you for this opportunity to comment. I was going to try to call yesterday and I couldn't get through, but since the Oklahoma disaster has happened, it really highlights why we don't need to bring a dangerous tritium into the marketplace. Like the gentleman said after Three Mile Island, years ago, he said, whenever you have human beings, you're going to have mistakes. What would happen if some terrorists got hold of a carload of tritium? Not only would the Federal Building not be on the map, but Oklahoma City would not be on the map.

Now, you can say that all this won't happen, but it's like waiting on a hurricane or earthquake; it's going to happen. The only factor is, when? Sooner or later some nut is going to get hold of a nuclear bomb. Obviously, Iran is looking at it now; the Russians are going to sell it to them. We've got to stop putting these isotopes, or whatever they are, out into the marketplace. No one has tried solar. They have windmills out in California.

Who is going to guard this tritium waste, etc., for the next 10,000 or 20,000 years? As a famous Roman said, who's going to guard the guards? There's never been a republic on this earth that lasted more than 1,000 years. We're the longest-lasting one now, and this waste is going to last tens of thousands of years.

We don't need it. We're making the wrong things. We should get out of this tritium business and get into VCRs or something that has a place.

TSR–P–055
PHONE TRANSCRIPT PAGE 2 OF 3

1/18.01 continued

Nuclear weapons? Come on. If we keep making more and more redundant nuclear weapons, something is going to happen. Some idiot is going to get one. That's reason enough, not to mention the waste. Who is going to watch the waste? Who is going to watch the people who are watching the waste? And why don't we do like the energy companies, encourage people to use less energy?

Sure, we don't even need to look at this exponential growth of mankind. Sooner or later it's going to have to slow down, the carrying capacity. If we plan on this at an early date, it's like planning on running out of gasoline when you're still making payments on a big gas-guzzler. If you used the last drop of gasoline and you're driving a big old gas-guzzler, you're going to plunge back to the stone age. But if you plan on it early, like now, wean ourselves off of these dangerous, terrorist-type weapons -- tritium -- I'm quoting your paper, "tritium is the [inaudible] of nuclear weapons."

What's the cleanup cost for Savannah River now? I just read in the paper it's something like $27 billion, just to clean up what we've already done. Well, let's stop and back up. Do we really need this energy? I've got energy over here; what does the future really hold? I think the future can hold using less instead of using more.

2/15.01

I think that's all I have to say. I appreciate being given the time to give these considerations, and I probably have a few more points to make, but I didn't write these down in advance because I didn't think I was going to get through, because yesterday I couldn't get through. When I punched the number to record, it said it was [inaudible.] So you might want to trouble-

TSR–P–055
PHONE TRANSCRIPT **PAGE 3 OF 3**

2/15.01 continued shoot your system, as well. But thank you very much for the opportunity. I am dead set against using tritium -- or any of these nuclear -- we don't need to be making any more nuclear bombs. I think we have enough, frankly, and if it's used in energy, it's still going to be a bad guy's bomb, not a good guy's bomb. I say go back and look at what happened in Oklahoma City and picture that with nuclear anything in the trunk of that car. And you think we're talking about 30 dead kids in a day-care? We're talking about a whole city being wiped out.

I don't trust the guards to keep an eye on the stuff. Look at Russia. Look at the motive for these Russian nuclear engineers to sell this technology to Iran and Iraq, etc., Pakistan, and so on. Their whole life could be changed by a million bucks, and someone is going to do it, because some bad guy is going to offer them a million bucks to sneak this stuff out of the plant. If we don't make it in the first place, then we don't have to worry about somebody being bribed. These guards are human beings. Who's going to guard these guards?

Thank you very much. My phone number is (803) 884-5860. Please, please, please, for the sake of our descendants, don't make any more nuclear weapons.

[Recorded 4/27/95 at 5:05 a.m.]

TSR–P–056
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. HARRIS: My name is Henry Harris, speaking as a taxpayer, 1355 Coleman Ridge Road, Wagner, South Carolina 29164.

1/13.09.01 I was calling to give my support for locating the tritium source at Savannah River Site. I believe it has the experience and the infrastructure to do the job right. Savannah River has many years, 40 years, of demonstrated success for handling tritium and operating nuclear facilities. It also has the local and state political support, and I believe that it would be a success and is the proper place to locate the facility in conjunction with the existing tritium production facility.

[Recorded 4/26/95 at 9:08 a.m.]

TSR–P–057
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. BROTCHE: Brotche [phonetically] is the last name, no organization, 314 Old Evans Road, Martinez, Georgia 30907.

1/13.09.01 My comment is in support of the tritium project being here at Savannah River Site. Savannah River Site has the infrastructure, it has the people, it has the buildings, it has the expertise. Sending it off anywhere else would not be cost-effective, mainly because of the infrastructure here and the production already going on.

[Recorded 4/26/95 at 10:58 a.m.]

TSR–P–058
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. CRIBBS: This is Sharon Cribbs, 1635 North Silverton Street, Jackson, South Carolina 29831-9647. I am speaking for myself.

1/13.09.01 We would like very much to have the tritium at Savannah River Site. We think it would be very good to have it here, but we also think it would be nice to have a new contractor instead of West-
2/20.08 inghouse. Everybody loved Dupont, but they really don't care for the Westinghouse management.

[Recorded 4/26/95 at 10:59 a.m.]

TSR–P–059
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. COOK: Cook, Savannah River Site, 710 Riverfront Drive, Augusta, Georgia 30901.

1/13.09.01 I want to express my strong support for locating the new tritium supply facility at the Savannah River Site. I believe the Savannah River Site should be chosen for the new tritium facility because there are many people on site who already have an enormous amount of expertise and experience with tritium production. There is an organizational structure already in place to support a new facility.

2/08.04 The Savannah River Site is a large geographical site, with ample room for a new facility. We have more than 40 years of strong support from business and political leaders. And due to the recent manpower downsizing, there is a need for additional jobs in this area.

I hope Mrs. O'Leary will give strong consideration to locating the new tritium facility at the Savannah River Site.

Thank you for allowing me to make this comment.

[Recorded 4/26/95 at 12:38 p.m.]

TSR–P–060
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. GARRISON: My name is Bonnie Garrison, 108 Notchaway Court, North Augusta, South Carolina 29841.

We have a committee in our town that would very much like to have --

1/13.09.01 This is a community effort. We would very much like to have the Savannah River Site have the reactor here. We have had it for many years and we would very much like to have it stay here. It's very good for our economy, and we would welcome them in our community.

[Recorded 4/26/95 at 4:52 p.m.]

TSR–P–061
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. KUSHNER: My name is Adele Kushner. The address is 2109 Wynn Lake Circle, [inaudible] Georgia 30510.

1/18.01 I would like to make a comment on the proposal to build a facility to produce tritium. I thought that had already been scratched; unfortunately, I see Congress is deciding that Star Wars isn't over, that the Cold War isn't over, or some such ridiculousness.

We don't need tritium. What we need to do is -- well, I don't know if we can abolish nuclear weapons, but if we abolish comprehensive testing, we won't need these things. We do have a supply that can be recycled out of the old weapons for a long time. We should really be putting our energy into reducing the number of nuclear weapons that we have and that everybody else has, and I thought that's what the START-II treaty was going to do.

2/11.00.12 So I am actually nonplussed, plus the fact that the tritium is harmful to people who live along the Savannah River, who breathe the air where it is produced. This is really a nasty piece of business, and I hope the whole thing can be abolished.

[Recorded 4/26/95 at 3:10 p.m.]

TSR–P–062
PHONE TRANSCRIPT **PAGE 1 OF 1**

MALE SPEAKER: I would rather not give my last name.

1/13.09.01 I have no problems with the tritium coming to the Savannah River Site. They do have the expertise and experience to do it. However, I would strongly recommend that you get some sort of new management oversight to replace Westinghouse with somebody that has the credentials of Dupont.

[Recorded 5/01/95 at 10:18 a.m.]

TSR–P–063
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. CATEN: My name is Randy Caten, 4126 Fair Oaks Road, Martinez, Georgia 30907.

1/13.09.01 I fully support the tritium source coming to SRS. I think it would be good for the area, and that the site is well capable of supporting it. There is a lot of technical capability here in the area. I think it would be very beneficial for it come to this area.

[Recorded 5/02/95 at 7:57 a.m.]

TSR–P–064
PHONE TRANSCRIPT **PAGE 1 OF 1**

1/19.01 MS. CARETEW: Hello. I am Helen Caretew [phonetically]. I live here in Long Island, and I am definitely against the tritium plant that you intend to build, I guess. Some of this good money could go to Medicare, which is very much needed, Medicare, MedicAid, homeless, the children who are having such a problem trying to live in this world.

[Recorded 5/01/95 at 3:35 p.m.]

[End of tape.]

TSR–P–065
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. [name not recorded]: -- for tritium supply and recycling PEIS.

1/13.00.01 Hello. We attended one of your briefing sessions and we have looked some of the papers we have from those,and we believe that no new tritium facility should be constructed anywhere. It seems like the stuff that you have, the tritium, can be recycled and reused, and that would do the job just fine.

2/15.01 Thank you very much. We like your comment line and we hope you keep it going for the next few eons or so. 'Bye.

[Recorded 5/22/95 at 7:25 p.m.]

TSR–P–066
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. WOOD: Wood, 268 Springwood Drive.

1/13.09.01 I would like to express my support for theSavannah River Site for the new tritium supply and recycling mission. The site has an extensive infrastructure and knowledge base that is necessary to perform this mission successfully.

[Recorded 5/22/95 at 8:12 p.m.]

TSR-P-067
PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. SIMS: This is Lynn Sims, 3959 Northeast 42nd, 97213.

1/18.01 I am disturbed over the upcoming policy to increase funding for tritium production. At this point in time we are trying to reduce nuclear arsenals, and we have enough tritium to last for 21 years. If we are really serious about reducing nuclear threats, we should not be producing tritium to make them more destructive and to trigger these bombs.

2/20.01 It is also costing us $50 million now and billions of dollars into the future. This disturbs me because the Department of Energy has been forced to cut back on cleanup funds, which are the direct result of military production in the past. This makes no sense. Stop tritium funding.

[Recorded 5/22/95 at 4:45 p.m.]

TSR-P-068
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. WEIMER: This is Marvin Weimer, speaking for SRS, 106 Boxwood Road -9803.

1/13.09.01 I believe that the new tritium supply should be from a multi-purpose power-generating lightwater nuclear reactor, located at the Savannah River Site.

[Recorded 5/18/95 at 12:44 p.m.]

TSR–P–069
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. DENTON: My name is Charles R. Denton. I live at 72 Bruce Road, Manchester, New Hampshire 03104-3920.

1/18.01 I am going to speak clearly. I oppose this dumb move on the Government's part to enhance nuclear warheads, and I hope you will stop the program.

[Recorded 5/22/95 at 12:16 p.m.]

TSR–P–070
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. GARROW: My name is Bruce W. Garrow, 106 Mockernut Circle 29803.

1/13.09.01 I would like to register a positive comment about keeping the tritium supply and mission at the Savannah River Site. The site has a long history of safe production and has recently invested in a modern facility. I believe it is fiscally irresponsible to relocate a brand-new project in a different area when this replacement tritium facility is successfully operating and has many more years of its expected life ahead of it.

[Recorded 5/22/95 at 3:52 p.m.]

TSR–P–071
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. KOBASA: Steven Kobasa, 46 Hobart Street, 06511-4033.

1/18.01 My comment is, I hope, brief and to the point. I think that the entire idea of producing tritium at all should be abandoned, and the nuclear weapons systems of the United States should be disarmed. We have an opportunity now to take unilateral action to show our commitment to change the world's perception of the United States and its willingness to remove the threat of nuclear destruction.

[Recorded 5/22/95 at 4:26 p.m.]

TSR–P–072
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. SIPP: My name is Pete Sipp, and my address

is 5260 Storey Mail Road in Hephzibah, Georgia 30815.

1/13.04.01 The way I would like to see the tritium supply go would be -- I would like to see the APT produce tritium for several reasons. One is, there is the least amount of low-level waste generated, and the other is that where it should be is in Idaho there. I know that Idaho generates a whole lot of electricity with hydro, and hydro is the most stable cost as far as making electricity, of all the choices. I know that might seem strange, living so close to SRS, but I just want what's best for our country, that's all. Again, I appreciate Mr. Sohinki and the other -- let me see, there was Crystal Collier and Julie Howard and Jay Rose, all them. They were pleasant and it was just a nice event when they came to North Augusta, South Carolina, a month ago now.

[Recorded 5/18/95 at 12:45 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. KEENER: My name is Julia Keener, 284 South 50 West.

1/18.01 I am very much against the new production reactor to make tritium. At a time when we need to move past war and into a more civilized peacetime, we also do not need to pollute and

2/20.01 contaminate our planet further. It is time to clean up as best we can the environmental mess we've already made. Please say no to tritium.

[Recorded 5/22/95 at 12:35 p.m.]

TSR–P–074
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. SCOTT: My name is R. J. Scott, 4305 Emil Street, Amarillo, Texas 79106.

1/18.01 I personally do not feel the United States needs to worry about a tritium supply, with the treaties that are currently pending. Are we going to be a warmongering nation? I have attended a meeting concerning the tritium at the Pantex Plant location. We

2/04.02.01 do not have enough water supply at Pantex to supply three feet of groundwater a year. That is out of the question.

[Recorded 5/22/95 at 2:58 p.m.]

TSR–P–075
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. KESSLER: Kessler, 284 South, 50 West 83455.

1/13.05.02 I am against the tritium recycling processing facility in the Idaho National Engineering Laboratory. I think it is not necessary, given the current political and worldwide climate. I think that it is a dangerous production facility, creating an environmental hazard in the State of Idaho, the United States, and the world. I think it is a waste of money. It is a poor use of dollars for national defense. It appears to me to be just another pork-barrel project for the State of Idaho, supported by our Representatives.

I ask that the new tritium facility not be considered for the INEL.

[Recorded 5/22/95 at 11:33 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. HIME: 919 Edmondson Pike, 37207-8210.

1/10.19 Please do not go forward with the tritium thing. On behalf of my husband and myself and my nine grandchildren, I'm just basically against the storage of anything that's hazardous. We don't need any nuclear waste in Tennessee or anywhere near people, so the nuclear wastes or anything of that nature that are produced should not even be produced if it can't be stored safely forever.

[Recorded 5/22/95 at 9:34 a.m.]

TSR–P–077
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. BEGLEY: My name is Harold Begley, speaking for myself, 1606 Broadmoor Circle, Boulder City, Nevada 89005.

1/13.04.01 2/13.06.01 3/13.04.05 4/09.05 I would like to recommend selecting the accelerator production method based on the total environmental impact and the absence of radioactive waste. I would also recommend siting the accelerator at the Nevada Test Site. I would also recommend further investigation of utilizing the potential power generated from the solar enterprise zone at the Nevada Test Site to supplement the power that would have to be procured from a commercial source to drive the accelerator. I would like to recommend deleting the need for a railroad line to the Nevada Test Site for tritium production if the accelerator is the selected method of supply and recycling. I would also like to emphasize that the current workforce of the National Laboratory, M&O Contractors, and the Southern Nevada Building Trades Union strongly endorse the APT being located at the Nevada Test Site.

[Recorded 5/22/95 at 2:13 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 2**

MR. HARRISON: This is Larry Harrison, 4175 Quinn Court, Evans, Georgia 30809.

I was at the evening session of the tritium meeting in North Augusta, and I made some verbal comments at that time. I just wanted to repeat them to be sure they would be entered into the record.

1/13.00.34 2/13.04.03 Basically, my concern is how factors -- as far as technical evaluation -- will be evaluated in terms of selecting the particular technology for the tritium supply production facilities, and in particular I was concerned about how new technology will be evaluated versus proven technology. I really do not have any comments as far as the accelerator goes; I think that it's an unproven technology and there needs to be a weighting factor applied to that.

3/13.01.02 My main concern is with the heavy water reactor technology. This is going to be an extremely expensive endeavor, regardless of which method is selected, and it's a very large expenditure of time and money. We need to be reasonably sure that the technology will work.

4/13.03.01 The light water reactors and the heavy water reactors both have proven technology, heavy water for tritium production and light water for commercial nuclear power. I think there's very little risk involved there, using the light water reactor.

5/13.02.01 My main concern is with the high temperature gas- cooled reactor. It has an extremely bad track record here in the United States and in Europe. General Atomics the demonstration plant at Fort [inaudible], Colorado, which was a very, very poor-per-

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PHONE TRANSCRIPT **PAGE 2 OF 2**

formance plant. It had a number of technical problems and eventually had to be decommissioned. In Great Britain they put a lot of time and money into gasco reactors, and when it came time for commercial power production reactors, they decided against using that technology and picked up technology from the United States for light water reactors.

5/13.02.01 continued The Government has spent a lot of money on gas- cooled reactor technology here in the United States but it's never really proven to be feasible on a large scale. I think there needs to be a very thorough study made of the technical uncertainties, and particularly the risk involved, in going with that technology. I think that it's probably a very long shot that this system would ever work for its intended purpose. The technology for producing the fuel is completely different from the other commercial fuel that I'm familiar with, the technology. I've worked for 20 years in the production of fuel for commercial power reactors for light water types, and the fact that it requires [inaudible] commercial producers here in the United States is going to drive the cost up even more. There is very, very limited technical expertise available for that fuel.

6/13.00.56 I think that, after attending the meeting, there was very little emphasis put on this private consortium proposal. From what I. heard at the meeting, I feel like DOE needs to take a very close look at that because, from the little that's been presented, it looks as though that might be a very feasible route to take, and certainly with a minimal up-front expense, and what appears to be an economically advantageous approach for the Government.

[Recorded 5/22/95 at 9:20 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 1**

1/13.00.01 MS. [name not recorded]: The DOE should choose the "no action alternative" for tritium supply.

[Recorded 5/19/95 at 12:01 p.m.]

MR. GEORGE: This is Frank George, Jr., 405 Magnolia, 79107.

Like I said, my name is Frank George, Jr. I'm at the Pantex Plant in Amarillo, Texas. I am President of the Metal Trades Council, which represents 12 separate local unions at the Department of Energy Pantex Plant.

I would like to take this opportunity to comment on the proposed draft Programmatic Environmental Impact Statement for the tritium supply and recycling issued by the Department of Energy

1/13.04.01 To start with, I would like to address which technology the DOE should choose. I strongly believe that the accelerator production of tritium, the APT, should be the preferred technology for tritium supply. The APT can safely and reliably provide the tritium necessary to support our nuclear arsenal, which is the cornerstone of our Nation's defense policy. The APT has numerous other advantages, compared to other technologies, such as that it uses conventional water cooling systems; no spent nuclear fuel is produced; it covers approximately 173 acres; there is no potential for a severe accident; no electricity is produced; it only takes approximately five years to build it;. an estimated 150 workers are required at peak construction, and employment is about 624 workers.

The bottom line on the APT is that it is cleaner and it generates less waste. It can be turned off, if need be. A reactor cannot be turned off.

Questions or comments that I think need to be resolved or considered:

2/04.02.01 You need to clarify the gallons per year that the APT would require, as this was a gray area in the draft PEIS for Pantex. The draft PEIS seems to be biased against the Pantex Plant. There are several things in there that sound like Pantex is already stricken from the record

3/09.09 What is the risk to transport tritium to and from the assembly and disassembly sites? As you know, Pantex is the Nation's only final assembly point for all nuclear weapons, and I think we should look at the risk of transporting tritium across the Nation's highways.

4/13.08.02 We need to clarify the energy consumption at Pantex. On page ES-28, Table ES-1, page 1 of 31, does this statement mean after the year 2010?

[Recorded 5/22/95 at 9:09 a.m.]

5/06.05 MR. GEORGE [Continuing]: The terminology on some of the endangered species is used in bold print for the Pantex data only.

6/11.00.23 Also, the chemical hazard index for the Oak Ridge Reservation is higher than Pantex by 100, yet ORR has no cancer risk. That needs to be identified and explained. Savannah River has a higher hazard index than Pantex, yet the cancer risk is lower than Pantex. Please explain this.

I think there needs to be radiation explanations.

[Recorded 5/22/95 at 9:15 a.m.]

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PHONE TRANSCRIPT **PAGE 3 OF 3**

6/11.00.23 continued MR. GEORGE [continuing]: To continue on with my comments, the cancer risk for Pantex is incorrect based on the chemicals that are listed. A Pantex Plant employee does not have a 1 in 100 chance of cancer death, as is stated.

7/03.04 Air quality at Pantex -- we are in the attainment zone. This is not true for the other candidate sites. We also have no evidence of active faults that have been found at the Pantex Plant. Seismic hazards are minimal for the Pantex Plant.

8/05.02 Engineering load-bearing capacities of our soils and the ground sediments are better than the other sites. The site is less than 7 percent designated as wetlands.

5/06.05 continued There is a grossly inaccurate statement in here on the foraging and denning habitats concerning bald eagles and other animals and things that roam the plant. We don't feel like we're going to impact any of those.

9/13.08.01 We have the local community's approval rating. We have one of the lowest electricity rates in the complex, and we are a clean site as compared to the other ones.

The bottom line, we're not here to make a war, but we feel like Savannah River should have their facilities upgraded, and that the new supply APT should be located at Pantex.

[Recorded 5/22/95 at 9:19 a.m.]

TSR-P-081
PHONE TRANSCRIPT **PAGE 1 OF 2**

MR. SCHULZE: Hello. My name is Peter Schulze, 900 South Lamarr Boulevard, Apartment 113, 78704.

1/18.01 I am opposed to the tritium supply plans for the Pantex Plant in Amarillo, Texas. I am also opposed to tritium reactor production in any part of our country. Personally, I feel that we really don't have an understanding of the technology that we're working with, and we won't for hundreds, if not thousands, of years. That is when we'll find out whether we've been effective or not in protecting our environment and our health and the dangers that are involved.

2/04.02.01 There are other reasons. Water supply -- I believe that we're using more water in Oglala Aquifer underneath the Pantex Plant. We're using more water there than is being recharged through natural processes, and I believe that the incorporation of this plant there would greatly increase the use of water. Water is important. We need it for our survival. We need clean, healthy water for survival, and we need to have a supply for more essential things, such as growing food and whatnot. So to waste a lot of water for production of something that we really don't understand and that causes various problems -- there's pollution, there's radiation, and all sorts of reasons -- so it's important that we consider the simpler, more important things for survival before we get into the technical, more complicated issues surrounding political battles and whatnot.

1/18.01 continued The Cold War is over. I know that we need to worry about our national security. There is enough tritium around from recycling of weapons to meet our demands for the time being.
3/13.04.01 If at all, the best way to produce this would probably be the accelerator, which uses a lot less water, does not produce nearly

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PHONE TRANSCRIPT **PAGE 2 OF 2**

3/13.04.01 continued as much waste, and is a simpler process. Simplicity is an important thing to remember. The more complicated the system you are going to be working with, the more likely that things aren't going to work, the more likely you're going to run into problems, the more likely there's going to be an accident, the more likely people are going to get hurt, the more likely people are going to get sick. All of these things should be considered. The simplest answer would be not to produce anything at all.

[Recorded 5/22/95 at 12:05 p.m.]

TSR–P–082
PHONE TRANSCRIPT **PAGE 1 OF 1**

MR. MC DOWELL: This is William McDowell, 608B Monroe Street, 37208.

1/13.07.01 My comment is that I'm against the tritium facility in Oak Ridge. That's why I'm calling. The possibility of having something like this right in my back yard scares me. I just wanted to call and go on the record as a citizen and say I'm very much against it.

[Recorded 5/22/95 at 1:09 p.m.]

TSR–P–083
PHONE TRANSCRIPT

PAGE 1 OF 1

MR. SNELL: My name is Jim Snell, 122 21st Avenue South, No. 3, Nashville, Tennessee 37203.

1/13.00.01 Yes. I would like to encourage the DOE to take no action on its tritium EIS. My name is Jim Snell.

[Recorded 5/22/95 at 1:40 p.m.]

TSR–P–084
PHONE TRANSCRIPT

PAGE 1 OF 2

MR. COOPER: My name is Robert O. Cooper. I am speaking as an individual. 9701 Summerhill Lane, Dallas, Texas 75238-1044.

1/04.02.01 I am very concerned about the tritium program for the Pantex area. I am a former resident near there, in the Texas panhandle, and I am still a resident of Texas and eat wheat grown in the panhandle and have friends who farm up there. I am very much concerned that if this program is situated at Pantex, that it will cause serious depletion of water resources in the panhandle, which are already being depleted by the cities and the farms that are irrigated there. Certainly, they do not need any more drawing-down for something like this.

2/18.01 My second concern is that I have seen no convincing indication that we need tritium supplies in light of the current situation with regard to weapons and the possibilities or probabilities of needing even fewer weapons in the future. I don't see why we need to expend all this money and time and to have the terrific environmental impact that this will have.

1/04.02.01 continued I think to relocate things to the Pantex site and to endanger the water supply is a serious mistake.

3/10.09 Also, I understand that in the Programmatic Environmental Impact Statement, spent nuclear fuel is considered a resource. As much difficulty as there has been in trying to decide what to do with spent nuclear fuel, I don't see how it could be considered a resource. 1/04.02.01 continued I am very much afraid that in addition to using up the water there, that there are significant dangers for contaminating the water supply, which will endanger agriculture as well as drinking water for the cities in the panhandle and out of

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PHONE TRANSCRIPT **PAGE 2 OF 2**

1/04.02.01 continued the panhandle that depend on the Oglala Aquifer for water supplies. I think that we would be well advised not to do anything at this time, and certainly not to do anything in the Pantex area.

[Recorded 5/22/95 at 3:24 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 1**

MS. KIMBROUGH: Ms. Kimbrough, 2362 Rocky Falls Road, [inaudible] Tennessee, 37135.

1/13.00.01 I want to protest the tritium plant that I understand is to be at Oak Ridge, Tennessee, or wherever in Tennessee, or anywhere. I just would prefer that we not have any more of those dangerous plants. That's all I have to say.

[Recorded 5/22/95 at 3:37 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 2**

MR. ALEXANDER: My name is George J. Alexander, Jr., 105 Bartlett Lane, North Augusta, South Carolina, 29841.

Yes. My name is Jack Alexander. I am a fourth generation North Augustan. My great- grandfather was the founder of North Augusta, and all of my family down through the generations -- the last two generations have been involved with Savannah River Site. The Savannah River Site has always been a good neighbor to us. They have always been involved in all of the communities surrounding the site. They have contributed millions of dollars to the United Way in this area. They have a great deal of local public and political support, including much support from our elected officials. To our satisfaction, we feel that they represent us very well in that regard.

1/13.09.01

We are very pleased with the SRS safety record. They have over 40 years of tritium production and handling experience due to the fact that they are a very talented and skilled workforce. It wouldn't make sense to me and to many of the folks who live here for the Federal Government to build another tritium facility elsewhere since there is already a replacement tritium facility at Savannah River Site, and it would cost nearly $1 billion to the taxpayers to build another facility somewhere else.

2/22.01

We believe that SRS has a strong environmental cleanup mission, and South Carolina DHEC -- of which I am very familiar -- has given a lot of praise to the Savannah River Site for meeting State and local regulations, as well as Federal regulations.

We would prefer to have the new tritium source located here. It would get very much support from us here. We recognize that

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PHONE TRANSCRIPT **PAGE 2 OF 2**

SRS is the only site that currently has the infrastructure to support such a facility, and we believe that by maintaining that infrastructure here, it would be easier and cheaper to all of the critical DOE missions.

We also recognize that this would not require any transport of tritium from one site to the other. We also recognize that Savannah River Site has been consistent in meeting all the requirements of the Federal Government over the years and we believe that they will continue to do so.

It is my opinion that Savannah River Site is the correct place. I am familiar -- I have read the PEIS and I am very familiar with all of the options. I would like to see the new tritium source come to Savannah River Site.

[Recorded 5/22/95 at 3:59 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 2**

MS. BARFIELD: My name is Ellen Barfield, 4009 Herschel Avenue, Dallas, Texas, 75219.

I am very concerned about the -- to be expected, but continuing to be disappointing -- railroading that the Government does with any program it wants to push through. You have no budget yet for the tritium production that you want to do, but you are planning on having that up and the decisions finished before the end of this year. It's almost halfway through the year already.
1/16.07 That concerns me tremendously. How can people comment without even hearing what the budget is?

Tritium need is very likely to be reduced even more because there should be more arms reduction in the next few years, and the tritium that is in the weapons that are being dismantled can simply be recycled.

2/04.02.01 I do not see any need to establish new tritium production at this time. I am very concerned about the huge water use -- officially, of course, because my focus is the Pantex Plant and the very dry Texas panhandle near Amarillo, but even in a wet place like Tennessee or North Carolina, tons and tons of water would be needed, and it's not exactly there to spare. We have very little fresh water on this earth.

3/15.08 My final comment is the format of all your meetings lately has changed from just people getting up and spouting off what they want to, with no interaction. I understand why you've gone toward that, but excuse me, you say one of the benefits of it is that the citizens can get technical information from technical experts. Excuse me, but those technical experts don't always tell the truth or focus on things in the same way that citizens do.

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3/15.08 continued I would rather read it out of a book, myself, than to have some Government shill tell me what he -- and it usually is a "he" -- thinks is the case, and usually in a condescending manner. Some interaction is fine, but I think there should also be verbatim recorded documenting as there was in the past. I have said this many times and I will continue to. Some of both is apparently about the best we can do.

[Recorded 5/22/95 at 4:35 p.m.]

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PAGE 1 OF 3

MS. YUPE: My name is Diana K. Yupe, Shoshone Bannock Tribe, Fort Hall Indian Reservation, Fort Hall, Idaho, Post Office Box 306, 83203.

The Shoshone Bannock Tribe is entering these comments in regard to the cultural resources section, Volume I, Section 4.2, under Land Resources, Water Resources, and Native American Resources.

1/01.05 Comment number one, a question regarding 4.1.4, are the land use assessments being made on DOE-owned land, such as has been done for other interested landholders?

2/04.02.04 Comment number two, water resources regarding groundwater, are the assessments being made in conjunction with the aquifers? And if so, what are they?

3/07.03 Comment number three, Native American resources, under the Historic Resources section, compliance with Section 106 and 110 of the National Historic Preservation Act regarding the updating of the buildings, the D&D actions on these buildings and any historical properties. The Native American resources are absent the same 106 requirements, as specified in the PEIS, and it is only regarding the NEPA document. However, other Federal laws are requiring consultation from the Government to the tribal government in a government-to-government relationship as mandated.

This office has a comment regarding the Native American resources, the last paragraph on page 4-9, the language applied there regarding the Native American resources by considering the proposed action, and the proposed action is based upon

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3/07.03 continued which criteria? According to this, it is only about the Native American physical environment and belief systems; however, the issues go much deeper are not being reflected within the document that is being provided for comment.

These are the concerns and comments that my office, as the cultural resources office for the Shoshone Bannock Tribe, is interested in. Other information can be obtained through my tribal chairman, who is Delbert Farmer. We can provide additional comments in writing as needed.

The Shoshone Bannock Tribe appreciates the opportunity to comment, and please make note that these comments are from the cultural resources department for the Shoshone Bannock Tribe. It is very critical that the 106 process under the National Environmental Preservation Act be included in the necessary places regarding these historic properties.

[Recorded 5/22/95 at 7:01 p.m.]

MS. YUPE [continuing]: From charts already provided with documents from the Department of Energy, for both.

Consultation with Department of Energy to the Shoshone Bannock Tribe.

4/14.01 One final comment I wanted to make regarding the Department of Energy's Programmatic Environmental Impact Statement for tritium supply and recycling is the consistency of the documents being provided by Department of Energy for Congressional review or for programmatic analysis. Currently, there are other documents that are being created for Congressional review,

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4/14.01 continued | which appear to be inconsistent with the PEIS in this document provided for comment.

[Recorded 5/22/95 at 7:09 p.m.]

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PHONE TRANSCRIPT **PAGE 1 OF 3**

MR. MARQUESAS: My name is Ed Marquesas. I am from the State of Oregon. I am calling you about tritium recycling.

53215 Timber Road, Bernonia, Oregon 97064.

1/18.01 | Yes. I think the time has come to disarm the United States nuclear weapons stockpile. It's time to get rid of the nuclear arsenal. The nonproliferation treaty which was at the U.N. this week, a lot of these countries would like these five nuclear countries to disarm; otherwise, they will not stand for nuclear apartheid.

Tritium recycling is just another way to put tritium in nuclear bombs. But I can see, with the incident in Oklahoma, that this tritium thing is happening behind the scenes.

2/15.03 | I see nothing happening in the paper, announcing these tritium plants being built. Clinton and his gang, they try to get legitimacy against this other gang, this militia gang; but again, you know, the Government has killed lots of people downwind with radiation, caused lots of body parts to be removed, amputations. They made a big thing about amputations at Oklahoma, but what about all the amputations from osteosarcoma of limbs through the last 50 years?

Nuclear weapons are unacceptable. They are illegal under international law. My job as a nurse is to protect the public health and to lead resistance by not paying taxes, by encouraging people to disrupt DOE hearings, by encouraging people to disrupt DOE operations, by bearing witness to what the DOE does, by going to the test site, by going to all the nuclear facilities, getting arrested, nonviolent actions -- I repeat, all nonviolent actions. The Government anymore, you know, this nuclear

3/15.06 weapons stuff, you've just got to get rid of it, folks. You're already paying compensation out under the 1990 act; how many more people are going to have to be compensated? That law in itself is inconclusive. The fact that it only pays for nuclear downwinders of atomic tests, and the Navajo miners and the atomic veterans, but what about the people around all the other nuclear facilities in the United States, the people around Hanford and the [inaudible] plant and the Oak Ridge plant and the Mound City plant and the Pantex plant? What about all those people? What about all the people around the Amarillo, Texas plants and the Kansas City plants and the Idaho National Engineering Laboratory plants? What about all those downwinders? Are they going to be compensated? Or are we just going to keep making more nuclear waste to kill ourselves by destroying our gene pool, by weakening the immune systems of the species? Who wins in the end? Nature laughs last.

1/18.01 continued It's time to disarm nuclear weapons. It's time to stop making any more tritium. It's time to disarm the nuclear weapons. It's time to call for international oversight and international inspection on all U.S. nuclear facilities. It's time to take the nuclear materials out of the hands of the United States Government, who has shown its violence with its Hiroshimas and its Nagasakis, who has called to tell people in Utah, various segments of the population, if you read Carol Gallagher's Book, "America's Ground Zero."

So I refuse to give any permission. I refuse to treat the Government that holds nuclear weapons as legitimate. I hold Clinton and his gang and Bush and others, Reagan and Carter and all those Presidents who oversaw expansions of U.S. arsenals or modernization of U.S. arsenals, just as legitimate and just as dangerous as people that blow up the Oklahoma Federal

Building with children inside. You guys have been just as destructive and just as disregarding the safety of children living downwind over the last 50 years. I don't see this in the paper when I look in the paper. I don't see anything about what's going on with this tritium plant. I don't hear it from National Public Radio. I don't see it in my Portland Oregonian. I don't see it in the New York Times. You guys are hiding behind the scenes. You guys have your little Nazi doctors down there in Livermore Laboratories with their national emission facilities, trying to do different types of nuclear testing to design nuclear weapons. I hear Los Alamos is kicking in. It's time to stop it all. You guys ain't legitimate anymore as long as you go on this track.

4/19.02 You ought to take all this money for tritium recycling and put it into solar power and alternative energy power. And even build some of those clinics up there, around Hanford, that the people have been crying for. This Subcommittee on the Health Effects at Hanford, I understand they are meeting today and tomorrow in Portland. I read the minutes of the March meeting, and I was at --

[Recorded 5/22/95 at 9:30 p.m.]

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MR. ELLIS: My name is David Ellis, Chief Steward for Refrigeration Mechanics at X-10, ATLC, Atomic Trades and Labor Council, 158 Lakeview Lane, Andersonville, Tennessee 37705.

Yes. My name is David Ellis. I am Chief Steward at X-10 for the Air Condition and Refrigeration Group. I received an invitation to attend the scoping meeting in Washington. I talked to the company about this and they said they wouldn't pay me my time off work, and I can't miss a day's work to attend. I sure would like to, and I appreciate your inviting me.

1/13.07.01 I would just like to say that I think that Y-12 has the people in place and the facilities already there to handle this tritium stockpile. We have environmental people here to see that there isn't any more damage done to the environment by bringing this material in there.

I would just like to say that I think we could do a good job and handle this stuff properly.

Once again, thank you for inviting me up to the meetings in Washington. I am sorry I won't be able to attend. Thank you.

[Recorded 5/22/95 at 2:41 p.m.]

TSR-PC-002
COMMENT LETTER

April 20, 1995

Office of Reconfiguration
DP-25
U. S. Department of Energy
P.O. Box 3417
Alexandria, Virginia 22302

Dear Secretary O'Leary:

To the U.S. Department of Energy:

1/13.08.01 I would like to take the opportunity to comment on the proposed draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling issued by the U.S. Department of Energy (DOE). Pantex would be an ideal site for any new functions dealing with the Nuclear Weapons Complex or the storage and disposition of fissile materials (including the proposed new tritium production and recycling facilities), in whatever technology DOE chooses, for the following reasons:

Local and statewide support. Local public support for the Pantex plant, and any expansion, is extraordinarily strong, and almost certainly surpasses the level of support in the communities surrounding the other candidate sites. Recent polls conducted by pollsters of both political parties, and the *Amarillo-Globe-News*, consistently reflect that Pantex enjoys the overwhelming support of Panhandle residents. The area's and state's elected public officials are also virtually unanimous in support of current and expanded plant operations. Essentially the entire 32-member Texas Congressional Delegation has pledged support for expansion, and the Mayor and all members of the Amarillo City Commission join local officials and community leaders as ardent supporters.

Lower labor costs. The existing work force in the Amarillo area has the skills necessary to meet the construction and operation requirements for any new functions (including a tritium facility) and to do so at a highly competitive wage rates. With a civilian labor force of 110,200, the Amarillo Metro Area can provide the project with a large, well-educated, and comparatively inexpensive labor pool. Average wage costs for manufacturing employment in Amarillo are 18% below the national average.

Lower utility costs. Utility rates for the Pantex plant are also highly competitive. Southwestern Public Service Company (SPS) has the ability to provide reliable electric service to a major expansion at Pantex at very reasonable prices. According to the Utility Data Institute, the SPS industrial rate currently ranks in the lowest 11 percent among investor-owned utilities in Texas. Water (both for

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COMMENT LETTER

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Secretary O'Leary
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drinking and industrial purposes) is plentiful, inexpensive and readily available, and industrial wastes and sewage can be disposed of in nearby facilities.

Lower costs to DOE through environmental soundness at Pantex and other factors. DOE's own audits and reviews have revealed that generally, DOE receives more value for the dollar spent at Pantex than at any other Complex site. Pantex is generally recognized as the cleanest of all Complex sites, which will inevitably result in far lower costs of remediation and site preparation if Pantex is selected. Further, DOE can realize significant cost savings by co-locating tritium facilities at Pantex, the only complex site performing stockpile surveillance and maintenance functions.

Strategic location. The Pantex Plant is less than an half-hour drive from Amarillo, a center of services in a region that includes parts of Texas, Oklahoma, New Mexico, Colorado, and Kansas. That flat topography and uniform geology of the area are highly desirable characteristics for any new functions, including a tritium facility. the environment is hospitable to construction, and the moderate High Plains climate would allow practically year-round construction and operation of any new facility.

Excellent living conditions. Located close to a metropolitan area, but not unreasonably close, the Pantex Plant offers a combination of urban and rural lifestyles. The city of Amarillo offers high-quality medical, educational, cultural, and economic amenities, as well as a broad selection of employment opportunities for family members of employees at a new tritium facility. The Southern Rocky Mountains, and all of the related recreational activities, are accessible by car in 3-6 hours. In the second quarter of 1992, Amarillo was listed as the ninth most affordable housing market in the nation. In fact, in 1990 Amarillo was ranked 17th in the nation, ahead of all other cities in Texas, as the most desirable place to live.

Educational excellence. Citizens of the Amarillo area enjoy educational opportunities that cannot be found anywhere else in the nation. In addition, Texas A&M University System, Texas Tech University, and the University of Texas System have formed a Higher Education Consortium to manage, on behalf of the State of Texas, the Amarillo National Resource Center for Plutonium that is located in the Amarillo area. These educational programs, utilizing new technologies and approaches such as distance learning, will make the citizens of Amarillo the most educated population regarding nuclear facilities and nuclear technology in the world.

Availability of land. The Department of Energy presently owns the 10,000 acres on which the Pantex Plant is located. More land is available for any new

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COMMENT LETTER

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Secretary O'Leary
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facility, including a new tritium facility, at no cost to the federal government, and Texas has an excellent record of compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and DOE relocation rules.

In summary, we want to inform DOE that we would enthusiastically support the siting of any new functions at Pantex, including new tritium facilities, whether DOE chooses an accelerator or reactor as the preferred technology. We appreciate your time and consideration in considering the Pantex Plant as a site for any new functions, including the new tritium facilities, and wish you the best in your deliberations.

Sincerely,

Rev. Wilford L. Brashears
1505 S. Rusk St.
Amarillo, Texas 7910[illegible]
Please note.
Although I didn't write this letter, it expresses my views about tritium production at Pantex as essential to economic viability of our defense department. I'm in total agreement with it. W.L.B. 4-17-95

PANHANDLE 2000
P.O. Box 9480 Amarillo, Texas 79105 (806)373-7888

April 20, 1995

Office of Reconfiguration
DP-25
U.S. Department of Energy
P O. Box 3417
Alexandria, VA 22302

To the U.S. Department of Energy:

Thank you for the opportunity to comment on the proposed draft Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS) issued by the U.S. Department of Energy (DOE) on or about March 1, 1995. We are confident that our views represent those held by the vast majority of the citizens of the Texas Panhandle. Pantex would be an ideal site for any new functions dealing with the Nuclear Weapons Complex or the storage and disposition of fissile materials (including the proposed new tritium production and recycling facilities), in whatever technology DOE chooses.

INACCURACIES IN DATA RELATING TO PANTEX.

However, we have grave concerns about the accuracy of the data presented in the draft PEIS relating to the Pantex site. We request that the Department withdraw the draft PEIS, correct the data, and reissue a corrected, revised version of the draft PEIS, or an addendum thereto with correct data. We also request that these inaccuracies be recognized by DOE officials at the April 20 meetings in Amarillo, and corrected data be presented at the April 20 meetings. We have noted many inaccuracies, most if not all of which will be discussed by concerned citizens at the April 20 meetings. We will not list each inaccuracy in this letter, but did want to discuss some of the major problems with the data therein relating to Pantex, in order to assist you in the redrafting process.

Water.

1/04.02.01

During the March 16, 1995 public meeting on the PEIS in Amarillo, DOE officials (including Erik Schweitzer, Deputy Director of the Reconfiguration Office) said that Pantex would be considered a "dry site" and would use a recycled water system that would use only 2 million gallons per year for a phased accelerator. However, on page 31 of the Executive Summary, it is averred that approximately 1.7 billion gallons would be required (a level required for a "wet" site), which finding leads DOE to the erroneous conclusion that (1) water from the Ogallala Aquifer would be necessary for this level of usage, and (2) such use from the Ogallala would adversely affect the aquifer's water levels. Pantex again is assigned figures appropriate for a "wet" site on page 32 of the Executive Summary, and elsewhere in the PEIS. The 1.7 billion gallon/year figure is not even consistent with other figures used in the PEIS (e.g., Volume I reports 1.977 b.). Also, cooling towers are referenced in the PEIS for use at "dry" sites, but are not evaluated for accelerators (if cooling towers were used, the water requirements drop to 20 million gallons/year).

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1/04.02.01 continued

Moreover, the City of Amarillo currently utilizes wastewater recycling on a large scale virtually identical to the process required for the recycled water system contemplated by DOE for a phased accelerator at a "dry" site. The City of Amarillo currently provides process water from the River Road Wastewater Treatment Plant to Southwestern Public Service ("SPS" - the electric utility servicing the Panhandle area) for cooling and process water at the Nichols and Harrington Station Coal Fired Electric Generation Plants. A similar arrangement could easily be made for proposed processed water needs at Pantex, since the City provides up to 12 million gallons/day (4.4 billion gallons/year) to SPS for cooling purposes (with sufficient additional capacity available), and the technology for cooling a tritium facility would be the same as used for power generation. Also, The quality of this recycled water is perfectly acceptable for cooling purposes, since it meets EPA's latest discharge standards

Further, Pantex could develop the capability to recycle treated effluent (the plant currently discharge approximately 400,000 gallons/day of treated effluent to Playa One). Pantex would be willing to demonstrate recycling and water conservation by using this water for cooling/process water. If DOE considers this in conjunction with process water potentially available from the City of Amarillo, it becomes clear that its claim in the PEIS that all candidate sites would impact groundwater resources is incorrect, as it relates to Pantex.

2/13.08.01

Finally, the City of Amarillo has excess water capacity to an extent enjoyed by no other candidate site, without depleting the Ogallala Aquifer. The City possesses 100 million gallons/day capacity, and only uses 40 million/day. Therefore, it enjoys a 60 million gallon/day excess (22 billion/gallons/year), and could have more if and when it becomes necessary. For example, the City owns 125,000 acres of undeveloped water rights in Hartley County (north of the Canadian River), 25,000 acres in Potter County, and 25,000 acres in Carson County. It is entitled to 40 million gallons/day from Lake Meredith (which it does not use to full capacity), and also is a member (with nine area counties) of the Canadian River Authority, in which it has a one-third right (and which is purchasing 100,000 acres of water rights in Roberts County)

Immediate correction of this water-related data is critical in order to ensure that DOE's decision making process is accurate and fair.

Cancer Incidence.

3/11.00.23

On page I-53 of Volume II of the PEIS, the incredible assertion is made that the cancer risks at Pantex from chemical hazards is one in one hundred. This is a preposterous finding. The contractor on site at Pantex performed an alternative risk calculation using the same methodology used for other candidate sites, and found that the risk was 7.7*10-7. The fact that this figure is fantastic is underscored by inconsistencies throughout the PEIS in its discussion of cancer risks. For example, page 36 of the Executive Summary states that Oak Ridge's "chemical Hazard Index is 0.36 with no cancer risk to the maximally exposed member of the public. The site worker Hazard Index is 0.26 is 0.26 with no cancer risk " The Pantex chemical Hazard Index is 0.03 with a cancer risk of 1.1*10-5 to the maximally exposed member of the public, with the site worker Hazard Index being 0 49 with a cancer risk of 0.01. How is the chemical hazard index higher at Oak Ridge by a factor of 100, but Oak Ridge has no cancer risk and

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3/11.00.23 continued

Pantex does? The chemical hazard risk at Savannah River is 200 times greater than Pantex, yet the cancer risk is lower. Further, page 57 of the Executive Summary references potential cancer fatalities at only one site - Pantex - which also is the only site upon which a review of non-radiological factors is done. These incorrect assertions about cancer risk at Pantex border on the irresponsible, and could cause grave concerns (and worse, such as panic) among the area's citizens. It is imperative that DOE provide corrected data, and explanations for the errors, as soon as possible.

Transport and disposal of tritium, low-level waste and other materials.

4/09.09

Page 25 of the Executive Summary, the PEIS addresses the risk of moving low-level waste from Pantex to a DOE disposal site. This analysis fails to consider the risk of transporting tritium containers from the assembly/disassembly site to the tritium site; a far more serious risk which would be averted if Pantex was the tritium facility site Further, page 56 of the Executive Summary avers that the relative transportation risk of tritium at the Nevada Test Site is 30 percent lower that the existing No Action case for all technologies. How can this be so since, under No Action, the tritium would be transported to the assembly/disassembly site - Pantex? Ignoring or miscalculating transportation risks and costs associated with weapons materials is a serious omission, and unnecessarily prejudices Pantex in the selection process. these data should be immediately corrected, with a full analysis of transportation risks and costs.

5/10.10

Page 51 of the Executive Summary lists Pantex as the only site with no onsite disposal capability, and states that offsite (City of Amarillo) landfill design would be reduced or require expansion. Why is there no consideration of storage/disposal on site? Further, why would the City need to reduce its landfill design or expand it, since there is no examination of capacity or other factors? Again, DOE fails to perform a complete analysis considering all relevant factors, thus prejudicing Pantex.

Endangered Species Act and related issues.

6/06.03

In a number of places in the PEIS, it is asserted that construction of a tritium facility would affect federally listed, federal candidate, or state-listed species, and could impact potential wetlands. More specifically, pages I-31, I-33, I-35, and I-37 of Volume II reference possible impacts on the bald eagle, the swift fox, and other species This claim fails to recognize that construction activities would occur well away from any of the Pantex Playas (which soils are inherently unsuited for construction), which are the only potential nesting, foraging, and denning habitat for these animals (e.g., no balding eagle nests or nesting pairs have ever been observed on site). The Pantex Playas constitute but five out of approximately 25,000 playas on the southern High Plains, and cannot be considered as critical habitat. Personnel from the U.S. Fish and Wildlife Service declined to support classification of any of the Pantex Playas as "critical habitat" during a site visit in 1994. Further, only a small proportion of the site (less than 7%) is designated as "playa wetlands." Any prudent site plan for tritium facility construction will avoid these areas. These claims in the PEIS should be corrected.

Seismicity and geological factors.

7/05.02

Critical components for construction of an accelerator or reactor (especially to the Nuclear Regulatory Commission) - seismicity and geology have been totally

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Page 4

7/05.02 continued

overlooked in the PEIS. Coincidentally, Pantex is by far the superior site in this area. The flat topography and uniform geology of the area are highly desirable characteristics for a new tritium facility. The underlying geology has sufficient strength to be excavated on steep, stable slopes and is ideally suited for the cut-and-cover construction technique using conventional mass excavation equipment. The site is in an area of low seismicity and no active faults. The Uniform Building Code places the Pantex Plant area in earthquake zone 1, which rates second lowest in earthquake occurrence. The engineering load bearing capacities of Pantex-area soils and geologic sediments is ideal for a project of this type The immediate area is free of such potential problems as ground settlement, slope instability, and solution cavities.

Other factors.

8/16.15

Other factors favoring Pantex for selection have been ignored or misconstrued throughout the PEIS, many of which are outlined below (such as community and statewide support). Any assertion that the inaccuracies listed above, as well as many not mentioned herein, will be addressed "at a later time" or in the site-wide EIS for the selected site is unacceptable, since it does not allow a fair competition or full consideration of all factors. Further, we are concerned that the NEPA process being utilized by DOE for the tritium facility is flawed beyond data inaccuracies The NEPA process should assess the combined impact of the different activities described in the PEIS, not a "laundry list" of individual assessments. Relying on the latter method for selection of a site herein runs the serious risk of making the process appear to be "result-oriented" from its outset, a conclusion we are confident DOE wishes to avoid.

WHY PANTEX IS THE BEST CANDIDATE SITE.

9/13.08.01

If DOE were to analyze corrected data with regard to site selection, we are confident that you would agree with us that Pantex would be an ideal site for the proposed new tritium production and recycling facilities (and any new functions dealing with the Nuclear Weapons Complex or the storage and disposition of fissile materials), in whatever technology DOE chooses, for the following reasons:

Local and statewide support

Local public support for the Pantex plant, and any expansion, is extraordinarily strong, and almost certainly surpasses the level of support in the communities surrounding the other candidate sites. A poll was conducted by Shipley and Associates, a respected Democratic pollster located in Austin and involved in national campaigns, in the four county area consisting of Armstrong, Carson, Potter, and Randall counties between May 20-22 of this year, with 400 citizens responding to the poll. The survey found that 99% believed that Pantex was important to the local economy, 88% said Pantex was a facility they could be proud of, 79% favored expansion of Pantex, 88% agreed that Pantex was safe, 73% believed an expanded Pantex would be safe, and 73% sided with DOE over groups opposing Pantex expansion in saying that DOE was and is capable of operating Pantex (whether expanded or current) safely and without harm to the environment. These findings demonstrate that the historical level of support for Pantex and its activities has remained constant over many years. In May 1991, Lance Tarrance, a prominent Republican pollster, conducted a poll which showed 85% of area citizens supported an expanded Pantex. Also, a July 1991 poll conducted by the *Amarillo*

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Globe-News showed almost three-fourths of the respondents favored expansion of Pantex. When one considers the findings of the poll conducted by Mr. Tarrance, a respected Republican pollster, and the results of the Shipley poll, conducted by a distinguished Democratic firm, it is clear that regardless of the party affiliation of the pollster or the time the poll is conducted, that Pantex enjoys the overwhelming support of Panhandle residents.

Support of the area's and state's elected public officials also is virtually unanimous in support of current and expanded plant operations. Essentially the entire 32-member Texas Congressional Delegation has pledged support for expansion (as evidenced by the Texas Congressional Delegation letter to Secretary O'Leary dated September 7, 1994 expressing support for retention and expansion of Pantex through the scoping hearings for the Fissile Materials PEIS), and will be active in the effort in the future. The Mayor and all members of the Amarillo City Commission join local officials and community leaders as ardent supporters.

Lower labor costs

The existing work force in the Amarillo area has the skills necessary to meet the construction and operation requirements for any new functions (including a tritium facility) and to do so at highly competitive wage rates. With a civilian labor force of 110,200, the Amarillo Metro Area can provide the project with a large, well-educated, and comparatively inexpensive labor pool. Average wage costs for manufacturing employment in Amarillo are 18% below the national average. Amarillo area high schools graduate an average of 1,900 students annually, and graduates of West Texas A&M University, Amarillo College, and Texas State Technical College are available to fill job openings. Job openings attract applicants from the 192,953 person civilian labor force of the Texas Panhandle Area.

Lower utility costs

Utility rates for the Pantex plant are also highly competitive. Southwestern Public Service Company (SPS) provides electric service to Amarillo and the surrounding area, including Pantex. SPS believes it has the ability to provide reliable electric service to a major expansion at Pantex at very reasonable prices. Pantex is located within 15 miles of SPS's 1500 megawatt generating complex. This allows excellent transmission line flexibility so the system to Pantex can, if necessary, be upgraded to handle a large increase in electricity consumption. According to the Utility Data Institute, the SPS industrial rate currently ranks in the lowest 11 percent among U.S. investor-owned utilities SPS has a long history of low rates and presently offers the lowest rates among investor-owned utilities in Texas. If the new facilities were operational now, SPS's standard rate for this class of firm service at 80 percent load factor would average 3.2 cents per kWh. Natural gas rates are also among the lowest in the nation, and because Energas (the supplier of natural gas for Amarillo) operates entirely within Texas, the company is not subject to regulation by the Federal Energy Regulatory Commission. Therefore, the Department of Energy can negotiate special competitive rates for gas supply contracts for Pantex. Pantex is also located near two very large gas reserves and can expect to have a plentiful supply of low cost gas for many years. Plentiful, high-quality water for drinking is readily available from multiple sources including

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groundwater and surface water, and secondary sewage effluent is available for industrial usage. Process water can be recycled and reused to the maximum extent possible with resultant savings in fresh water resources. Finally, industrial wastes and sewage can be disposed of in nearby, inexpensive, and appropriately-licensed facilities.

With regard to water, the City of Amarillo currently utilizes wastewater recycling on a large scale virtually identical to the process required for the recycled water system contemplated by DOE for a phased accelerator at a "dry" site, as Pantex should be characterized. A similar arrangement could easily be made for proposed processed water needs at Pantex, as discussed above. Further, as demonstrated above, Pantex is the only candidate site which would not impact groundwater resources if it was selected for the tritium facility. Finally, the City of Amarillo has excess water capacity to an extent enjoyed by no other candidate site, without depleting the Ogallala Aquifer.

Lower costs to DOE through environmental soundness at Pantex and other factors

DOE's own audits and reviews have revealed that generally, DOE receives more value for the dollar spent at Pantex than at any other Complex site. Pantex is generally recognized as the cleanest of all Complex sites, which will inevitably result in far lower costs of remediation and site preparation if Pantex is selected. Further, DOE can realize significant cost savings by co-locating tritium facilities at Pantex, the only complex site performing stockpile surveillance and maintenance functions.

The Pantex facility also is the candidate site nearest the Los Alamos National Laboratory. This is important because Los Alamos will be the DOE facility where the research and design work on an accelerator, if that is the technology chosen by DOE, will be conducted. Accordingly, selecting Pantex as the site for any new facilities, including the new tritium facility, would result in lower overall costs of construction and operation to DOE.

Strategic location

The Pantex plant is equidistant from the east and west coasts of the U.S., located in the middle of the Sun Belt. The plant is less than a half-hour drive from Amarillo, a center for services in a region that includes parts of Texas, Oklahoma, New Mexico, Colorado, and Kansas. The flat topography and uniform geology of the area are highly desirable characteristics for a new tritium facility. The underlying geology has sufficient strength to be excavated on steep, stable slopes and is ideally suited for the cut-and-cover construction technique using conventional mass excavation equipment. The site is in an area of low seismicity and no active faults. The immediate area is free of such potential problems as ground settlement, slope instability, and solution cavities. The environment is hospitable to construction, especially to an accelerator, and there are no threatened or endangered species present at the site. The site would have no adverse noise effects on the surrounding area. Groundwater is more than 60 feet below any area of construction. Finally, the moderate High Plains climate would allow practically year-round construction and operation of any new tritium facility.

Excellent living conditions

Located close to a metropolitan area, but not unreasonably close, the Pantex Plant offers a combination of urban and rural lifestyles. The City of Amarillo offers high-quality

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medical, educational, cultural, and economic amenities, as well as a broad selection of employment opportunities for family members of employees at a new tritium facility. The Southern Rocky Mountains, and all of the related recreational activities, are accessible by car in 3-6 hours. In the second quarter of 1992, Amarillo was listed as the ninth most affordable housing market in the nation. In fact, in 1990 Amarillo was ranked 17th in the nation, ahead of all other cities in Texas, as the most desirable place to live

Educational excellence

Citizens of the Amarillo area enjoy educational opportunities that cannot be found anywhere else in the nation. The Amarillo Area Center for Advanced Learning, a new magnet school program, includes a Technical Sciences Academy that is focused on producing high school graduates with high science and math skills. The Academy, which will teach dual-credit (high school and college) courses in subjects such as environmental safety, environmental science, aerospace sciences, and college math, is funded by a $630,000 grant from the National Science Foundation.

In addition, Texas A&M University System, Texas Tech University, and The University of Texas System have formed a Higher Education Consortium to manage, on behalf of the State of Texas, the Amarillo National Resource Center for Plutonium that will be located in the Amarillo area. This consortium, representing 37 institutions and campuses across Texas, and globally-recognized programs in a myriad of disciplines, brings to Pantex a wealth of resources which could benefit the proposed tritium facilities. One of the primary functions of this Center is to promote and create educational programs in math and sciences, particularly as they relate to nuclear energy. These educational programs, utilizing new technologies and approaches such as distance learning, will make the citizens of Amarillo the most educated population regarding nuclear facilities and nuclear technology in the world.

Availability of land

The Department of Energy presently owns the 10,000 acres on which the Pantex plant is located. More land is available for any new facility, including a new tritium facility, at no cost to the federal government (through, among other avenues, an option to purchase the Texas Tech land). Texas has an excellent record of compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and DOE relocation rules.

10/13.04.17

We also respectfully suggest that DOE give very serious consideration to the selection of an accelerator technology for tritium production. As you know, the current two main options for tritium production are the accelerator and the use of a nuclear reactor. While we do not oppose the use of a nuclear reactor, especially since this technology is proven, the use of an accelerator offers some distinct advantages.

For example, the accelerator option would allow the tritium production to be built in modules. Initially, a small accelerator could be constructed and additional facilities could be added if the need for tritium necessitated an expansion. It would be more difficult, but not impossible, to build a nuclear reactor with a wide range of production capabilities. More importantly, however, are the expected benefits that would result from developing and demonstrating advanced concepts of an accelerator program. As with most new technologies, once the technology is better understood, additional applications

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10/13.04.17 continued

will be forthcoming. Some of these applications can be envisioned today, while other application possibilities will develop over time.

That being said, we want to inform DOE that we would enthusiastically support the siting of any new functions at Pantex, including new tritium facilities, whether DOE chooses an accelerator or reactor as the preferred technology.

We appreciate your time and consideration in considering the Pantex Plant as a site for any new functions, including the new tritium facilities, and wish you the best in your deliberations.

Sincerely,

Jerry Johnson
CO CHAIRMAN

Walter Madden Jr
CO CHAIRMAN

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Comment Letter
Page 1 of 1

April 26, 1995

Dear Sir:

1/13.09.01 The purpose of this letter is to express my support for siting the new Tritium Source at the Savannah River Site (SRS). SRS has many advantages over other potential sites. These advantages include:

1) major cost savings as a result of existing support infrastructure that is not present at other potential sites,

2) 40 years experience in producing and packaging tritium safely and on schedule,

3) a new modern tritium facility (Replacement Tritium Facility) which provides an excellent anchor around which the new Tritium Source could be consolidated,

4) an unequaled record of successfully performing difficult production missions while leading DOE and industry in safety performance, and

5) unmatched local public and political support for new nuclear work.

2/13.00.05 I would also like to express my support for the ALWR "Triple Play" reactor. This tritium production method would solve at least three problems simultaneously:

1) utilize a safe, proven method to produce tritium,

2) provide a preferred method of disposing plutonium, and

3) produce power for a rapidly growing area (Aiken-Augusta and Greenwood-Greenville) instead of consuming power.

Another potential plus is that at least one utilities consortium has offered to build and operate a "Triple Play" reactor unit at SRS which could reduce DOE's costs and liabilities.

In conclusion, when all the facts are considered, I believe SRS has to be the logical choice for the new Tritium Source.

Sincerely,

Billy [illegible]

TSR–PC–006
Comment Letter
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05/04/95 THU 16:13 FAX 202 586 0487 ◆◆◆ JULIE HOWARD 002

April 28, 1995

Mr. Stephen M. Sohinki
Office of Weapons Complex Reconfiguration, DP-25
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

SUBJECT: Comments on Tritium Supply and Recycling Programmatic Environmental Impact Statement (PEIS)

Dear Mr. Sohinki:

These comments are an endorsement of a Tritium Supply and Recycling Alternative utilizing a reactor technology at the Savannah River Site (SRS).

1/13.09.01 As is confirmed in the PEIS, the SRS is the only site where tritium recycling from retired weapons continues at the new Replacement Tritium Facility. As a result of the rigorous reviews of this facility prior to beginning operation in 1993, it meets current standards for safety and seismic design thus requiring minimal upgrades. This fact alone should weight the siting decision toward selection of SRS. Building only one new facility has significantly fewer environmental impacts than construction of two facilities as would be required at any of the other four sites being considered.

2/13.09.06 The SRS also offers a significant savings in construction impacts and cost resulting from the ability to use the newly constructed cooling tower designed to mitigate thermal discharge impacts from the now retired K-Reactor production facility. The natural draft tower was built by Marley, the leading U.S. constructor of similar utility cooling towers, and will perform effectively for a reactor in the 1000 megawatt range. In addition, the proposed location for the new tritium supply source (near N Area) is ideally situated to tie in with the existing 10 miles of cooling water discharge pipe running from K-Reactor to the Savannah River. Only 4 miles of new piping would be required.

1/13.09.01 continued Another advantage of the SRS is the long-term support of the public officials and government agencies as evidenced by the excellent cooperation in both Georgia and South Carolina for the SRS and Vogtle Electric Generating Plant emergency preparedness programs.

3/13.00.05 The "triple play" could be extended to a "quadruple play" at SRS since co-generation of process steam from a reactor could replace the antiquated onsite supplies used for transferring fluids,

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COMMENT LETTER — PAGE 2 OF 2

05/04/95 THU 10:13 FAX 202 586 0467 ---- JULIE BOYARD [illegible]

2

3/13.00.05 continued | heat transfer, and building heat requiring an average of approximately 750,000 pounds per hour. The site's electrical needs now supplied through the offsite grid could also be met.

1/13.09.01 continued | Lastly, co-location of the nation's new tritium supply source at the SRS could be the determining factor in locating the International Thermal Experimental Reactor in the United States. A sufficient power supply and new tritium handling capabilities would make the SRS site much more attractive than the French or German sites.

3/13.00.05 continued | The basis for our support for use of a reactor technology is very straightforward. It is the only option which can provide multiple benefits: producing tritium efficiently, providing needed electrical power, and burning weapons grade plutonium. A "triple play" reactor meets all of the stated goals of the Department of Energy (i.e., replenishing the stockpile requirements for tritium, encouraging economic development and technology transfer in the vicinity of DOE sites, partnering with the private sector to "test-drive" the streamlined commercial licensing processes, and reducing the likelihood of nuclear weapons proliferation). Further, we believe an advanced light water reactor using proven technology is in the economic interest of all taxpayers. While research and development of the possibility of using a linear accelerator would be an intriguing scientific effort, the nation simply cannot afford the luxury of pursuing unknown, unproven technologies. Much like the once proclaiming and now prohibitively expensive super collider technology, the accelerator looks good on paper but may not be ready in time or at a capacity to meet the country's vital need for a new tritium supply.

For these reasons, our view is that an advanced light water reactor located at the Savannah River Site is the optimal path forward.

Very truly yours,

TSR–PC–008
COMMENT LETTER — PAGE 1 OF 1

May 5, 1995

U.S. Department of Energy
Box 3417
Alexandria, VA 22302

Re: Tritium Supply and Recycling Draft
Programmatic Environmental Impact Statement

For several years, I, along with many other concerned U.S. citizens and residents, have followed the efforts of the Department of Energy to restructure its nuclear weapons production complex. I have reviewed with interest the current draft on tritium supply and recycling, and wish to address both general issues and some specific issues with the Pantex Plant site.

1/04.02.01 | The Pantex Plant is not suitable for two primary reasons. The first, and most critical, is the availability of adequate water resources. The region has no potable surface water, and is totally dependent on the Ogallala for all its needs -- agricultural, residential and industrial. These needs, as they currently exist, are drawing down the aquifer far faster than its recharge rate, and people who look critically toward the future can see that choices will have to be made that will impact the quality of life of both urban and rural residents. Already, many area farmers are moving toward agricultural practices that demand less Ogallala water.

2/13.08.04 | All of the proposed technologies for tritium supply are water intensive, and will only serve to exhaust more rapidly an unrenewable national resource. If treated wastewater is used in the accelerator production option, environmental impacts assessed must include impacts where that water is currently discharged.

3/01.03 | A second problem with the Pantex Plant site is the size of the facility. It is the smallest in area of all the sites being considered. It is surrounded on three sides by private land, and on the fourth by university research property, which the plant currently leases for security requirements. It is unclear that the accelerator in particular could be placed on site without extensive (and expensive) relocation of other facilities. While the reactor options might be sited without impacting other activities, it is unclear that adequate security zones could be provided without impacting adjacent land, most of which is in agricultural production by families who have lived on the land for three or four generations. The impact of having food crops grown less than a mile from a nuclear reactor must also be considered.

4/18.01 | Finally, the most serious flaw of the draft PEIS is its failure to assess the question of whether new tritium supply facilities are needed at all. Current supplies can maintain post-START II arsenal for some 20 years. In the current world climate, there is no foreseeable new nuclear superpower, and, in light of negotiations for renewal of the Non-Proliferation Treaty, a smaller arsenal is more likely than not. In fact, treaty commitments of the NPT require all nuclear powers, including the United States, to move toward a nuclear weapons-free world. For the U.S. to begin a costly program to rebuild production facilities seriously undermines these goals, and ultimately will leave us less rather than more secure.

5/13.00.01 | The interests of national security and fiscal responsibility both support a No Action decision at this time, as do hopes of millions of people, not only in the U.S. but around the world, for an end to nuclear weapons production.

Thank you for your consideration.

Sincerely,

Jeannine & Duane Weydel
Rt. 2 Box 054-A
Graham, TX 76450

TSR–PC–011
COMMENT LETTER **PAGE 1 OF 1**

102 Manchester Rd.
Newton, Ma. 02161
May 1995

Stephen Sohinki
Director
Office of Reconfiguration
P.O. Box 3417, DOE,
Alexandria, Va. 22302

Dear Director Sohinki,
We are writing because of our concern presently that the DOE should choose the

1/13.00.01 "No Action" alternative to tritium supply— especially at this time when the U.S. is negotiating an international treaty for non-proliferation, we should not be

2/18.01 seeking ways to build up our nuclear arsenals.

Sincerely, Jim and Sally McAlpine

TSR–PC–012
COMMENT LETTER **PAGE 1 OF 2**

June 4, 1995

Dr. Beckner
Assistant Secretary for Defense Programs
Department of Energy

Dear Dr. Beckner:

We are here to express our belief that SRS is the best possible site for Tritium production. Here are some of the reasons we believe this:

1/13.09.01

1. With over 80,000 acres the site is large enough for any technology whether it be accelerator or reactor or both.
2. Human resources, such as engineers and technician trained in all phases of the nuclear field are already in place and ready for the new missions.
3. Infrastructure that has been built and maintained for over forty years is in place, has been maintained, and is ready to be used.
4. Why build a reactor or accelerator at any location that falls short or land, infrastructure or personnel when SRS has all three?
5. Inability to reuse site because of its location and extensive clean-up that will take years would make the site a liability if not used.

Richard H. Dyhuse CGR
Vice President - Builders Association of Metro Augusta Ga.
President of Augusta Remodeling + Const
P O Box 201
Grovetown, Ga. 30813

TSR-PC-012
COMMENT LETTER

PAGE 2 OF 2

QUESTIONS

2/18.11 | 1.) If D.O.E. is turned over to Department of Defense what effect if any will that have to do with site selection and technology for Tritium?

2.) We understand that a true cost analysis using a proforma approach which weighs cost against potential income is being studied. If so, will that information be made public and when?

3/13.00.05 | 3.) We understand that a triple play reactor would burn spent fuel, make tritium and electricity at the same time. Is this common sense approach on non-proliferation, income potential and production being considered jointly?

08/12/95 MON 14:24 FAX 202 586 8487 *** JULIE HOWARD 003

TSR-NE-002
COMMENT LETTER

PAGE 1 OF 1

Mon Sep 18 15:07:48 1995
James Blackburn, NA&L Manager (Acting)
Tennessee Valley Authority
P. O. Box 2000
Hollywood, AL 35752
Phone: 205/574-8058 Fax: 205/574-8950
eMail: idket.office@mhs-tva.attmail.com
Subject: stockpile

This commenter agrees with DOE's determination to include commercial reactors as an alternative for the long-term supply of tritium in the Final Tritium Supply and Recycling Programmatic Environmental Impact Statement. The decision to re-examine the use of commercial reactors for the production of tritium is a proper and prudent course of action to ensure that the least cost option is selected. The potential payback associated with the commercial production of electricity concurrent with tritium production compels the careful consideration of the commercial reactor option. Two concerns have been identified by DOE as the principal reason for eliminating the commercial reactor alternative from the draft from the detailed study: "...1) the production of tritium for defense purposes in nuclear reactors that generate electricity for commerical sale would be contrary to the long-standing policy of the United States that civilian nuclear facilities should not be utilized for military purposes; 2) such utilization of commerical reactors would make the United States' nonproliferation efforts much more difficult".

1/22.02 | Placement of the tritium production facility on an existing government reservation would certainly eliminate both concerns. For example, the Tennessee Valley Authority, a federal utility, is currently operating two commercial reactor sites with two others under construction. TVA's two unit Bellefonte site, located in northeastern Alabama, offers a number of advantages in addition to elimination of the aforementioned concerns with nonproliferation and the utilization of civilian nuclear facilities: 1) Bellefonte Unit 1 is ~ 88Xomplete and could be operational in fifty-four months or less, 2) Bellefonte is a third generation nuclear facility with a 40-year life expectancy, 3) the Bellefonte site has a final Environmental Impact Statement issued and an active NRC construction permit, 4) the Bellefonte core design is very compatible with tritium production and has existing thermal margin available for the irradiation of 2000 - 6000 target pins per fuel cycle, 5) TVA nuclear plants and Babcock & Wilcox nuclear steam supply system operating plants (Bellefonte utilizes a B&W NSS) are operating at high capacity factors thereby ensuring reliable tritium supply, 6) TVA is presently evaluating a potential partnership arrangement with other utilities and private corporations for the completion of Bellefonte and would consider other business arrangements for the completion and operation of the facility, and 7) Bellefonte can provide the least cost alternative for DOE considering possible business arrangement options for completion costs and compensation for irradiation services

TSR–NF-001
COMMENT LETTER
PAGE 1 OF 1

09/12/95 TUE 08:46 FAX 202 586 8487 --- TETRA TECH 004

R R 2 Box 1910
Old Town ME 04468
1995 August 23

Ms Hazel R. O'Leary
Secretary of Energy
Washington D. C.

Dear Ms O'Leary:

1/13.00.07 As a private citizen with some knowledge of energy, I urge you to decide in favor of a reactor to produce tritium for the nation's nuclear warheads instead of doing it with a linear accelerator. I don't like the idea of any nation building nuclear warheads, but if it must be done, at least we can produce, rather than consume, energy to do it.

These are several of the reasons I see for renewing our nuclear energy industry:

1. Other nations are going ahead with nuclear power and we will not stop them by our reluctance to do so.

2. Now, under 10% of U S electric energy is produced with oil, but we should reduce that further. With only about a tenth of the world's supply of oil, we are growing in dependence on imports.

3. About 55% of our electricity is produced by coal, which is not without some radiation release, and produces more CO_2 for its energy output than any other fuel.

4. Nuclear power produces no CO_2 at the power plant.

5. Normal radiation release is less than for coal, and accidental radiation release from commercial plants in the U S has been contained. Three Mile Island, contrary to some belief, released very little outside the plant, and Chernobyl could not occur with the reactors in the U S.

6. Overall, nuclear power production is about the safest way to produce electricity. In terms of man-hours lost per unit of energy, produced, if all hours lost because of construction, mining, transportation, and other accidents are included, it is much safer than coal, oil, solar, or wind. Only natural gas is safer.

2/18.04 7. High level waste storage does not need to be the problem we are making it to be. We could reprocess the wastes from the present nuclear plants into fissile plutonium. Is is done in other countries, but we are not allowed to because of a decision by either the President or by Congress (in the late 70s I believe).

Sincerely,

Edward R Huff

Edward R Huff

TSR–NM–001
COMMENT LETTER
PAGE 1 OF 1

September 4, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki:

1/22.02 I write in response to your letter of August 21, 1995 asking for comments on the Draft PEIS for Tritium Supply and Recycling. It is my opinion that the possible use of a commercial reactor for the production of tritium should be considered as probably a less costly use of facilities.

2/18.01 However, I do not think the United States should produce tritium at this time when efforts are being made to dismantle nuclear weapons and to persuade countries without nulcear weapons to refrain from producing any. 3/23.01 Therefore I support the idea of purchasing irradiation services only in the event of a national emergency. I understand that some changes might have to be made to a commercial plant to ready it for the emergency use.

Sincerely,

Isabel Chiquoine

Isabel Chiquoine
31 Norton Ave.
Clinton, NY 13323

TSR-NM-002
COMMENT LETTER

PAGE 1 OF 1

AIKEN COUNTY COUNCIL
POST OFFICE BOX 2040, AIKEN, SOUTH CAROLINA 29802
TELEPHONE 642-1690

August 31, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
Department of Energy
P. O. Box 3417
Washington, DC

Dear Mr. Sohinki:

Thank you very much for soliciting my comments on the DOE Tritium Supply and Recycling Draft Programmatic Environmental Impact Statement. I believe the use of a reactor is the correct technology for tritium production, and am encouraged that the Department has recognized this requirement.

1/13.00.05 — As a graduate of M.I.T. in nuclear engineering, I strongly recommend using the proven technology of fission for future tritium production. However, use of an existing commercial PWR or BWR will not be cost effective and will present significant challenges in terms of national security and NRC/DOE regulations. In addition, the issue of displaced electrical supply, even if a commercial reactor could be purchased or used, would likely result in its defeat from a political perspective.

2/22.02

1/13.00.05 continued — I am confident that by recognizing the need for fission technology in tritium production, the Department is beginning to understand why the multi-purpose reactor concept is in the best interest of the nation in terms of tritium production, plutonium disposition and overall cost effectiveness.

With best regards, I am Sincerely,

Russ Ferrara

cc: U.S. Senator Strom Thurmond
U.S. Senator Fritz Hollings
Rep. Lindsey Graham
Rep. Floyd Spence

TSR-NM-003
COMMENT LETTER

PAGE 1 OF 1

838 Lake Blvd.
Davis, CA 95616
September 5, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

In response to your letter of August 21 in regard to the Department's intention to consider using a commercial reactor (s) as a reasonable alternative to the production of tritium, I am expressing an opinion.

This opinion is based partly after having confirmation from John Jungerman, retired nuclear physics professor of the University of California at Davis.

John Jungerman in 1945 worked on the top team --the Manhattan Project--that built the bomb.

After explaining to Dr. Jungerman the purpose of my telephone call, I said, "We don't need more tritium."

He responded, "That is right. We don't need more tritium. In Los Alamos five years ago Carson Mark said that we have enough tritium for 20 years. As we dismantle nuclear weapons, more tritium is available."

1/22.02 — In my opinion the production of tritium violate the nuclear Non-Proliferation Treaty. Tritium is for the making of nuclear weapons. We have agreed not to do that.

We have a long-term supply of tritium. We do not need to produce more tritium.

Sincerely,

Betty S. Houston

Betty S. Houston

TSR-NM-004
COMMENT LETTER
PAGE 1 OF 1

2314-9 Lawrenceville Highway
Decatur, GA. 30033
September 5, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
U. S. Department of Energy
Post Office Box 3417
Alexandria, VA. 22302

Dear Mr. Sohinki:

Thank you for your letter of August 21 informing me of the re-opening of the comment period on your department's intention to consider using a commercial reactor or reactors to produce tritium.

1/22.02 I agree with the department's earlier reluctance to consider using a commercial reactor because it would be contrary to our wise decision not to use civilian facilities for military purposes (this would then make all civilian facilities military targets in the case of conflict or terrorism). I agree that this would make non-proliferation efforts much more difficult, and NON-PROLIFERATION IS ESSENTIAL FOR THE HEALTH AND SAFETY OF ALL OF US.

2/23.01 If I had to choose only between your two suggestions, it would be better to consider purchasing irradiation services if you ever needed tritium again rather than producing more at the present time. WE DO NOT NEED TO PRODUCE ANY MORE TRITIUM AT THIS TIME, and I doubt if we shall ever need it again. We already have a problem with ensuring safe storage of the tritium we have. If we ever used half the nuclear weapons we now have, we would probably kill ourselves off in a few years from the effects of the radiation (green-house effect, etc.). For instance, the people downstream of the Savannah River Plant, our main tritium production facility, have much higher than average rates of cancer and birth defects.

None of your options for producing more tritium is "low cost" in terms of human lives ruined. Plans for the production of more tritium were begun before the dissolution of the Soviet Union. Since that event we can safely discard all such plans and simply concentrate on safeguarding the existing tritium and other highly radioactive materials in ways to protect them from terrorists and monitor the containers for any leakage.

I am praying that you folks will see the light before it is too late.

Yours in Christ's service,
Lois M. Congdon
(Dr.) Lois M. Congdon

pc: Georgia Power Company
Atlanta Journal and Constitution

TSR-NM-005
COMMENT LETTER
PAGE 1 OF 1

Citizens for Clean Air and Water

PO Box 614 Rock Hill, S.C. 29731

September 2, 1995

Executive Committee
Paul Sacco, Ph.D.
Rev J H Bailey
Dick Baker
Doris Lewis
Fran Whitesell

Board of Directors
Paul Sacco
Rev. J H. Bailey
Dick Baker
Hubert Dertmaring
Johnnie M. Coachman
Mary Ellen Connolly
Dorothy Friscia
Bob Guild, Attorney
Melvin McCullough
Ada Perry
Hazel Reid
Mary Sacco

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Sir:

Reopening the comment period on tritium supply and my opinion is an exercise in futility.

1/20.01 DOE is hell bent on resuming tritium manufacture when most students of the subject have expressed opinions that dismantling astronomic stockpiles can release tritium in quantity sufficient for several generations.

We should not be made pawns of the munitions industry.

Sincerely,

Paul Sacco PhD
Board Chairman

PS: I'm not convinced an honest to goodness impact study was conducted.

Working For A Cleaner and Safer Environment

TSR–NM–006
COMMENT LETTER **PAGE 1 OF 1**

September 2, 1995
304 Manor Drive
Sautee, GA 30571

Stephen M. Sohinki
Office of Reconfiguration
U.S Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki,

In response to the DOE's letter of August 21, 1995 concerning the public comment period on the Draft PEIS for Tritium Supply. Your letter arrived three days ago, after the twenty-one day comment period already started. It could be a 21 week comment period and the time would still be ridiculous short if you really intend to involve the public in DOE's policy.

I am a full time volunteer, one of the few members of the public who is in a position to liaison between government offices such as yours and the many caring citizens who want to know what their government is doing but have no time to follow each individual government undertaking such as the production of Tritium. I have no secretary. I have no budget. I have no organization other than a network of other volunteers.

1/15.07 I do appreciate the new openness at the DOE. I am delighted with Secretary O'Leary, but this process of publishing something in the Federal Register and initiating a 21 day comment period is hardly more than a sham. I certainly want to give you credit for trying, but don't fool yourself.

2/22.02 With this letter I formally lodge my objections to using any commercial reactor to produce Tritium. If the U.S. government with all its resources has not prevented Tritium from finding its way into Georgia's well (Oct 1991) nor contaminating the Savannah River (Dec. 1991), I certainly don't want private industry to take over the job. The real debate is whether the nation needs Tritium at all.

I also want to go on record as objecting to the short comment period. There is no way I can adequately pass this information on the the concerned people in the environmental network I represent within this time frame.

Sincerely,
Joan O. King (706) 878-3459

Joan O. King

TSR–NM–007
COMMENT LETTER **PAGE 1 OF 1**

Aug. 31, 1995

Steven M. Sohinki, Director
Office of Reconfiguration
U. S. Department of Energy
P. O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki;

1/22.02 In response to your letter of August 21, 1995, "A National Emergency should be the only justification for using a commercial reactor to produce tritium for defense purposes." Controlling the reprocessing of plutonium from commercial reactors will be a difficult enough problem to solve in the non-proliferation negotiations with out this complication.

Reactor or accelerator production of tritium for defense purposes should be determined upon it's own merit - including the long term or permanent disposal of radioactive waste.

Richard J. Kropschot

TSR–NM–008
COMMENT LETTER

Aug 30-1995
Pampa, Tx 79065

Stephen M. Sohinki
Office of Reconfiguration
U.S Department of Energy Re (6450-01-P)
PO Box 3417
Alexandria, VA 22302.

Dear Sir:

1/22.02 In regard to using Commercial reactors I believe this is the way to go.

I am now retired and thirty some years ago I discovered in our system of processing gas we had tritium as a byproduct. This was a problem then and caused our cold boxes to freeze up. I found a way to trap it and dispose of it. We tried to sell same to the US government but to no avail.

I am now retired.

Sincerely yours

Merle Bohlander
1600 turtle Creek
Pampa, texas 79065
Ph 806 665 3400

TSR–NM–009
COMMENT LETTER

JOHN P. CHURCH, Ph.D., P.E.
1204 Woodbine Road
Aiken, South Carolina 29803
(803) 648-1260

August 31, 1995

Mr. Stephen Sohinki
Director, Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki;

I am writing in response to DOE's request for comments on the use of a commercial reactor for producing tritium. In short, don't do it! The technology to make tritium, retain it in the target material during irradiation, and extract it from target material after removing from the reactor has not been proven for the high-temperature operating conditions that exist in a commercial reactor. It is premature to commit to the purchase of such a facility at this time. It will take, perhaps, $100 Million to complete the necessary research to provide a proven target technology for use in a commercial reactor.

However, at this juncture, the DOE has an important opportunity to save billions of dollars of taxpayers' money, and at the same time improve the country's position with regard to tritium production.

Three popular proposals for making tritium for defense purposes include the so-called multipurpose reactor (burn weapons Pu to make tritium and electricity); the use of a commercial nuclear power reactor with special targets to produce tritium; and the use of an accelerator to produce tritium. Each of these methods purports to offer some advantages. But each shares the common fact that they are years away from being proven capable of reliable production of needed tritium.[1]

It is, of course, important to continue research on some of these ideas. But it is more important at this point to realize the disadvantages of these methods relative to the simpler, much cheaper, and immediate method of producing tritium in a small core in K and/or L reactors at Savannah River Site. For the latter, no new construction is needed.

Before being put in standby condition, K reactor was restarted briefly to verify operability. There are no unresolved questions pertaining to safety of operating K reactor. The only questions are the standard charge design questions that have been answered for 30 years for every new charge. A very important adjunct of choosing this way to produce needed tritium is that the separate questions of disposing of excess weapons-grade plutonium and spent fuel from reactors can then be addressed more optimally.

Let's address each of these proposals in turn:

---

1 This latter may explain why they all get such preferred attention from DOE, because it seems that DOE rarely chooses to fund technologies and programs that can actually succeed immediately. Thus the choice of a geologic repository instead of an engineered Monitored Retrievable Storage facility. The latter could have been built and operable in one third the time that has been spent on "studies" for the former.

JOHN P. CHURCH, Ph.D., P.E. Page 2
(803) 648-1260

1. Multipurpose Reactor

1/13.00.05 This method does nothing well. We have proved for 30 years that the low-temperature, heavy water reactor technology in use at SRS is an excellent way to produce tritium. Many years ago a multipurpose reactor was constructed and operated at the DOE-Hanford site to produce weapons-grade Pu and electricity. It never succeeded in doing either one very well. While tritium production differs significantly from that of Pu production, the demands for stable and continuous operation so necessary for electricity production are generally incompatible with the need for frequent shutdown of defense-production reactors to discharge fuel and targets.

The most versatile reactor for producing a variety of isotopes is a low-temperature heavy water facility. However, such a facility is inefficient for producing electricity.

Remember, the basis for successful and efficient electricity generation is long-running, high-temperature operation. Over the years, materials have been developed to make this possible. None of these materials has yet been designed to contain tritium for very long at these conditions and then be able to extract it easily upon discharge.

2. Commercial Nuclear Power Reactor

2/22.02 Whether the reactor being considered is either a light-water reactor or a high-temperature gas-cooled reactor, the fundamental problem remains to develop a target that will contain tritium as it is being produced during the high-temperature operation and that will then release it upon discharge under conditions during processing of the spent targets.

The target technology is not yet available. It is worthy of research, and some has already been accomplished. But no one can predict when a workable production solution will be obtained. It seems unwise, risky, wasteful, and downright criminal to pick this method as the ultimate solution until research proves out all aspects of the operation. One estimate of the additional research and development needed is as high as $100 Million.

The demands for reliable electricity production by any node on a power grid are counter to the priorities of tritium production. If the target integrity is sensitive to exposure, the reactor cycle will be determined by the target technology. The result may be that the power reactor will have to be shutdown more frequently that customary for electric power production, thereby reducing efficiency and greatly increasing power costs. The entire process needs to be extensively simulated in sufficient detail to fully understand the interrelations of target behavior and electricity production to ensure acceptability by electric power companies and to ensure that the cost estimates for this approach are realistic.

3. Accelerator Production of Tritium

3/13.04.03 This method is, perhaps, the farthest removed from production status. There are many reasons to try this approach, but none of them are based on proven technology for making tritium in the quantities needed for national security. Rather, they are based on studies based on extrapolations of other studies. Such studies and simulations are an important and perfectly appropriate part of the standard approach to science and engineering. But they must be followed by full-scale tests to verify both the necessary extrapolations of small scale experimental results and the theories underlying those extrapolation methodologies. Such verification has not been done.

JOHN P. CHURCH, Ph.D., P.E. Page 3
(803) 648-1260

4. Small-Core in K-Reactor

4/13.00.17 This will work immediately. There is no valid technical or environmental argument against operation of K reactor with a small core to produce tritium in the quantities anticipated. Further, the reactors could be expected to operate indefinitely. Bear in mind that these reactors have been upgraded continuously throughout their operation (not just in the last few years). SRS should continue such upgrades and replacements of components as new analyses and ideas point to significant improvements in operational safety.

All safety questions are resolved by use of the small core. When the SRS reactors were shutdown in 1987 because of questions about the capability of the emergency core cooling systems, studies showed that a small core would resolve all such questions. At that time the small core was not pursued because of DOE's insistence on full production. However, the need for tritium has obviously decreased significantly now, and the small core could provide the needed amounts.

NOTE:

This is not about jobs to be lost or gained. This is not about ideology. This is about reliable technology. If tritium production is important to national security, then the low-temperature heavy-water reactor technology is the only proven way. Further, it seems reasonable to ask that major expenditures for unproved technologies be deferred until adequate research and development have been completed.

For example, the commercial reactor option should be tested thoroughly by irradiating as many as 1000 full length targets in an existing commercial LWR to verify that the target can produce the predicted and desired amounts of tritium, that the tritium can safely be retained within the target during extended irradiation, and that the tritium can be extracted reliably and safely following removal of the targets from the reactor. Similar testing should also be demanded for the accelerator option.

The decision of restarting K reactor to make tritium depends on when you need that product. But the relationship is not simple. Clearly, if new tritium is needed next year, startup of K is the only facility that will meet that need. If new tritium is not needed for 50 years, then it would be best to wait to construct a new reactor. Between those times, inflation and regulations combine to make the analysis a bit fuzzy. But is clear that for the next 8 years or so, until the new target technology required for any proposal is developed and proven, that K reactor should be recognized as the method of choice to produce tritium.

Very truly yours,

John P. Church

John P. Church, Ph.D., P.E.

TSR–NM–010
COMMENT LETTER

PAGE 1 OF 1

August 30, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Re: Comments Re: Draft PEIS Tritium Supply And Recycling

Dear Mr. Sohinki:

Thank you for the opportunity to comment on the draft of the Department Of Energy Programmatic Environmental Impact Statement. Though I applaud your efforts to find low cost options for producing tritium, I question the need for any further supply of this toxic substance. In this era of budget cutbacks and government austerity, the best option would be to abandon this project entirely.

1/20.01 Therefore, consider this letter as my suggestion that the Department Of Energy not go forward with its search for an additional supply of tritium. Instead, I support the current move in Congress to shut down the Department Of Energy due to its egregious history of harming innocent Americans, by unnecessarily exposing unaware citizens to deadly radiation.

Thank you for the opportunity to comment.

Very truly yours,

MARK C. HAFER, ESQ.

MCH/ljb

TSR–NM–011
COMMENT LETTER

PAGE 1 OF 1

1705 Alpine Dr.
Aiken, S.C. 29803
(803)-648-3515

August 28, 1995

Stephen Sohinki, Director
Office of Reconfiguration
U.S. Department od Energy
P.O. Box 3417
Alexandria, Va. 22302

TRITIUM SUPPLY AND RECYCLING PEIS

1/18.15 The need for tritium has dropped sharply over the past five years, and that trend is almost certain to continue. In the world as we see it for the next 30 to 50 years, our 6000+ nuclear warheads will provide no greater security for the USA than would 1000. Can anyone visualize a situation where we should ever launch even 1000 nuclear warheads, without there being a USSR? Limiting our arsenal to 1000 warheads would stretch our tritium supply at least out to the year 2040.

2/19.01 In the face of this probable further decline in tritium requirements, it would be most prudent to not commit the multi-billions needed for a new tritium production facility, be it a new reactor or a linear accelerator. Contracting with the operator of an existing commercial reactor for neutron flux for tritium-producing targets, to be processed in existing facilities (as at SRS), would put the minimum money at risk, and should save of the order of $100 Billion over the next 40-50 years.

3/13.00.55 The only problem with this alternative is one you know of, that of mixing production of nuclear materials for defense with production of electric power for sale. But those who have been pushing the "triple-play" reactor for SRS apparently see no problem with that.

So I say, go with the idea of using an existing nuclear power reactor for the neutron flux. Very little money would need to be committed for 10-15 years, even if there were no further reduction in nuclear warheads by then.

Victor J. Reilly

08/18/95 09:54 ☎2025867280 DP-40 ☑011

EGAN & ASSOCIATES, P. C.
Counselors at Law

MEMORANDUM

TO: George A. Davis

FROM: Joseph R. Egan

DATE: September 11, 1995

SUBJECT: Input for Supplemental Comments to DOE on Tritium EIS

I. Analysis of DOE's Proposed Existing Reactor Option

DOE makes the almost casual assumption that, due to issues such as stranded investment and the relatively high production costs of some nuclear plants, it will readily find a willing seller of a nuclear plant that the U.S. Government can simply buy. For a variety of reasons, this assumption is likely to be incorrect.

First, unless fully depreciated (in which case the plant may be too old to buy), any privately-owned nuclear plant, regardless of how well it is running, is earning both a return of and a return on the original investment. That original investment is likely in the $4.5 to $8 billion range or more. Thus, even if the plant's O&M costs do not compare favorably with alternatives, utility owners are still reaping very substantial earnings from these plants, which is why the plants are not being shut down even if their production costs exceed, in some cases, 50 or even 70 cents per kilowatt-hour, according to a recent compilation by Nucleonics Week.

Getting these plants into utility rate base in the first place was in all cases a Herculean job, involving years of litigation, multiple contestants, occasionally state statutory relief, refinancings, multiple bond issues, and sale-leasebacks. Utilities spent, on average, $30 to $100 million in legal fees per plant to get these units into the rate base. Yet, according to surveys by the Edison Electric Institute, over $100 billion of investment was disallowed nationwide by state utility commissions in the process, involving historic write-offs, conversions to coal (e.g. Zimmer), multi-billion dollar settlements (e.g. Nine Mile Point 2), and even bankruptcies (e.g. New Hampshire Public Service and El Paso Electric).

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EGAN & ASSOCIATES, P. C.
Counselors at Law

With the proper investigation, DOE will find that, at this point, most utilities regard the undoing of their multi-billion-dollar rate base achievements to be as threatening as was the original doing. For some nuclear utilities, the removal of a plant from rate base at cost would immediately render one or more of the owning utilities insolvent, precipitating a bankruptcy. This is why, despite stranded investment issues and high production costs, plants are not being shut down across the nation. Simply an attempt to do so can spawn threats of new litigation by bondholders, co-owners, purchasers of giant blocks of power under long-term contracts, and shareholders in derivative lawsuits. This is also why most of the late-vintage nuclear plants in this country were not canceled despite dramatic escalations in their original construction cost estimates.

A recent example is illustrative. Approximately a year ago, the City of Austin, Texas offered in the Wall Street Journal to sell or give away its 16-percent share of the South Texas Nuclear Project, which over the preceding two years had operated at a production cost of over 70 cents/kilowatt-hour. The City received only one bid, which asked that the City pay the bidder $120 million to take its interest. Yet, the majority owners of this project, operated by Houston Lighting and Power, do not close the plant because bondholders and utility shareholders continue to reap sizeable earnings from the $7 billion plant in their rate base, notwithstanding extraordinary production costs.

1/22.02 Thus, DOE's assumption of the costs of executing an option to buy a nuclear plant may, in the real world, be wildly understated. Unless it is being purchased from the government (e.g. TVA, and this would create new problems), a nuclear plant may not be bought at a price anywhere near what, in FERC parlance, would be considered a "market" price. Even assuming such a sale could be legally effectuated, DOE would likely have to pay numerous and substantial premiums to compensate vested interests in the plant.

Second, legally effectuating any such sale is likely to be far more complex than DOE appears to imagine, and could involve negotiations with dozens of parties, many with highly disparate interests, instead of simply the plant operator. Such negotiations could by necessity include multiple owners (some, such as municipalities, which financed their interests only with bonds, or co-ops, which financed purchases with low-interest REA government loans), cities and counties (some which receive extraordinary tax revenues from the plant), multiple intervenor groups (some which may believe that the Government will do a worse job of owning or operating the plant), owners of long-term purchase power contracts (which may have the right to block the deal or demand that DOE pay high termination fees), bondholders (who, at a minimum, will demand that DOE make them whole based not on a market price for the plant, but on a market price for their bonds), Boards of Directors, and shareholder groups.

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EGAN & ASSOCIATES, P. C.
Counselors at Law

1/22.02 continued

In every state in the U.S., sale or transfer of major utility assets requires the approval of a state utility commission, which would involve an undoubtedly long and protracted rate litigation proceeding, the results of which would very likely be appealed. Both Federal and State environmental laws would enter into play. This could affect the timing of DOE's implementation of its proposed option.

Third, all the above considerations would exist if DOE were simply purchasing a nuclear plant and doing nothing more controversial with it than operating it or shutting it down. DOE's proposal to produce tritium in such a plant would vastly complicate the above considerations, and this very fact could create a large disincentive for the owners of a nuclear plant even to publicly contemplate sale of the plant to DOE.

Tritium production in an existing plant will require not simply a license transfer, but a relicensing by NRC. Industry efforts to foster license renewal for Yankee Atomic and Monticello proved unavailing for many of the same complex technical reasons that would enter into play in relicensing an existing plant for tritium production. For example, if DOE desired the term of the license to exceed the original term, the relicensing would also be a license renewal. (If not, the original license term may be insufficiently short for DOE.) This expands the arena of litigation into a second, federal forum, with further parties and authorities to be considered, and further appeal possibilities.

Now, moreover, DOE's proposal does not simply intermingle military and civilian uses of nuclear power, but does so in the middle of a utility's historic civilian jurisdiction. Many of the same parties who would not have been opposed to simply a sale of the asset to DOE, such as some environmental groups, might now find themselves in the opponents' camp, as they battle to prevent their disfavored nuclear plant from becoming a weapons production center. Likewise, given DOE's history in managing its other federal nuclear facilities, some who might have supported the shutdown of the plant or its sale to another utility may find themselves opposed to the conversion of a component of their utility's service territory into, effectively, a federal military reservation. This latter group could include tax or real estate groups, environmental groups, political parties, or local citizens groups.

DOE's proposed sub-option simply to lease the plant, have it converted for tritium production, and manage its operation, is laden with many of the same issues, with the exception that the owning utilities lose none of the liabilities (e.g. decommissioning, insurance, etc.) that they would lose if the plant were actually transferred to DOE. This would have the effect of "maximizing the damage" to the leasing utilities and would likely not be seriously contemplated.

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09/18/98 08:58 ☎2025587260 DP-40 ⧉014

EGAN & ASSOCIATES, P. C.
Counselors at Law

In short, DOE's proposed option to purchase or lease an existing nuclear plant and convert it to tritium production — as well as the supposed costs of such an option — are grossly lacking in due diligence and are not credible. Any further analysis of such an option should, at a minimum, include the following:

1/22.02 continued

1. Whether any utilities are actually interested in and capable of implementing such a scheme, and what contingencies would be attached by such utilities and by the numerous vested interests in the plant. This should include both general hypothetical discussions with the Nuclear Energy Institute, as well as individual discussions with operating utilities, co-owning utilities, Moodys and Standard & Poors, the historic rate parties that would be involved in any associated state utility proceeding, and local citizens and environmental groups and county officials.

2. Costs, time required, and the technical and legal feasibility of relicensing an existing nuclear plant for tritium production. This should include discussions with the Nuclear Energy Institute and the NRC.

3. Costs, time required, and the legal feasibility of transferring the asset from the utility's (or utilities') rate base(es) to the federal government.

4. NRC regulatory implications of such a relicensing, (e.g. who will pay the considerable NRC fees?).

5. State public utility commission implications of such an option. At a minimum, this ought to include discussions with the National Association of Regulatory Utility Commissioners, and surveys of individual commissions, particularly if certain plants (e.g. Vogtle) are actually being suggested by DOE as possible candidates.

6. An assessment of how the plant's operating history may affect DOE's ability to implement tritium production. For example, if (as is likely) only the worst-operated plants are offered to DOE, how does this affect DOE's assumption of production costs? What assumptions is DOE making as to its ability to do better than the previous owners in operating the facility?

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EGAN & ASSOCIATES, P. C.
Counselors at Law

II. Comparison of the Existing Reactor Option with the Triple Mission Option

For the same reasons that the existing reactor option is fatally flawed, the proposed triple-mission reactor option, which DOE has not adequately considered, offers numerous advantages.

2/13.00.05 First, the plant would be originally licensed to produce tritium. In our view, this task is easier from a regulatory standpoint than the conversion of an existing reactor would be. Issues such as age-related degradation, license terms, and retrofitting would not enter into the picture.

Second, as proposed, the project would not have to scale the immensely high hurdle posed by rate base issues in the states. It would be licensed under FERC jurisdiction, and would require state PUC approval only for its purchase power agreements. Nor would the project have to worry about litigation from bondholders, shareholders, state and local taxing authorities, and power purchasers.

Third, there are far less uncertainties in the cost projections for the triple-mission project, given the far less number of parties with which to negotiate, the fewer legal authorities with which to deal, and the likelihood that the consortium could offer a fixed-price proposal.

Fourth, if DOE is prepared to cross the enormous ideological threshold that would result from the production of weapons material in a civilian reactor once operated by a civilian utility in the middle of a civilian service territory, it should be prepared to face the less onerous ideological threshold of permitting private power sales from a privately-financed reactor operating on what has always been a federal/military reservation, particularly if that reactor also consumes excess weapons plutonium.

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COMMENT LETTER PAGE 1 OF 3

09/18/95 08:50 202 586 7260 DP-40 003

GE Nuclear Energy

General Electric Company
175 Curtner Avenue, San Jose, CA 95125

XL-P2A37-95049 September 14, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P. O. Box 3417
Alexandria, VA 22302

Subject: Comments on the Tritium Supply and Recycling Programmatic Environmental Impact Statement

The purpose of this letter is to provide additional comments on the subject document as requested in the August 25, 1995 Federal Register. These comments are provided in two sections, 1) Triple purpose reactor option drawbacks, and 2) Use of commercial reactors.

Triple Purpose Reactor Option Drawbacks

In the comments provided for the draft PEIS for Tritium Supply on May 15, 1995, we indicated that while it would seem efficient to combine tritium production with plutonium disposition activities, the additional complexity of combining the objectives and activities would most certainly result in significant operational tradeoffs. These tradeoffs would compromise the efficiency of all elements of the mission objectives (tritium production, plutonium disposition, and electric production).

1/13.00.55 A consideration discussed in the earlier comments was the anticipated need for IAEA inspections in a reactor facility where some of the operations (tritium production) are classified, while others (Pu disposition) would need to be unclassified and subject to inspection. This is only one obvious conflict. The expected efficiencies of combining the missions will easily be nullified by conflicts, delays, and compromises due to the additional complexity caused by combining the multiple objectives and the incompatible or cross purposes activities needed to carry them out. The following are other elements that would add complexity, costs, delays, and compromises to a triple purpose mission reactor project.

(1) Modification of plant licenses and technical specifications for both MOX fueled operations and tritium production.
(2) Fresh MOX fuel storage facility (assumes Urania and MOX spent fuel can be treated equivalently) as well as new and irradiated target storage and handling facilities for tritium in a single facility
(3) Fuel rod, bundle, and core design; fuel qualification; and fuel licensing
(4) Handling of both MOX fuel bundles and irradiated tritium targets during refueling

The combination of these activities needed for Pu fueled operations and tritium production in the same electric production facility are certain to extend the project duration and delay the onset of either operational objective, raise project costs, and compromise the production levels of each objective during the operational phase.

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1/13.00.55 continued

The upfront development costs and processes are more complex and protracted, and will therefore most certainly delay the realization of the combined triple purpose mission and compromise it's effectiveness. The licensing process for both DOE missions will need individual focus to be successful in a reasonable time period and to avoid the bureaucratic and technical obstacles that combining those objectives and technical requirements would produce. The core design and fuel cycle tradeoffs associated with combining the three missions while technically achievable, must result in one or more of those missions being significantly constrained. Added operational complexity will further constrain the effectiveness of all three missions.

Taken alone, the licensing process and technical issues for tritium production in an existing uranium fueled, commercial electric production reactor system are straight forward and manageable in a reasonable time frame. In a similar fashion, the plant and fuel licensing issues for the MOX fuel for Pu disposition in a commercial LWR are within the capabilities of existing commercial technology. The challenges to the licensing of MOX fuel for Pu disposition are institutional, but again are manageable if addressed by a specific dedicated program. It is our conclusion that the DOE's current approach of separate missions is a more straightforward one with separate clear success paths for both missions.

Use Of Commercial Reactors

2/23.01

The purchase of irradiation services for Tritium production from a utility with an existing reactor makes sense from an available infrastructure and economical standpoint. It should be unnecessary to construct new facilities just so they could have a "Government" title where facilities already exist which could perform the mission but currently carry a "commercial" title. Even the purchase of an existing reactor would have merit if the useful life of the plant will support the mission objectives. We also expect that the licenses for existing reactors can be extended to address the DOE tritium production needs for the next several decades. The consideration for new construction should be based on technical need, capacity requirements, logistics, project timing, and economic advantage; and not on "Policy" or "Titles."

3/22.02

A dedicated program for tritium production in one single or dual unit existing commercial reactor would make a reliable facility immediately available to the program. The program would then be more certain to achieve its goals within a limited time frame. Likewise, a dedicated Pu disposition program using a small number of compatible commercial reactors would be a more direct approach for accomplishing the mission goals by eliminating the need for additional and more complex core design and licensing of coincident tritium production.

If there are any questions, please contact me at (408) 925-1714 or FAX (408) 925-2439.

Edward Ehrlich

Edward Ehrlich
Project Manager
GE ALWR Pu Disposition Project

09/18/95 09:51 ☎2025867260 DP-40 ☎003

XL-P2A37-95049 September 14, 1995

cc: Steve Stack - DOE Weapons Complex Reconfiguration Office

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COMMENT LETTER

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09/18/95 09:52 ☎2025867280 DP-40 ☑007

ABB

September 15, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki:

ABB Combustion Engineering has reviewed the August 25 Federal Register Notice, concerning the Tritium Supply & Recycling PEIS. Our comments are provided in the following attachment. In addition, we are also including comments prepared by Egan & Associates, a law firm that is part of our System 80+ Team for our Multipurpose Reactor initiative.

1/22.04 We are particularly concerned that DOE has made an eleventh hour decision to add an option for tritium production without justifying why the decision could not have been made in time for adequate public comment. As recently as July 27, the Secretary was quoted in the South Carolina press as voicing her opposition to the concept of a privatized multipurpose reactor on the basis that she was concerned about the "blending of missions - that is, the commercial production of electricity and the military production of tritium". Then, less than a month later, DOE announces that it is dropping those concerns, so that it can consider the existing reactor option. DOE had sufficient information to make this decision a year ago. While we do not disagree with the outcome, we are deeply concerned that DOE has needlessly waited until the last possible moment to announce a change in its position, effectively blocking any opportunity for meaningful public input. We, therefore, request that DOE release information relevant to the technology evaluations and provide a reasonable public comment period prior to the Record Of Decision.

Please feel free to call me (203-285-5207) if you wish to discuss these comments or require any clarification.

Sincerely,

George A. Davis
Project Manager
System 80+ Deployment, U.S.

ABB Combustion Engineering Nuclear Systems

1000 Prospect Hill Road
PO Box 500

Telephone (203) 688-1911
Fax (203) 285-3512

TSR–NM–014
COMMENT LETTER

PAGE 2 OF 4

09/18/95 09:52 ☎2025867280 DP-40 ☑008

ABB Combustion Engineering Comments on August 25, 1995 Federal Register Notice Concerning Tritium PEIS

2/22.02 **1. DOE's assessment that potential "policy objections" should not prevent the production of tritium in a commercial reactor is the proper decision.** As was noted in Section 4.10.2 of the Draft PEIS, DOE had already found that "no statutory, regulatory, or treaty requirements have been found that would prohibit the use of commercial nuclear power plants to produce tritium for use in U.S. defense programs". Previously stated concerns about mixing weapons productions and peaceful uses of nuclear energy were never founded on the basis of factual information. In reality, the restrictions on producing weapons materials in commercial reactors has always been limited to the issue of production of Special Nuclear Materials in commercial nuclear plants. Special Nuclear Materials (e.g., plutonium and high enriched uranium) are materials considered to be a proliferation threat and are specifically identified. Tritium does not fall into this category, since it is not useful for weapons purposes unless the terrorist or host nation already has a plutonium or HEU bomb. Furthermore, if tritium were to be declared a Special Nuclear Material, there would be no point in pursuing the fusion reactor program.

2. DOE has not provided justification for a last minute change, to allow existing reactors to be included in the final PEIS. The Draft PEIS's nebulous reference to concerns about the "policy issues" related to production of tritium in a commercial reactor were never explained or justified. The Federal Register Notice does not provide any explanation as to why or how the previous concerns have suddenly disappeared. Although we agree with the conclusion, the resulting decision to add existing reactors as a reasonable alternative, at the very last moment, seems suspicious. At the least, it creates the appearance that DOE may have waited until the very last moment and, then, provide only a very limited public comment period, as a means to limit public input to the NEPA process.

3/22.04 **3. Section 4.10 of the Draft PEIS does not provide an adequate basis for public input to the NEPA process.** As acknowledged in the Federal Register Notice, the Draft PEIS does not provide "a detailed study" of the existing reactor option, because it had been eliminated as a reasonable alternative. As will be explained in some of the following comments, the information in the Draft PEIS is not adequate for obtaining public input.

4. DOE should provide an opportunity for public comments on the Final PEIS, prior to issuing the Record Of Decision. Based upon Comments 2 & 3, DOE should provide an opportunity for public comments on its Final PEIS. Such a comment period is especially important if DOE should decide to include the existing reactor option as a preferred alternative in its final Record Of Decision.

2/22.02 continued **5. Now that the potential "policy objections" (concerning tritium production in a commercial reactor) have been cleared away, DOE should include the privatized multipurpose reactor as a reasonable alternative.** DOE has repeatedly refused to consider the proposed Program Plan, submitted by ABB-CE and seven other companies, for a privatized multipurpose reactor – primarily on the basis that DOE was concerned about the policy implications of producing tritium in a commercial reactor. This view was espoused by the

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Secretary in press reports as recently as July 27, 1995 – less than one month before the Federal Register Notice was issued. DOE's Implementation Plan for the Tritium PEIS states that 19 commenters recommended that the multipurpose reactor should be included as an option. Meanwhile, we were only able to find two commenters recommending that existing reactors be added. We are also aware that there were many expressions of strong support for the multipurpose reactor at the DOE Public Workshop near Savannah River Site last Spring. It would seem a mockery of the NEPA process for DOE to modify its plans to include the existing reactor option, while continuing to disregard the multipurpose reactor option. In fact, when one considers the interest in the multipurpose reactor expressed by the public and by members of Congress, it would seem difficult for DOE to claim that it has considered all reasonable alternatives under the NEPA process, without a full and fair assessment of the multipurpose reactor option.

2/22.02 continued

6. **DOE should immediately release to the public the documents that evaluate the economic, schedule, and technical maturity of each technology under consideration.** DOE had originally said that it would release these documents when the draft PEIS was released last March. DOE did not do so, however, based upon the assertion that an outside consultant had been hired to evaluate the previous work by DOE and its contractors. DOE said in the Public Workshops that it planned to release these documents as soon as possible – but, no later than the issuance of the Final PEIS. DOE's previous assertions that public release of these documents is not required under the NEPA regulations does little to assuage concerns that DOE is limiting the opportunity for public input to the NEPA process – by following the letter of the law, rather than the spirit of it. This is particularly true if the press accounts are correct in their assertions that DOE has added the existing reactor option at the last possible moment because of the outside consultant's economic study, rather than the public input that is claimed in the Federal Register Notice.

7. **If DOE should select the existing reactor option as a preferred alternative, then it should also include the large, evolutionary Light Water Reactor option, as well.** The difference between the existing reactor option and a new evolutionary ALWR option is like a used car versus a new car. The differences between the two options are purely economic. Private industry almost always decides that it is more economic to purchase new cars for business purposes, with very few exceptions (one being the car rental company Rent-A-Wreck).

There would seem to be tremendous economic uncertainties in attempting to purchase a used reactor or in purchasing services from one. What is the remaining useful life of the plant? Can its NRC license be extended? What financial incentives will the utility require for providing irradiation services? How will the local public respond? If DOE purchases the plant, how will the ratepayers, stockholders, financiers, public utility commissions, and intervenor groups respond? If the plant is not economically competitive with alternative electricity sources in its region, will DOE have to subsidize the electricity sold? If the plant is competitive now, but becomes uncompetitive later, will DOE have to the step in with a subsidy, so that it does not lose its tritium source? What plant modifications, increased security, and target transportation issues will surface? If purchased by DOE, will the plant have to be modified to meet DOE safety standards?

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Meanwhile, a new plant on a government reservation would simplify many of these issues. With offers to privately fund such a project (such as the one proposed by ABB-CE's team), DOE would still have the option to either purchase the reactor or to simply purchase the services from it. Siting the reactor on a government site would greatly improve the ability to provide adequate security, the ability to license the facility, and the ability to gain public acceptance. It would also assure the maximum government control over the facility. Most importantly, a new plant will allow the use of the most modern and efficient technology, as well as the technology best suited for the tritium mission. As noted by the National Academy of Sciences in its two reports on plutonium disposition, the most viable new reactor technology that should be considered as an alternate to existing reactors is the large, evolutionary ALWR.

The attached comments from Egan & Associates provide a more detailed description of the potential pitfalls that might result from a government take-over of an existing reactor.

We do not find it credible that DOE could have sufficient information available to make an informed decision to select a "used plant" option, while discontinuing consideration of a "new plant" option. Therefore, any plan to further consider existing plants should also include a new evolutionary ALWR on a government site, as well.

2/22.02 continued

8. **Section 4.10 of the draft PEIS is incorrect in assuming that the environmental impact of tritium production in an existing reactor is limited to the tritium activities only.** The draft PEIS appears to assume that the existing reactor would be operating anyway and that the only added environmental impact would result from the activities related to the tritium mission (e.g., the handling of targets and the generation of additional spent fuel). In reality, however, DOE's take-over of the reactor (or its annual payments for irradiation services) will likely result in the continued operation of the reactor beyond the time that it would have been decommissioned if its only mission were electricity generation. This is especially true since any existing reactor will be half way through its design life before the tritium mission even begins.

Will DOE be able to prove that the existing reactor that it selects for this mission would not have otherwise shut down prior to its 40 year design life (e.g., for economic reasons)? Or that the design life of the reactor will not be extended because of the tritium mission? If not, then DOE should assume that the environmental impact of the existing reactor option will include the operation of the entire facility – not just the tritium mission.

9. **A full assessment of the existing reactor option should be added to the PEIS.** All sections and tables of the PEIS, including accident analyses, should be modified to include the bounding case for an existing reactor facility. The additional information should also include environmental impacts of the additional transportation and security requirements related to carrying out the mission at a nongovernment site.

10. **The parameters in Section 4.10 of the draft PEIS are not adequate to bound all potential existing reactors in the U.S.** For example, the draft PEIS provides information based upon a 1200 Mwe plant. Some of the existing reactors most likely to be selected for this mission are above this power level.

TSR–NM–015
Comment Letter

Comments on
Tritium Supply and Recycling
Programmatic Environmental Impact Statement

Submitted by Kathy Helms
1515 Ferguson Ave.
Nashville, Tenn. 37212
(615) 383-5368
Sept. 15, 1995

Thanks for the opportunity to comment on the PEIS.

1/22.02 Would not use of a commercial nuclear reactor for tritium production be considered a violation of the Nuclear Nonproliferation Treaty (Article VI which requires nations with nuclear weapons to achieve nuclear disarmament)?

2/23.01 At the Department of Energy-conducted Stockpile Stewardship and Management Program session I attended in Oak Ridge, we were told the nuclear weapons stockpile was to be reduced to 3,500 "accountable" weapons by the year 2003. If the United States is supposed to be reducing its nuclear weapons' stockpile, building a new facility to produce tritium, or leasing irradiation services from a public utility is contradictory to those goals. Breaking the line between defense and civilian nuclear programs also could have an impact on U.S. credibility with other nations.

3/11.02.01 By DOE's own estimates, an "earthquake and release of of tritium at an extraction facility could cause an estimated 0.012 cancer fatalities in the population within 50 miles and an increased likelihood of cancer fatality of 2.3×10^{-7} to an individual located at the site boundary during the accident. The risk to the population, that takes the probability of an accident into account, is on the order of 1.2×10^{-8} cancer fatalities per year."

At a tritium recycling facility, "0.041 cancer fatalities within 50 miles and increased cancer fatalities of 8.0×10^{-7}" are projected. Cancer fatalities per year as the result of an accident are projected at 4.1×10^{-8}.

Sen. Strom Thurmond and Rep. Floyd Spence favor building a new reactor at Savannah River to offset economic loss for cutbacks at that facility or the use of a reactor at Vogtle plant in Augusta, Ga. I doubt whether they checked with the population to see who, within 50 miles of those facilities, considers himself expendable from cancer should there be an accidental release of tritium.

4/20.01 Recovering tritium from dismantled warheads seems to be a viable solution. If there is only a 16-year supply, then the United States should negotiate with Russia deeper cuts in our nuclear arsenal and dismantle more warheads.

5/07.01 In regard to siting a facility in Idaho, or anywhere else that might disturb Native American resources: This is an outrage. Creating national intrusions on Native American sites is not to be tolerated. Instead, why not locate it inside a First Baptist Church or Temple Beth Israel at Savannah River — it's the same difference.

If DOE is going to show disrespect for human life, don't do it by lobbying Congress for cuts in benefits to Native Americans and then dangling a monetary carrot in front of desperately poor Native Americans. And please, do not site this in a rural area of minority population, as is common practice.

This is totally unacceptable!

Kathy L. Helms

TSR–NM–016
Comment Letter

139 Candler Oaks Lane
Decatur, Georgia 30030
August 28, 1995

Secretary Hazel O'Leary
Department of Energy
Washington, D.C.

Dear Secretary O'Leary:

1/22.02 I am writing to express my opposition to using Plant Vogtle, or any commercial nuclear power plant, to produce tritium for nuclear bombs.

Proliferation of nuclear weapons is a major threat to international security. Use of commercial reactors to produce bombs will exacerbate proliferation problems.

2/13.09.04 Nuclear weapons production at the Savannah River Site has had a devastating environmental impact on the land and water around Aiken, South Carolina. Likewise, nuclear weapons production at commercial plants would increase nuclear contamination around those sites.

3/18.01 In this time of the Nuclear Non-Proliferation Treaty and START II, is it appropriate to continue producing tritium to boost to destructive power of our nuclear arsenal? Isn't it time now to move away from nuclear weapons production?

Sincerely,

Bobbie Wrenn Banks

Bobbie Wrenn Banks
Atlanta Women's Action for New Directions

TSR-NM-017
COMMENT LETTER PAGE 1 OF 1

September 1, 1995

Stephen M Solinski

Dear Sir:

In response to your letter of August 21, 1995 concerning the choice or choices of tritium re-actors, my stance is the same as my last reaction to you:

1/18.01 With Albert Einstein who said, "the splitting of the atom has changed everything save our mode of thinking and thus we drift toward unparalleled catastrophe." In my opinion we owe our allegiance not to any nation or leader but to life itself. Science without wisdom can be dangerous and even jeopardize the entire human species. Therefore, for me, the use and threat to use nuclear weapons is illegal.

Sincerely yours,
Mary Mc Nellis S.L.
2546 Cherry St.
Kansas City, Mo 64108

TSR-NM-018
COMMENT LETTER PAGE 1 OF 1

George Baggett
820 W. 35th St.
Kansas City, Missouri 64111
(816) 931-9578

September 15, 1995

Stephen M. Sohinki
Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

RE: Tritium Supply

1/13.09.04 I am please to note that DOE is reviewing it's options regarding tritium supply. I have been unimpressed by the out-of-hand dismissal of the option to purchase tritium from foreign countries, including Canada, Germany, and France. I have also been concerned about any future use of the tritium reactor at the Savannah River Site or development of any such reactor as part of reconfigured DOE.

2/13.00.20 First of all, I question the long term needs of tritium, in order to maintain military superiority. The idea of deterrence by use of an arsenal of tritium triggered devices seems flawed. In my opinion, non-tritium devices would suffice as a deterrence force, and eliminate the tritium requirement.

3/18.01 I also believe that future requirements will also be affected by weapons reduction treaties, efficiency of recycling efforts, and an ability to purchase tritium from producing countries when made available. Aggressive efforts along these lines will likely stretch the estimated 12.5 year supply to 15 or 20 years or more.

4/22.02 As for the option of utilizing an existing commercial reactor for securing tritium needs, it seems likely that there will be many facilities bidding on such a program. Not only will this option be cost efficient, but if DOE develops storage for nuclear waste generated by commercially owned facilities, payment for tritium could be a trade for waste management services. If such an arrangement is made, it will result in lowest-cost tritium purchase option.

5/22.01 In conclusion, my opinion is that tritium required by DOE should be procured by an integrated approach. DOE should continue it's effort to recycle current and foreign supplies as they become available, develop small scale or intermittent production in cooperation with existing commercial reactors modified to recover tritium, and develop a purchasing group to aggressively pursue opportune purchases of tritium from foreign governments. Such an approach will ultimately result in a low cost tritium supply, while meeting the tritium needs far into the future.

6/18.01 Finally, I am very much opposed to any development of a tritium reactor by the DOE. Not only would such a development be a high cost option, but the required infrastructure would not be something easily managed or terminated.

Sincerely,

George Baggett

TSR–NM–019
COMMENT LETTER

PAGE 1 OF 1

September 10, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
US Department of Energy
PO Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki,

1/22.04 Thank you for extending the period for public comment on the proposal to resume tritium production, using a commercial nuclear reactor I would like to focus on the nonproliferation aspects of this proposal.

First, US nonproliferation objectives are of paramount importance to our national security and are far more critical than incremental changes in the US nuclear stockpile. The US would be far more secure if we had 5000 nuclear warheads and Iraq had none than if we had 7000 and Iraq had 200.

Also, nuclear proliferation represents one of the most dangerous possible environmental impacts of resuming tritium production. A nuclear war between Iraq and Iran, or between Pakistan and India, would involve numerous airburst or surface-burst nuclear explosions which would produce significant amounts of radioactive fallout, affecting the health of everyone on Earth. Even if the weapons produced by the currently non-nuclear states were never used, their production process results in large-scale and very difficult environmental problems of nuclear waste disposal, as you at DOE should be well aware of by now.

2/18.01 Most important of all, I believe that resuming tritium production will have a very strong adverse effect on US nonproliferation objectives, especially in the context of resumed nuclear testing by France and China. Although the signatories to the Nuclear Non-Proliferation Treaty recently voted to extend that treaty indefinitely, they took that decision only after voicing bitter complaints about the cavalier behavior of the nuclear states. We must remember that the NPT does not sanction the permanent division of the world's nations into nuclear and non-nuclear states, and that the non-nuclear signatories have never agreed to accept permanent status as second-class citizens. Rather, the nuclear signatories promised to disarm. By continuing to test nuclear weapons and produce weapons materials -- activities which are soothingly described as "maintaining our existing stockpiles" but which also conveniently keep the nuclear weapons production complex well-oiled and ready to generate new and improved "third-generation" weapons -- the nuclear states flout their contempt for our own obligations under the NPT. How can we be outraged at some small country for producing nuclear materials, while we continue to produce them ourselves?

3/13.00.20 Finally, I would like to question the proposition that tritium is essential to national security. It is true that tritium is an essential component of our existing weapons, but that's because you built them with tritium. If tritium were not available, you could still produce practically unlimited numbers of fission weapons from your vast plutonium stockpiles. Fission bombs worked in the 1940's and should still work fine today. The higher levels of technological elegance which characterize tritium bombs are not worth the expense of resuming tritium production, to say nothing of the proliferation danger.

In conclusion, we will all be a lot safer if DOE applies its admirable technological skills to cleaning up the mess you have made by producing all the nuclear weapons of the past. Thank you very much for the opportunity to express my views on this important matter.

Sidney S Sloan
Brenda K Sloan

TSR–NM–020
COMMENT LETTER

PAGE 1 OF 1

9708 Blazing Star Ct.
Las Vegas, NV 89117
September 8, 1995

Mr. Stephen M. Sohinki
Director, Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Subject: Tritium Supply and Recycle PEIS (60 FR 44327)

Dear Sir:

A) DOE should further address costs and benefits of phasing out the use of tritium (Tr) in our weapons.

B) If continuing Tr use, Tr should be manufactured in the cheapest possible way, by using existing utility reactors.

Tritium Phaseout

1/13.00.20 The first sentence of the published notice is incorrect. Tritium is not a necessary component of our arsenal. It is an enhancement agent, increasing the explosive yield of the weapon. The use of Tr could be phased out and the current weapons could be slowly replaced with other designs that do not use Tr or make it during the blast. The effect would be a less efficient weapon (smaller blast/lb. of weapon). Tr is required for very large weapons but with emphases on accurate delivery, it is not required today. I don't think we even have large weapons (megaton yields) in our arsenal today. The cost of making the material (Billions $/yr) can not be justified today when you consider that nuclear deterrence still exists, even with bombs of smaller yields.

Utility Irradiation

2/22.02 If Tr is considered essential, DOE should consider the cheapest way to manufacture the material. They should consider the use of Lithium instead of boron as shims, control rods, or vessel neutron shields in existing utility reactors. These should be removed at the scheduled refueling interval (usually 18 month fuel cycles) and not at a frequency optimized for Tr production. This is cheaper than building, staffing, maintaining and decommissioning a separate facility at a government laboratory. A look at the current costs of operating Savannah River Plant (during a time when no material is being manufactured at all) is proof of the escalating cost of operating a government facility. The moral argument about material manufacturing in civilian reactors is minor compared to the moral disaster of saddling our children with a large national debt.

Thank you for the opportunity to comment; I look forward to hearing a response.

Sincerely,

Eric R. Siegmann

Eric R. Siegmann

TSR–NM–021
COMMENT LETTER
PAGE 1 OF 1

George Keosian
1 Isle of Pines Road
Hilton Head Island, S. C. 29928

September 12, 1995

Mr. Stephen M. Sohinki. Director
Officeof Reconfiguration
U. S. Department of Energy
P. O. Box 3417
Alexandria, Va. 22302

Dear Mr. Sohinki:

CASE AGAINST TRITIUM. WHY MORE TRITIUM?

The Hydrogen Bomb triggered by tritium has never been used as a deterrent. Actually, since the A Bombing of Hiroshima and Nagasaki no atomic bombs have been used in major warfares since WWII.

1/18.01 The terrifying devastation left by the A Bomb convinced the civilized world that nuclear armament should be obliterated and outlawed.

We have endured and survived three major military confrontations without using nuclear bombs; the Korean War, the Vietnam War, and the Gulf War. This is almost conclusive evidence that the civilized world would not use Atomic Bombing. It remains for the civilized countries and the U. N. to monitor and prevent the proliferation of nuclear armament by the "crazies", i.e.Libya, Iran, Iraq, N. Korea, etc.

2/13.09.04 In conclusion, I would propose that the U. S. stop all production and storage of tritium in the future, especially, as it applies to the S. R. S. Already, we have had too many occasions when tritium has accidently escaped into the S. R. which is the source of drinking water for many communities.

Respectfully,

George Keosian
George Keosian

g/s

TSR–NM–022
COMMENT LETTER
PAGE 1 OF 2

PSR

PHYSICIANS FOR SOCIAL RESPONSIBILITY

Comments on the "Re-opened" Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling

Tracy Ann McCaffery, Senior Research Analyst
Physicians for Social Responsibility
8 September 1995

I am very pleased that the DOE has decided to expand its look at options for tritium production. As I stated in my comments submitted in May 1995, PSR believes that a new tritium source is 1) unnecessary to maintaining our "national security," 2) is a threat to human health and the environment, 3) is an unneeded expense during a time of fiscal constraints, and 4) is a threat to future international arms agreements.

There are several reasons why producing tritium would be a significant mistake for the United States.

1/18.01 First, it sends the wrong signals to the international community that the U.S. intends to actively pursue re-armament – and not disarmament. Last April at the close of the Non-Proliferation Treaty Extension Conference, the U.S. government re-committed itself to pursue a nuclear weapons-free world. It is hypocritical for the U.S. government to state that it intends to put an end to nuclear weapons while at the same time planning to produce tritium for a stockpile 20 years from now that is *exactly* the same size as its present stockpile. Pursuing further nuclear weapons cuts would make the world a safer place and greatly reduce the need for additional tritium.

2/19.01 Second, in this time of fiscal constraint, it is wasteful and unnecessary to spend billions of dollars on an unneeded tritium source. While the DOE fights for its very existence and to maintain its Environmental Restoration and Waste Management budget, it is foolish for the DOE to consider building a new production facility or converting an old one.

Having stated this, I will respond to your request for specific comments on the use of an existing light water reactor for tritium production.

3/22.02 A light water reactor could be used if, in the unlikely event, the U.S. stockpile has no reductions in size in the next 20 years, and if there were a national "emergency" that required immediate production of tritium. This option would allow the DOE to make arrangements for tritium production closer to the estimated time that tritium would be "needed" because the use of an already existing light water reactor would take far less lead time. The light water reactor option is attractive in that it would 1) allow for a decision on a tritium source closer to the time when we might actually "need" tritium, 2) be less costly than building a new facility, and 3) would not create a "new" environmental sacrifice zone.

TSR-NM-022 COMMENT LETTER — PAGE 2 OF 2

PSR's Tritium PEIS Comments (p. 2 of 2)

3/22.02 continued

It is of concern, however, that DOE is discussing this option only in the context of producing tritium *and* continuing to produce energy for sale. It would make more sense and be less de-stabilizing for the DOE to purchase a reactor outright for conversion to military uses. This would remove any confusion regarding the tritium production site having a "civilian" vs. "military" function. By purchasing the reactor and using it solely for military purposes, the DOE could also avoid adversely affecting non proliferation initiatives.

I applaud the DOE for re-opening the review of tritium production options. I urge the Secretary to take <u>no action</u> to produce tritium now, but keep open the civilian reactor option in case of a "national emergency" years from now.

Thank you for the opportunity to comment on this very important matter.

Physicians for Social Responsibility is a national organization of nearly 20,000 health professionals and supporters with more than 80 chapters working to prevent nuclear war and protect the environment and human health. PSR -- formed in 1961 to end nuclear weapons testing -- is the U.S. affiliate of International Physicians for the Prevention of Nuclear War, recipient of the 1985 Nobel Peace Prize.

TSR-NM-023 COMMENT LETTER — PAGE 1 OF 2

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(404) 981-3385

Stephen M. Sohinki, Director
Office of Reconfiguration
Department of Energy
PO BOX 3417
Alexandria, VA 22302

Re: Tritium Supply and Recycling Programmatic Environmental and Impact Statement

9/7/95

This letter is to make a comment of the above item during this reopening of the comments period.

I am strongly against any planned use of a commercial reactor to supply tritium for military projects. On the surface, the plan looks good. Not having to invest the funds for a new system plus cutting down the number of reactors to be decommissioned in the future seems logical. Making money by selling electric services if you do build another reactor should save money. These ideas however skip the important facts.

Commercial reactors are not secure facilities. The level of protection is at best minimal. Just as our military can use tritium, so could several other nations. Unlike the radioactive products in the core, the enrichment add-ons would be an easy target. The need to safeguard any reactor on public lands would require massive military involvement. I don't to see my tax dollars at work in this way.

1/22.02

Just as important is the likelihood that enrichment procedures will age the materials in the reactor prematurely. Any increase of radioactive materials will cause enbrittlement to speedup thus losing any benefit of cost savings by forcing the plant to lose years off its operational run.

The International Atomic Energy Agency, which we have backed and forced onto many other countries, has always pushed to keep the military out of civilian energy programs. If we refuse to follow this idea ourselves, we might as well write off the Non-Proliferation Treaty, the Treaty of Tlatelolco, and the Nuclear Suppliers Guidelines (to name just a few). It is no longer enough to tell other nations to do as we say, not as we do.

The solution is fairly easy. Build a simple reactor without all the frills needs to make electricity. This would allow the military to get what they need without blurring the lines between them and civilian activities. By running it on an as need only basis, this single reactor could be the last one needed for military projects for a hundred years. Building it on a military post could allow it to

TSR-NM-023
COMMENT LETTER

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1/22.02 continued

be secure (somewhat) from smugglers and attacks. Finally, we could be seen as following the guidelines of the IAEA.

There's my ideas on the matter. I would likely have supported the use of commercial reactors up until recently but with proper information, just can no longer do so.

One a 'personal' note, who would I write to inquire about the effects of reactor materials in a nuclear explosion? The question came up during a discussion of test explosion verification if done in a cavity. What if all the long lived radioactive products of a decommissioned reactor were "blown away" in an explosion? Please let me know who to contact.

Thank you for allowing my input.

TSR-NM-025
COMMENT LETTER

Comments on Scope
Programmatic Environmental Impact Statement
Tritium Recycling and Supply

September 13, 1995

Comments by:
Carl N. Anderson, 439 49th St. #35, Oakland, CA 94609

Send Comments to:

Steven M. Sohinki, Director
Office of Reconfiguration
US Department of Energy
PO Box 3417
Alexandria, VA 22302

DOE Documents Used

Notice of Limited Reopening of Public Comment Period, 6450-01-P, Aug. 21, 1995

General Question of Tritium Requirement

1/16.02

So that my opinion on the general question of tritium supply will be clear, I will state as follows: The PEIS has a fundamental flaw because it assumes a tritium requirement based on an excessively large stockpile of nuclear weapons. A stockpile whose size reflected the actual destructiveness of these weapons would be much smaller (certainly under 1000 warheads total, including reserves and tactical warheads) and therefore tritium production could be postponed for many decades.

2/22.02

But this is not the topic being raised by those commenters who favor the use of a commercial reactor. Agreement on the general topic of tritium requirements is not necessary to realize how greatly troublesome it would be to use a commercial reactor. I will restrict the rest of these comments to the question of using a commercial reactor.

Scenarios: Military Tritium from a Commercial Reactor

The DOE notice of August 21 provides two scenarios. In both of them, a commercial nuclear reactor would be modified to produce tritium for nuclear weapons, while continuing to produce electricity for the general grid. One of the scenarios includes an assertion that the nuclear-weapons usage would be restricted to the "contingency" of a "national emergency." In other respects, the difference between the scenarios is bureaucratic and financial (which bureaucracy will own the reactor; a bureaucracy is not necessarily governmental) and not greatly important to me as a citizen.

In earlier DOE consideration of these scenarios, there was an explicit rejection of the idea that a specific reactor should be identified.

Claims of Proponents

For clarity, I will state the claims from the Notice of Limited Reopening. I respond to them, then add comments on pollution and site selection. I am listing the claims in a different sequence than in the Limited Notice, but I believe I am citing them accurately.

Claim: Scenarios would not weaken nonproliferation efforts

Claim: Policy objections can and should be reconsidered

Claim: Scenarios would not violate any law

Claim: Possible cost savings

Responses

Claim: Scenarios would not weaken nonproliferation efforts

This is the heart of the problem. The nuclear power industry has always told the world that commercial reactors are not a source of weapons of mass destruction.

The Iranian nuclear power program illustrates the proliferation danger involved. The government of Iran has asserted that their reactors (under construction) are strictly civilian in nature. If the United States goes ahead and uses a civilian reactor for military purposes, the United States will establish the principle that such conversions are acceptable. Why on earth should we do any such thing? If the Iranians go ahead and build reactors, there is still a chance that they will comply with their promises and keep their operations civilian. Any such chance would be drastically eroded by a US example to the contrary.

2/22.02
continued

Claim: Policy objections can and should be reconsidered

The claim implies that separation of civilian from military nuclear programs is a matter of policy, and the policy has no fundamental underlying necessity. The previous paragraphs, on nonproliferation, show the inanity of reversing this policy.

Two additional reasons for the policy may be stated. First, the proper disposition of civilian radioactive waste is difficult enough when the waste is, in fact, civilian. It would be even more difficult if such waste were connected with apocalyptic weaponry, from a political standpoint if no other. Second, the financial stability of numerous utilities is based the inclusion of nuclear reactors in their rate base. This is a controversial matter, and use of such reactors for apocalyptic purposes will further arouse public antagonism to paying for these reactors through electric bills.

Claim: Scenarios would not violate any law

The separation of civilian reactors from weapons production is fundamental to international law on nonproliferation. In the Nonproliferation Treaty, Article IV confirms the possibility of peaceful use of nuclear energy, but Articles I and II limit the spread of weapons technology. This treaty is totally contradicted by any use of civilian reactors to make nuclear weapons materials. The regulations of the International Atomic Energy Agency are also based on separation of civilian from military uses of nuclear energy. Some may wish to make a big issue of the difference between making plutonium (fissile) and making tritium (enhancement of

Carl Anderson on Tritium from Commercial Reactors 2

fission explosions, and fusion); if so, I would strongly object. In any case, I expect the use of civilian reactors for military tritium to violate IAEA regulations. And if the IAEA regulations have a loophole here, it should be closed at once; the regulations must do everything possible to prevent proliferation.

Claim: There might be cost savings

I haven't seen any specific data, but I suspect that there might indeed be cost savings. But the nuclear industry has been badly led astray by efforts at cost-effectiveness; such efforts have caused long-term cost increases on a mind-boggling scale. Two examples will suffice to show the trouble with penny-pinching.

In the design of the West Valley, New York, reprocessing plant, corrosion resistance and remote maintenance were considered, but deemed less important than low construction cost, both by the plant's operators and, decisively, by the Atomic Energy Commission. This attitude contributed in a major way to the plant's failure and groundwater contamination. Episodes like this have greatly increased the need for regulation with all its cost implications for the entire nuclear industry. See Luther J. Carter, "Nuclear Imperatives and Public Trust," 1987, especially pp. 57, 95-105.

2/22.02
continued

At Hanford, during the 1960's and 1970's, when it was discovered that high-level liquid wastes were leaking, it was decided to allow the water to boil off, leaving the troublesome components as a damp salt cake. An alternative method would have been to maintain the waste dissolved in water, build new double-wall tanks, and pump the waste there. This would have been more expensive at the time, but such an investment would have saved us an even larger bill when we have to deal with the salt cake. Carter, pp. 59-60.

Cost savings can never again be allowed to dominate decisions in the nuclear industry. Cost savings that worsen the problem of nuclear proliferation, such as the commercial-reactor tritium proposal, would be cost-effectiveness gone loony.

Identification of Sites; Pollution

So far, the PEIS has considered the commercial-reactor scenarios only for the purpose of briefly demonstrating their undesirability. In this context, the DOE has omitted the identification of specific sites.

This omission is marginally acceptable, provided that the commercial-reactor scenarios are not to be actively pursued. If, however, these scenarios are to receive more attention, the omission is intolerable. I suspect that the omission would open the entire PEIS process to major legal challenge. Of course, site-specific protests will and should occur when sites are identified. People will have legitimate concerns about their groundwater and atmospheric releases, among other things, because of their connection with mass destruction (see Carter, p. 42, etc.) and because the DOE and its predecessors have been very poor in controlling tritium leaks. And tritium leaks are almost impossible to clean up.

Conclusions

The civilian-reactor options should be considered only enough to firmly reject them. If the PEIS is expanded to include explanation of the reasons for this rejection, I would not object. But if it is expanded any further, I insist that sites be identified.

Carl Anderson on Tritium from Commercial Reactors 3

TSR–NM–026
COMMENT LETTER

PAGE 1 OF 2

U. S. DEPARTMENT OF ENERGY
OFFICE OF RECONFIGURATION
1000 Independance Avenue (S. W.)
Washington D.C. 20585

RE: Comment on the Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling (Doe/EIs-0161) of February, 1995 under the Federal Register Notice of August 25, 1995.

It appears there is no proper place for written comments on the topic of this Federal Register notice. However, the phrase, "...comments on this notice" can be read broadly, so I am mailing this comment to the Director, Office of Configuration, and hopefully it will appear among the comments solicited. (There would be no harm if another Federal Register notice indicated clearly an address such as ordinary persons might use for ordinary mail. Modem, Telenet, Internet, or Gopher are meaningless to many effected persons.)

1/22.02 The real Comment: - Inadvisability of using a Commercial Reactor to produce Tritium or an "Irradiation Service".

This "scenario" to quote the notice, is a poor choice for the Department of Energy. These reactors operate at high temperatures and high pressure, and these two facts have caused many unexpected problems. The normal result of these problems has been shutdown time for the commercial reactor, although a few of these problems have caused anxiety and concern. Only a fool would believe all of these problems have even appeared, let alone been solved. The available commercial reactor option should be

2/13.01.01 rejected in favor of the Heavy Water Reactor (HWR) described in the PEIS in Appendix A, at Page A-32, a reactor, "...specifically designed to produce Tritium."

This reactor would require far less in safety systems than a commercial reactor. The possiblity of metalurgical problems would be reduced as well. It could be a dedicated, non-plutonium

TSR–NM–026
COMMENT LETTER

PAGE 2 OF 2

DOHERTY, COMMENT P. 2

2/13.01.01 continued producing piece of equiptment under D.O.E. control at a D.O.E. site.

3/23.01 The use of an "irradiation service" suggests the reactor used might not be on any of the D.O.E. sites analyzed in the Draft P.E.I.S. The tritium supply cannot really wisely be created at a nuclear power plant site without increasing vulnerability to whoever might wish to upset defense programs of the United States.

2/13.01.01 continued Thus neither the use of a commercial reactor on or off a D.O.E. controlled site is a good plan. The low pressure, low temperature Heavy Water Reactor (HWR) at a D.O.E. site is the best alternative for D.O.E. in providing a tritium supply.

Respectfully submitted,

John F. Doherty, J.D.

John F. Doherty, J.D.
289 Angell St.
Providence, R.I. 02906

ENERGY
RESEARCH
FOUNDATION

September 15, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Re: Tritium Supply and Recycling Draft Programmatic Environmental Impact Statement (PEIS)

Dear Mr. Sohinki,

1/18.01 Just months after the United States renewed its commitment to the world community to pursue further reductions in its nuclear arsenal, we find it appalling that the Department of Energy (DOE) continues on an unnecessarily fast track to resume production of a key nuclear weapons ingredient, tritium. Publicly available information demonstrates that the planned U S nuclear arsenal - minus the recently established tritium reserve - will not be adversely affected by the lack of tritium production for at least another 20 years. If our nation's promise in the Nonproliferation Treaty has any value, surely we will move below START II strategic arsenal levels by then, or at least further reduce the number of tactical nuclear weapons in our arsenal.

2/18.15 DOE's decision in this PEIS should recognize the potential for future arms reduction agreements to influence tritium requirements. This should be done in at least three ways. First, the PEIS should consider a range of tritium production goals based on different arsenal levels. Second, DOE should consider the benefit of selecting a production alternative with the shortest possible lead time and lowest resource commitment. Such an alternative would help avoid implementing a decision which is ultimately made wasteful or unnecessary by future nuclear arms reductions. Third, the PEIS should evaluate the reduced environmental impacts associated with lessened tritium production requirements.

3/23.01 The alternative of utilizing a commercial reactor either by purchasing/leasing a reactor or securing irradiation services could provide unique benefits in light of the likelihood of additional arms reductions. This would be especially true for a flexible arrangement which explicitly addresses the potential for changes in tritium production requirements.

4/22.02 As to the policy implications of using a commercial reactor, we contend that the most significant potential nonproliferation impact associated with this PEIS is from

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Columbia, South Carolina 29205
803 256 7298
Fax 803 256 9116

4/22.02 continued the fact that the United States appears to be pursuing tritium production more aggressively than ratification of the START II Treaty and steps toward additional arms control. Still, any move to further blur the separation of commercial and military nuclear operations should not be dismissed lightly. The PEIS should consider these points and further address nonproliferation issues by explicitly and clearly describing the potential and unique impacts of each alternative.

5/14.01 The PEIS should also recognize that DOE is evaluating the future of the nuclear weapons complex in other National Environmental Policy Act documents, perhaps most significantly that related to stockpile stewardship. Despite moves by some in Congress to dictate the location for future tritium operations, the American people deserve to see documented in the PEIS the potential cumulative environmental and economic impacts of alternative locations for tritium production in combination with other defense missions.

6/13.00.55 Finally, we are including a copy of a June report, "Multi-Fallacy Reactors," for consideration in the PEIS in addition to our comments above and those we submitted on May 15. If you or others have questions about any of our comments please contact us at 803/256-7298. Thank you.

Sincerely,

Brian Costner
Director

TSR-NM-028
COMMENT LETTER **PAGE 1 OF 1**

1712 Marin Ave
Berkeley, CA 94707
9-14-95
3:50 pm

S.M. Sohinki
DOE
P O Box 3417
Alexandria, VA 22302

re: Comments on use of Commercial Reactors for Tritium production.

1/22.02 FIRST I believe that it is <u>INSANE</u> to consider any production of TRITIUM. The only option that should be considered is to build down the stockpile fast enough so that no new tritium would be necessary.

2/18.01 SECOND I believe that it would seriously erode what little credibility that the U S still has with the non-nuclear states to use commercial reactors. There is ironically one 'good' side effect, which is that it will help to strip the facade that commercial reactors can't produce material for weapons.

In summary "STUPID QUESTIONS RESULT IN STUPID ANSWERS" ITS TIME-WAY PAST TIME-TO START REAL IMPLEMENTATION OF ARTICLE VI OF THE NPT. STEP ONE WOULD BE TO HALT ALL CONSIDERATION OF PRODUCING MORE TRITIUM BY ANY MEANS.

YOUR SINCERE CRITIC

TSR-NM-029
COMMENT LETTER **PAGE 1 OF 1**

Citizens for Nuclear Technology Awareness

1323 Pendleton Street
Columbia, SC 29201
803/256-8054
1-800-299-CNTA
Fax 803/779-0701

September 13, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki:

This is in response to the Department of Energy's request for public comments on the Draft Preliminary Environmental Impact Statement on Tritium Supply and Recycling.

Citizens for Nuclear Technology Awareness (CNTA) is a non-profit, grassroots citizens organization with nearly 1000 members. Our charter is public information and public education concerning nuclear issues and new missions for the Savannah River Site.

1/22.02 Citizens for Nuclear Technology Awareness believes that use of a commercial reactor to produce tritium would violate the spirit of international non-proliferation agreements. 2/13.04.03 CNTA remains very concerned that one option under consideration -- the accelerator -- is an expensive, unproven method which puts the nation's security at risk and undermines efforts to reduce the deficit and balance the Federal budget. We do not believe the nation's best interests are served by consideration of an accelerator as the preferred option.

3/13.00.55 CNTA also believes that the multi-purpose reactor with its ability to produce tritium while generating electricity and burning excess plutonium as fuel is the most logical, proven and cost-effective choice for meeting the nation's tritium needs.

4/13.09.01 Regardless of the technology selected, we are convinced that the Savannah River Site offers the most appropriate and suitable location for the new tritium source because of its history, expertise and infrastructure associated with tritium handling and production for more than four decades.

CNTA appreciates the opportunity to present these comments and your consideration of our views.

Sincerely,

Bill Reinig

William Reinig
Vice Chairman

NUCLEAR CONTROL
INSTITUTE

[illegible]

September 15, 1995

Mr. Stephen M. Sohinki
Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, Virginia 22302

Tritium Supply and Recycling Programmatic Environmental Impact Statement

Dear Mr. Sohinki:

In response to the notice of limited reopening of the public comment period on the Tritium Supply and Recycling Programmatic Environmental Impact Statement as published in the *Federal Register* of August 25, 1995 (60 *Fed. Reg.* 44327), I am writing to express the views of the Nuclear Control Institute concerning the proposal by the Department of Energy (DOE) to consider utilizing a commercial reactor or reactors for tritium production.

Introduction and Summary

The Nuclear Control Institute is a public-interest research and advocacy organization that works to stop the spread and reverse the growth of nuclear arms. We have worked extensively on tritium issues. In 1988, we organized a coalition of eminent scientists and diplomats in support of our "Tritium Factor" proposal to use tritium's natural rate of decay to pace U.S.-Soviet nuclear arms reduction negotiations. We also undertook an initiative to maintain the barrier between military and civilian U.S. nuclear programs in response to a 1988 Executive Order that appeared to clear the way for production of tritium in civilian reactors, under non-emergency conditions. This year, we were successful in opposing attempts in the House and Senate to earmark funds for two large new "multipurpose" reactors -- a plan that would have preempted Secretary O'Leary's decision on tritium and created a large excess tritium capacity.

1/18.01 We continue to take the position that the need for a new tritium source has not been conclusively demonstrated. As stated in our May 15 comments on the Tritium Supply and Recycling Draft Programmatic Environmental Impact Statement (DPEIS), "[A]ny decision on a future tritium source is premature in the absence of a thorough public discussion of the need for tritium. Such a discussion...must be based upon publicly available information on tritium supply and specific future tritium requirements for the U.S. nuclear weapons

Strategies for stopping the spread and reversing the growth of nuclear arms.

arsenal." We once again request that DOE declassify this information.[1]

1/18.01 continued But even without this information, one can make estimates based on publicly available figures. Under very conservative assumptions (including adherence to DOE's stipulation that a five-year reserve be maintained), the earliest that a new tritium source would be required would be 2019, eight years later than DOE's asserted date of need. (See Appendix.) Thus, even with the 15-year lead time that DOE says is necessary, the Department need not make a decision on a new tritium production source until after the turn of the century.

2/19.01 In the absence of a demonstrated need for new tritium production, DOE's tritium decision should weigh two important factors. First, U.S. arms-control objectives are best served by forgoing construction of a dedicated military nuclear-materials-production facility since such a decision would demonstrate a de-emphasis on nuclear weapons as a component of U.S. national security and accomplish a savings of billions of dollars.

Second, the policy benefits of forgoing construction of a new tritium source would be vitiated if DOE turned to existing commercial reactors as a routine, primary source of tritium. Such non-emergency use of commercial reactors would blur the distinction between civilian and military nuclear programs and send a signal that civilian nuclear power plants can legitimately be applied to building nuclear weapons. It would especially hinder U.S. arms-control objectives if all U.S. power reactors capable of producing tritium were made available for this mission, since the total tritium-production capacity of these reactors is many times greater than the projected U.S. need.

3/22.02 On the other hand, NCI strongly supports maintaining a commercial reactor as a contingency source of tritium that could be utilized only in a national emergency, and only under carefully defined conditions that preserve the principle of separating civilian and military nuclear activities.

The *Federal Register* notice describes two scenarios for use of a commercial reactor. We reject the first but support the second if the second is subject to certain essential constraints to ensure that it complements U.S. arms-control and non-proliferation objectives. These comments describe the ways in which the second scenario can be modified to bring it into conformity with these objectives. If implemented in accordance with the points detailed below, the second existing-reactor option is clearly preferable to construction of a new reactor or accelerator.

Using a Commercial Reactor As a Contingency Source of Tritium: Needed Revisions in the DOE Proposal

[1] An informed public discussion on tritium would require DOE to declassify 1) the amount of tritium currently in the U.S. nuclear arsenal; 2) the total amount of tritium held in reserve for use in the nuclear arsenal; 3) the number of nuclear weapons that, for the purpose of calculating tritium requirements, DOE assumes will be in the arsenal in the 2011-2015 timeframe, and 4) the amount of tritium that DOE projects will need to be produced annually to maintain the nuclear arsenal after 2015.

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The *Federal Register* notice describes two scenarios for use of a commercial reactor or reactors:[2] purchasing a reactor or securing irradiation services. The notice is unclear as to whether it contemplates these two scenarios as a primary or a contingency source of tritium. In several places it calls for consideration of both as "reasonable alternatives" in the Tritium Supply and Recycling PEIS, suggesting that they are both to be considered primary sources. Later, however, the notice says:

3/22.02 continued

> Under the first scenario, the Department would purchase an existing commercial reactor and convert it to defense purposes rather than construct a new tritium supply facility. Under the second scenario, the Department would purchase irradiation services as a contingency source of tritium in the event of a national emergency.

These sentences indicate that the first scenario is for a primary source, while the second is for a contingency source.

Still later, however, the notice says, "The environmental impacts ..are the same regardless of whether irradiation services are purchased (either as a contingency or as a primary option) or a commercial reactor is purchased and converted to defense purposes." Here the irradiation services could serve as either a primary or contingency option. DOE should be clear in articulating policy options to the public.

4/23.01

We urge DOE to acquire irradiation services, and only a contingency source of tritium. As noted above, there is no need today to decide upon a dedicated tritium production source. If the decision is deferred into the next decade, and further arms reductions have been agreed, the decision can be further deferred since additional tritium will continue to be recycled from dismantled weapons. Maintaining a commercial reactor as a contingency source would provide substantial arms-control and economic benefits since it would avoid a premature decision to proceed with an unnecessary tritium source. It should be noted that Under Secretary Charles Curtis has stated that a single 600 MW reactor is sufficient to meet projected tritium stockpile requirements.[3]

3/22.02 continued

We wish to underscore that a commercial reactor should be used for tritium production only in the case of a Congressionally declared war or national emergency. This is the explicit requirement of Section 108 of the Atomic Energy Act, which, as far as we are aware, provides the only statutory basis for the federal government to operate, or seize

[2] Of the two approaches described in the DPEIS, NCI prefers the single-reactor approach to the multiple-reactor approach. The single-reactor approach would send an unambiguous signal regarding the limits of U.S. anticipated tritium production, limit the number of facilities that would have to be at least partially exempted from safeguards (a consideration that would arise if a fissile-material cut-off covering power reactors were ratified), centralize operations in one location, and reduce the amount of transportation and handling required (although this last advantage is largely offset by the likelihood that each transport would contain a larger amount of tritium). Therefore, these comments will refer to use of a "reactor" rather than "reactors."

[3] Senate Armed Services Committee hearing, May 16, 1995. His testimony on this issue is described in "Curtis Tells Senate DOE Has Concerns Over 'Triple Play' Reactor," *Inside Energy*, May 29, 1995.

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materials from, licensed reactors.[4]

The Executive Branch has always adhered to the position that a Congressional declaration would be required -- although at one time there was some doubt on this point. On November 18, 1988 President Reagan signed Executive Order 12656, which seemed to call into question the commitment of the Executive Branch to adhere to this requirement. By introducing new and undefined terminology, it appeared to broaden the circumstances under which nuclear plants may be seized. On February 8, 1989, we wrote a letter to President Bush requesting clarification of this issue and, on March 8, 1989, received a reply from the Executive Secretary of the National Security Council affirming that a Congressional declaration would be required. (Copies of the two letters are attached.) If DOE decides to pursue the commercial-reactor option as a contingency source of tritium, the Clinton administration should clarify the ambiguities of Executive Order 12656 through an official statement affirming the assurances we received from the National Security Council.

3/22.02 continued

Use of commercial reactors for tritium production in circumstances other than a Congressionally declared war or national emergency would undermine the division between civilian and military nuclear programs. That distinction is fundamental to U.S. non-proliferation law and policy. The *Federal Register* notice describes the importance of this distinction succinctly when it says:

> (1) the production of tritium for defense purposes in nuclear reactors that generate electricity for commercial sale would be contrary to the long-standing policy of the United States that civilian nuclear facilities should not be utilized for military purposes; and (2) such utilization of commercial reactors would make the United States' nonproliferation efforts much more difficult.

Given this context, DOE should proceed carefully to ensure use of a commercial reactor as a tritium source will only take place in a Congressionally declared national emergency. A Presidential finding of a shortfall in tritium supply would provide the basis for a Congressional declaration of a national emergency. Such a declaration would specify the irradiation services required to eliminate the shortfall, based on the President's finding, and constitute the defined limit of the national emergency during which a commercial reactor would be used to produce tritium.

In addition to the requirement of a Congressionally declared national emergency, another condition could be applied: that the reactor not generate electricity for sale while it

[4] Section 108 states: "Whenever the Congress declares that a state of war or national emergency exists, the Commission is authorized to suspend any licenses granted under this Act if in its judgment such action is necessary to the common defense and security. The Commission is authorized during such period, if the Commission finds it necessary to the common defense and security, to order the recapture of any special nuclear material or to order the operation of any facility licensed under section 103 or 104, and is authorized to order the entry into any plant or facility in order to recapture such material, or to operate such facility. Just compensation shall be paid for any damages caused by the operation of any such facility."

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3/22.02 continued

is used as a contingency source of tritium. Such a requirement would preserve the formal barrier between military and civilian use of the reactor but could increase the cost to the government if the utility owner had to be compensated for lost revenue from electricity production.

To promote coordination between affected utilities and DOE in the event of a genuine need to produce tritium -- and to avoid creating the impression that a large number of reactors might be called into service to augment the U.S. tritium stockpile -- DOE should develop a list of no more than three commercial reactors that are under consideration as the tritium contingency source, of which one would be selected if the need for new tritium production arose.

This list should include only currently operating reactors that have an outstanding record of safety and reliability. Restricting the list in this way would ensure the reliability of the reactors to be used and would prevent the creation of a financial incentive for utilities to turn over excess nuclear capacity to DOE for tritium production.

With these protections in place, DOE can simultaneously defer construction of a new dedicated tritium source, meet any foreseeable tritium requirements, and preserve the barrier between civil and military programs.

Safeguards Issues

The U.S. has called for a negotiated ban on the production of fissile materials for weapons. Although production of tritium for weapons would not be included in a "fissile cutoff" convention, the operation of facilities for that purpose would complicate treaty verification. This is because such facilities could also be used to produce plutonium clandestinely for weapons, but will not be open to intrusive verification measures because of their military significance. This complication would result from any tritium production, whether the facility in question were a dedicated tritium producer or a commercial reactor temporarily recruited for the task. However, the problem is more complex in the latter case.

For instance, in one verification scheme under a fissile cutoff, all commercial power reactors in the U.S. would be placed under safeguards similar to those currently employed in non-nuclear weapons states. The commercial-reactor option for tritium production would necessitate DOE's withdrawing a reactor from these safeguards, inserting unsafeguarded materials in the core, irradiating them in a campaign the details of which would remain classified, removing unsafeguarded irradiated materials and taking them to a processing facility outside of safeguards. Classification of the reactor operating history at this time would lead to a loss of continuity of knowledge of the core. This activity would appear to violate the terms of a future fissile cutoff treaty unless some means were provided of verifying that spent fuel containing plutonium was not being removed from the reactor. One potential solution is development of non-destructive assay techniques that distinguish between uranium and lithium-6 to enable distinguishing between plutonium-producing and tritium-producing elements.

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This analysis is not intended to disqualify the commercial-reactor option. Rather, it is intended to highlight potential difficulties in the interest of addressing them early in the policymaking and R&D process.

Other Issues in the *Federal Register* Notice

5/22.04

According to reporting in the trade press,[3] the reopening of the comment period was spurred at least in part by a report from the accounting firm of Putnam, Hayes & Bartlett assessing the costs of various options for tritium production. DOE should have released the report in conjunction with the *Federal Register* notice so that the public would have had the benefit of seeing the firm's analysis and the list of 10 plants under consideration as the tritium source. DOE should release the report before making a final decision on the tritium source.

In the notice DOE also states:

> During the public comment period, several commentors asserted that both scenarios described in the Draft PEIS have the potential to be a low-cost option and should be considered reasonable. Commentors asserted use of an existing commercial reactor to produce tritium would not violate any law or weaken nonproliferation efforts, and that any past policy objections should be reconsidered.

As noted above, those policy objections to use of civilian reactors for military purposes are valid and should not be "reconsidered." Instead, DOE should address those objections by utilizing a commercial reactor for tritium production only under the strict conditions described in these comments.

Conclusion

NCI regards use of a commercial reactor for contingency production of tritium as described in the second option of the *Federal Register* notice as acceptable, with the modifications described above. Such use of a commercial reactor would be consistent with U.S. non-proliferation and arms-control objectives and would be far preferable to construction of a new reactor or accelerator as a dedicated source of military tritium.

Sincerely,

Paul Leventhal

[3] Airozo, Dave, "DOE Seeks More Public Comment on Reactors as Tritium Source," *Nuclear Fuel*, August 28, 1995, 12. See also Airozo, Dave, "Dual Path for Tritium Production Seen, But Money Favors Accelerator," *Nucleonics Week*, July 27, 1995, 1.

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Appendix

The date at which tritium production will have to resume to support a future stockpile of a certain size can be derived from two assumptions: one, that the average amount of tritium per warhead in the enduring stockpile is equal to the average in the stockpile in 1988, the year in which tritium production was terminated; and two, that the size of the strategic reserve also remains the same (expressed in terms of the number of years' supply which it provides). With these assumptions, then the year in which tritium production must resume is given simply by

$t = 1988 - [12.3 \ln (N/N_0)]/\ln 2,$

where 12.3 is the half-life of tritium in years, N_0 = the number of warheads in the stockpile in 1988 and N = the number of warheads in the year t.

6/18.15 For the START II stockpile of no more than 3,500 strategic warheads (and assuming that no tactical weapons will be deployed in the future), this formula implies that production would have to resume about 31 years from 1988, e.g. in 2019, for an approximate value of N_0 = 20,000 warheads.[1] DOE's contention that it will be necessary to resume production in 2011 implies it envisions a future stockpile of around 5,500 warheads, well above START II levels.

[1] Norris, Robert and Arkin, William, "U.S., Soviet Nuclear Weapons Stockpile, 1945-1989: Numbers of Weapons," Nuclear Notebook, *Bulletin of the Atomic Scientists*, November 1989, 53.

NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

March 8, 1989

Dear Mr. Leventhal:

This is in response to your February 15 letter to the President in which you expressed concerns about certain provisions of Executive Order 12656. The Executive Order addresses preparedness responsibilities of the Executive Branch agencies and specifically states in Section 102(b) that plans developed pursuant to the Order "may be executed only in the event that authority for such execution is authorized by law".

The Atomic Energy Act requires a Congressional declaration of war or national emergency before recapture of special nuclear materials could be authorized. Thus, plans developed under Executive Order 12656 or its predecessor Executive Order 11490, which was promulgated in 1969 and which treated recapture in the same way, could not be executed absent a Congressional declaration.

Your letter also proposed that tritium be designated as a "special nuclear material" under the terms of the Atomic Energy Act. Tritium does not meet the requirements for such designation under the Act in that it is not capable of releasing substantial quantities of atomic energy.

Sincerely,

G. Philip Hughes
Executive Secretary

Mr. Paul L. Leventhal
President
Nuclear Control Institute
1000 Connecticut Avenue, N.W.
Washington, DC 20036

NUCLEAR CONTROL
INSTITUTE
1000 CONNECTICUT AVE NW SUITE 704 WASHINGTON DC 20036 202/822-8444

February 8, 1989

President George Herbert Walker Bush
The White House
Washington, D.C. 20500

Dear Mr. President:

I am writing on behalf of the Nuclear Control Institute to express our deep concern about the application of the provisions of Executive Order 12656, 53 Fed. Reg. 47491 (the "Executive Order"), to the possible seizure of licensed nuclear power facilities by the U.S. Government for military production purposes.

The Executive Order, which was signed by President Reagan on November 18, 1988, deals with the assignment of emergency preparedness responsibilities. It calls, among other matters, in Section 2101 for the Nuclear Regulatory Commission (the "NRC"), in collaboration with the Department of Energy ("DOE"), to develop plans to take over licensed civilian reactors for weapons production purposes. Section 2101 provides that the NRC shall:

* * * *

(2) Develop plans to suspend any licenses granted by the Commission; to order the operations of any facility licensed under Section 103 or 104; Atomic Energy Act of 1954, as amended (42 U.S.C. 2133 or 2134); to order the entry into any plant or facility in order to recapture special nuclear material as determined under Subsection (3) below; and operate such facilities;

(3) Recapture or authorize recapture of special nuclear materials from licensees where necessary to assure the use, preservation, or safeguarding of such materials for the common defense and security, as determined by the Commission or as requested by the Secretary of Energy.

Such plans, if implemented, would violate the long-standing, rigid separation between civilian and military atomic energy facilities in the United States. Because of ambiguities in the Executive Order, we urge you to clarify its intent by confirming that no such action can be taken without a formal

Dedicated to stopping the spread and reversing the growth of nuclear arms

President George Herbert Walker Bush
February 8, 1989
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declaration by the Congress that a "state of war or national emergency exists", as required by Section 108 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2138 (the "Atomic Energy Act").

Our concern about the implications of the Executive Order arises for three reasons:

First, the Executive Order employs new and broader terms than its predecessors. Not only is the fundamental term "national security emergency" new, but the definition of that term in Section 101(a) of the Executive Order includes "any occurrence, including natural disaster, military attack or technological emergency, or other emergency, that seriously degrades or seriously threatens the national security of the United States." There is no precedent for the breadth of this definition or for new terms such as "technological emergency". Previous executive orders and Presidential proclamations concerning emergencies have referred only to the term "national emergency".

Second, previous executive orders, especially Executive Order 11490, the immediate predecessor of the current Executive Order, have explicitly provided that emergency plans and programs of the Atomic Energy Commission (later DOE and the NRC) must be consistent with the applicable provisions of the Atomic Energy Act. The new Executive Order, however, fails to include any such specific reference to the Atomic Energy Act.

Third, changes in the terminology found in the Executive Order are danger signals that the Executive Branch may be side-stepping controls established in the National Emergencies Act of 1976, Pub. L. No. 94-412 (the "National Emergencies Act") and thereby ignoring the specific intent of the Congress. The Senate Report on the National Emergencies Act (S. Rep. No. 1168, 94th Cong., 2d Sess. (1976)) specifically warns, "Congress must be prepared for possible efforts to thwart the intent of the bill by dropping the wording 'national emergency' and introducing new terminology.... No claim can in the future be advanced that a particular type or class of emergency can arise in which the President's powers are not subject to Congressional review."

Section 108 of the Atomic Energy Act is explicit in stating that a Congressional declaration of war or national emergency is required before the takeover of nuclear facilities is permitted. It provides:

> Whenever the Congress declares that a state of war or national emergency exists, the Commission is authorized to suspend any licenses granted under this chapter if in its judgement such action is necessary to the common defense and

President George Herbert Walker Bush
February 8, 1989
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> security. The Commission is authorized during such period, if the Commission finds it necessary to the common defense and security, to order the recapture of any special nuclear material or to order the operation of any facility licensed under section 2133 or 2134 of this title, and is authorized to order the entry into any plant or facility in order to recapture such material, or to operate such facility. Just compensation shall be paid for any damages caused by the recapture of any special nuclear material or by the operation of any such facility.

We are unaware of any other statutory basis, including the National Security Act of 1947, the Defense Production Act of 1950 and the Federal Civil Defense Act of 1951, for the President to operate, or seize materials from, licensed reactors. Consequently, whatever the Executive Order may say, it cannot provide the authority, absent Congressional action, for implementation of takeover plans. See Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579 (1952).

The distinction between civilian and military uses of atomic energy is fundamental as a matter of U.S. law and policy. Section 57(e) of the Atomic Energy Act (the "Hart-Simpson-Mitchell Amendment") is explicit in prohibiting the use of any special nuclear material produced in a licensed facility "for nuclear explosive purposes." If the United States intends to maintain a sound non-proliferation policy, there is every incentive not to breach this principle, except in the most dire common defense and security circumstances, and then only if the Congress declares a national emergency pursuant to Section 108 of the Atomic Energy Act.

We recognize that the Executive Order provides in Section 101(a) that "national security emergency preparedness activities shall be consistent with the Constitution and laws of the United States" and in Section 102(b) that:

> This Order does not constitute authority to implement the plans prepared pursuant to this Order. Plans so developed may be executed only in the event that authority for such execution is authorized by law.

Nonetheless, the new Order's terminology does create uncertainty about the Executive Branch's intentions and clouds what previously have been clear statements with ambiguity. The Executive Order cannot authorize the takeover of licensed facilities, independent of mandated Congressional action under Section 108 of the Atomic Energy Act. Thus, we believe it to be essential that the new Administration clarify the purpose and effect of the changes reflected in the Executive Order and specify explicitly that nothing in the Order would

President George Herbert Walker Bush
February 8, 1989
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authorize the takeover of licensed facilities, absent Congressional action.

Finally, we recognize that a major question for the Administration is securing the future supply of tritium. However, given the non-proliferation policy just discussed, we would emphasize that it would be wholly inappropriate to seek to obtain tritium for weapons purposes from civilian reactors and to do so would be contrary to the common defense and security of the United States. Tritium is not now defined as a "special nuclear material" within the meaning of Sections 11(aa) and 51 of the Atomic Energy Act. Consequently, in theory, it could be produced in commercial power reactors for use in the weapons program, even without Congressional declaration of a national emergency. To clarify that the Administration cannot and would not use tritium from licensed facilities for weapons purposes, except in the case of a national emergency or state of war declared by the Congress, we urge that the statutorily-defined steps be taken under Section 51 of the Atomic Energy Act to redesignate tritium as "special nuclear material". This action would assure that tritium will be treated no differently than other materials critical for nuclear weapons, i.e., plutonium or enriched uranium, that are produced in civilian facilities.

The questions raised by the application of the new Executive Order are of grave importance. We hope that you will respond by acting promptly and forcefully to confirm the United States position that licensed nuclear facilities, and all materials produced in such facilities, including tritium, cannot and will not be used for any military purposes, unless there is an imminent threat to the U.S. and the Congress formally declares, pursuant to Section 108 of the Atomic Energy Act, that a national emergency exists sufficient to warrant breaching the principle of separation of military and civilian uses of atomic energy.

Your prompt response to the specific points contained in this request will be deeply appreciated as it will make clear whether a legislative remedy is required to address the

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COMMENT LETTER

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President George Herbert Walker Bush
February 8, 1989
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ambiguities and uncertainties raised by the new Executive Order.

Sincerely,

Paul L. Leventhal
President

cc: Hon. George Mitchell
Hon. Robert Dole
Hon. Thomas Foley
Hon. Robert Michel
Hon. Bennett Johnston
Hon. Sam Nunn
Hon. John Glenn
Hon. James McClure
Hon. John Warner
Hon. William Roth, Jr.
Hon. John Dingell
Hon. Les Aspin
Hon. John Conyers
Hon. Norman Lent
Hon. William Dickinson
Hon. Frank Horton

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COMMENT LETTER

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139 Candler Oaks Lane
Decatur, Georgia 30030
September 13, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki:

1/22.02 I am writing to express my strong opposition to using nuclear power plants like Georgia's Plant Vogtle to produce tritium for nuclear weapons.

Producing tritium for nuclear weapons fuels a continued arms race, both literally and figuratively. This is poor policy in a world seriously threatened by nuclear weapons proliferation.

2/18.01 The negative economic and environmental effects of 50 years of nuclear weapons production (and nuclear energy production) are deplorable. A few years ago I attended the World Uranium Hearings in Salzburg where indigenous people from all over the world told of how the nuclear industry has destroyed their land and killed, or brought illness and deformity, among their people. We must retreat from this nuclear path if we are to have a healthy future to offer our children.

Please consider these thoughts as you make decisions concerning continued tritium production.

Sincerely,

Bobbie Wrenn Banks

Georgia Power Company
333 Piedmont Avenue
Atlanta, Georgia 30308
Telephone 404 526 3195

Mailing Address:
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201
Telephone 205 868 5581

W. G. Hairston, III
Executive Vice President
Nuclear Operations

September 15, 1995

Mr. Stephen M Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O Box 3417
Alexandria, VA 22302

Comments on
Tritium Supply and Recycling Programmatic Environmental Impact Statement
(60 Federal Register 44327 dated August 25, 1995)

Dear Mr Sohinki,

Georgia Power Company (GPC) submits these comments in response to the Department of Energy's Notice of Limited Reopening of Public Comment published in the August 25, 1995 Federal Register The Notice solicited comments on the Tritium Supply and Recycling Final Programmatic Environmental Impact Statement (PEIS) on the DOE's consideration of utilizing an existing commercial reactor or reactors (either by purchasing or securing irradiation services) as a reasonable alternative to tritium supply for military application. GPC believes that under appropriate contractual terms, existing commercial reactors may provide an economical option to meet the Department's tritium requirements.

1/22.02 As an initial matter, GPC acknowledges that DOE has identified significant "policy issues related to the separation of civilian and military uses of nuclear technology that are not fully consistent with use of commercial light water reactors for such purposes" Resolution of these policy issues is better left to the appropriate branches of the United States Government and, accordingly, GPC takes no position and offers no comments on the ultimate outcome of this very important issue. GPC's comments are more generic, relating to the salient environmental issues, not the far reaching policy ones

Existing commercial reactors proximate to tritium extraction and recycling facilities are environmentally sound candidates for tritium manufacture. The operational adaptations required for the "single reactor" scenario will be greater than those required for the "multiple reactor" scenario The "single reactor" scenario, however, has environmental and economic benefits compared to the "multiple reactor" scenario.

Georgia Power

Mr. Stephen M. Sohinki
U. S. Department of Energy
September 15, 1995

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1/22.02 continued As a practical matter, the incremental environmental impact that would result from DOE's use of commercial reactors is significantly less than the environmental impact of a new facility Siting, construction, and operation of a new tritium supply and recycling facility will have far reaching and significant environmental impacts For instance, the PEIS, in section 4.11 recognizes that up to 560 acres of land could be required to construct and operate the facility, supporting infrastructure and access roads. Other unavoidable environmental impacts are likely to include loss of habitat in the disturbed area, loss of wetlands, cooling towers impact to visual resources through their physical structure and vapor plumes, construction of miles of transmission lines and modifications for other electrical power systems There would be some "unavoidable impact" to aquatic biota from the loss of fish, larvae and fish eggs due to entrainment and impingement at new water intakes. Depending on the site, there may be unavoidable impacts to Native American resources possibly triggering environmental justice issues. Most, if not all, of these "unavoidable impacts" would be eliminated or substantially reduced if the "single reactor scenario" of two or less commercial reactors is pursued.

DOE may avoid even greater environmental impacts if the commercial reactor(s) selected is proximate to the tritium extraction and purification facility(ies) which will remain operational into the future The choice of these particular commercial reactors, because of their location -- and in the case of the Savannah River Site (SRS), surrounding rural character -- would result in lower transportation risks than other options. In short, rural commercial plants in the Southeastern U.S. may offer a unique advantage in minimizing the populations within potential exposure pathways and the likelihood of an accident.

Additional environmental or land use concerns identified in the PEIS may stem from the need for improved security infrastructure. These concerns, namely buffer zones, fencing, security buildings, road access restrictions, new roads, may be minimal for some potential commercial reactors since most of these features already exist at the site and modification or enhancements may be readily achievable. Site specific review would identify these more favorable options.

State and local emergency planning organizations are already in place and effectively manage current operations at commercial reactors in accordance with NRC regulations. In the case of organizations already cooperating with the SRS, these mature organizations can be expected to continue their present support. The existing organizations may be wholly adequate to accommodate emergency planning for large core inventories of tritium at some commercial reactor sites. At worst, these particular organizations may need some modest changes or enhancements to reflect the different scenarios.

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COMMENT LETTER **PAGE 3 OF 3**

Georgia Power

Mr. Stephen M. Sohinki
U. S Department of Energy
September 15, 1995

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1/22.02 continued Some issues in the economic, financial and regulatory arena clearly require further inquiry. In particular, the licensing issues attendant to purchasing an operating commercial reactor by DOE requires review. However, GPC believes that the relative missions and responsibilities of both the NRC and DOE may be met based on a purposeful, joint review by the two agencies and affected parties. Given the importance of tritium production and recycling to our national defense, these issues are capable of resolution with prior planning and analysis.

Thus, GPC's perspective is that use of commercial reactor(s) affords DOE the opportunity to "piggy-back" on existing facilities and associated support systems. The ultimate result likely is more efficient use of surface and groundwater resources, land resources, waste management resources, emergency management resources, and personnel. In addition, the selection of particular reactor(s) may reduce the overall displacement of terminated employees at DOE facilities if the reactors are in the general locale of the employees' residences

Finally, GPC is respectful of DOE's careful review of commercial reactors as a viable option for meeting the Department's future tritium needs should the policy of the United States, as determined by its leadership, so dictate GPC is willing to discuss this matter further should the Department so desire.

Should you have any question, please advise.

Respectfully submitted,

W. G. Hairston

W. G. Hairston, III

WGH/TMM

cc: Georgia Power Company
H. A Franklin

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COMMENT LETTER **PAGE 1 OF 1**

1386 Cedar Post Ct.
Decatur, GA 30033
September 7, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki,

1/22.02 I am writing to express my strongest opposition to the proposed plan by the DOE to secure tritium by purchasing a reactor or securing irradiation services, possibly through a commercial reactor.

2/18.01 As a taxpayer I am outraged and confused by the messages my government is sending. In the Spring the U.S. signed the extension of the Nuclear Non-Proliferation Treaty and publicly supported an international Comprehensive Test Ban Treaty. Yet, in reality, it appears my tax dollars are being used to maintain, enhance, and insure that we have a capacity to use our nuclear weapons. I do not see how the goals of non-proliferation and a long term supply of tritium can be anything but opposites.

3/10.02 As for the question of environmental impact, our government has far too many sights where nuclear weapons have been in production that have left vast quantities of radioactive waste, low and high level, which have yet to be disposed of. It is wrong to pursue the goal of "war ready" nuclear weapons when there is so much containment to do.

Sincerely yours,

Mary E. Terrell

Mary E. Torrell

cc: President Clinton
Senator Nunn
Senator Coverdell
Rep J. Linder

TSR–NM–035
Comment Letter

PAGE 1 OF 1

PANA Panhandle Area Neighbors and Landowners

HCR 2 BOX 20 PANHANDLE, TEXAS 79068 (806)335-1050

September 14, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 23302

Dear Mr. ~~Sohinki:~~ Steve

RE: Tritium Supply and Recycling Draft PEIS

1/18.15 For the Panhandle Area Neighbors and Landowners we continue to stress there is no need at this time for new tritium production facilities at all. It is been our theory that with all the tritium being returned with the dismantlement program (which is happening in our community), this tritium will still be within its lifespan for use far beyond the time covered by the DOE.

The DOE estimates are based on current arsenal size. We are committed in the Nonproliferation Treaty to continue further reductions in arsenal sizes, along with the other nuclear weapons nations. What are we going to do with all the tritium left after the world says **NO MORE NUCLEAR WEAPONS**.

2/22.02 We feel that it is extremely important that the separation between commercial and military uses of nuclear technology be maintained in this country. We do note the flow of personnel between the two realms.

The lifespan of these reactors is not worth the amount of money that would be spent for about a dozen years of additional tritium production. The bargain that DOE sees in the Vogtle reactors is not there. For our money, we do not approve of the bailout with our tax dollars of the Vogtle plant. Let that utility take care of its own problems. Just because they overexpanded and now are in financial difficulty does not justify our tax dollars being used by DOE to resurrect them for new tritium production.

Satsop reactors also are beyond the financial capability of the U.S. Government. Stop spending our money on useless projects. The world does not need more tritium. We must show the world that we are serious about non-proliferation -- it is up to the U.S. to stop NOW!

We are in a wasteful arms race with ourselves just to keep and protect jobs. In the event you missed our point - we restate
NO MORE TRITIUM PRODUCTION.

Sincerely,

Doris Smith

Doris & Phillip Smith, Spokespersons

TSR–NM–037
Comment Letter

PAGE 1 OF 1

September 11, 1995

Stephen M. Sohinki, Director
Office of Reconfiguration
U.S. Department of Energy
P.O. Box 3417
Alexandria, VA 22302

Dear Mr. Sohinki,

1/18.01 I am writing to you to express my strong opposition to the current proposal for "an assured, long term supply of tritium."

I support the policy of worldwide Nuclear NonProliferation as well as a Comprehensive Test Ban Treaty. While securing a tritium supply may be construed in the narrowest sense as not jeopardizing nonproliferation, it certainly is not supportive of a broad policy of nonproliferation.

2/20.05 Further, I deplore the economic and environmental effects which 50 years of nuclear weapons production has had on our country. Nuclear weapons are an unacceptable form of weaponry and we should stop using our country's resources on the maintenance of a nuclear weapons arsenal.

3/19.01 The need for tritium, whether produced by a commercial reactor, or a new facility run by the DOE, is a false need, and one that is taking precious dollars from education, health care, housing, and the environment.

Thank-you for your consideration.

4/22.02 civilian plants should not be used for a militaristic purpose - now or ever. Thank you.

Sincerely yours,

Marianne Webster
5399 N. Peachtree Rd.
Dunwoody, GA 30338

TSR–NM–040
COMMENT LETTER

+++ TETRA TECH ☐002

SIERRA CLUB NUCLEAR WASTE TASK FORCE
2405 Delgado Drive
Tallahassee, FL 32304

September 12, 1995

Mr. Stephen M. Sohinki, Director
Office of Reconfiguration
Department of Energy
Washington, DC 20585

Dear Mr. Sohinki:

The Sierra Club's Nuclear Waste Task Force wishes to protest (1) the Department's decision, in the Tritium Supply and Recycling Final PEIS, to consider using a commercial reactor (s) as a reasonable alternative for producing tritium; (2) the assumption that a sufficient supply of tritium to maintain US nuclear weapon capability will so soon be depleted that construction of a reactor to produce it must be begun now; and (3) the failure of the August 25, 1995, DOE notice of a limited reopening of the public comment period to mention the alternative of using a linear accelerator to produce tritium.

1/22.02 1. We differ with those commentators who say there is no proliferation risk in DOE's use of commercial reactors to produce tritium because making plutonium commercially available certainly would set a precedent for world wide commercial use and would widen the opportunity for this highly valuable material to escape safeguards and be misused either by rogue nations or terrorists. Locating the reactors on a DOE Reservation would not absolve the United States from endorsing commercial use of plutonium and would encourage other nations to defray the cost of electricity by using their stockpiles of plutonium for its production.

2. We question the need for tritium in the short time frame assumed by DOE. While acknowledging that tritium decays by 5.5 percent a year, we wonder whether salvaging the tritium contained in the five thousand currently deployed warheads that are soon to be decommissioned, following the signing of START II, plus the tritium in 11,000 warheads already in reserve or awaiting dismantling,* could produce a sufficient supply of tritium to allow for a longer delay in building new production facilities. At a later date, a more pacified world may make such construction unnecessary. In the interim, we believe US efforts to renew tritium production could be interpreted by other nations as bellicose behavior and result in a renewed arms race.

2/13.04.01 3. If tritium cannot be salvaged from decommissioned warheads and the DOE time frame is correct, we believe the need should be supplied through a linear accelerator, thus eliminating the production of more nuclear waste, the rapid accumulation of which is a serious and unsolved threat to the future.

Sincerely,

John W. Winchester

John W. Winchester, Ph.D.
Chairman

*data from Disarmament Times, special issue, August 1995

COMMENT SUMMARIES AND RESPONSES

Comment Summaries and Responses

CHAPTER 3: COMMENT SUMMARIES AND RESPONSES

This chapter summarizes the comments the Department of Energy received on the Draft Programmatic Environmental Impact Statement for Tritium Supply and Recycling during the public comment period, and provides responses to those comments. Identical or similar comments provided by more than one commentor were grouped together in one comment summary and responded to. The responses indicate whether any changes were made to the PEIS and the rationale behind those decisions.

01 LAND RESOURCES

01.01 Commentors suggest that the Department of Energy (DOE) carefully consider all of the potential consequences of siting the proposed tritium facilities at the Pantex Plant (Pantex). Commentors express the opinion that Pantex is surrounded by some of the nation's richest agricultural resources and any accidental radioactive release or contamination would seriously affect this vital national resource, as well as the surrounding population. In the commentors' view, the Programmatic Environmental Impact Statement (PEIS) for Tritium Supply and Recycling should address this issue.

Response: *The PEIS addresses the potential impacts of the proposed tritium supply and recycling facilities on the surrounding environment from facility accidents in section 4.5.3.9. Additionally, appendix F, section F.3.4 provides information on secondary impacts of accidents at Pantex. DOE is aware of the valuable agricultural resources surrounding the Pantex facility. If the proposed tritium supply and recycling facility was sited at Pantex, appropriate safeguards would be taken to minimize the likelihood of an accident, radioactive release, or contamination that could significantly degrade these resources, such as described in section 3.4.2 and appendix section A.2.*

01.02 The commentor notes that the area proposed for the proposed tritium supply and recycling facility at Pantex infringes on land that was leased from Texas Technological University. The commentor believes that DOE should address this issue and any complications it may present in the PEIS.

Response: *As discussed in section 4.5.2.1 of the PEIS, the proposed tritium supply and recycling facility would be located in the interior industrial core at the Pantex site. Three areas have been designated for future industrial sites within that core, and one area designated as Area C on figure 4.5.2.1-3 currently encompasses DOE-leased land from Texas Technological University. As can be seen from figure 4.5.2.1-3, there are two areas that would not affect leased land. Ultimate siting will be discussed in site-specific tiered* National Environmental Policy Act *(NEPA) documents. For the area in question, the boundaries can be rearranged to exclude any land DOE has leased from Texas Technological University. Therefore, no complications concerning DOE-leased land and Texas Technological University are anticipated with siting the facility at Pantex.*

01.03 The commentor notes that Pantex has less total acreage than the other proposed sites. As a result, the commentor believes that siting the Accelerator Production of Tritium (APT) technology at that site could result in extensive and expensive relocation of existing facilities and an inadequate security "buffer" zone unless additional land is obtained. The commentor suggests that DOE should address these issues and their potential impacts on properties adjacent to the site in the PEIS.

Response: *Section 4.5.3.1 of the PEIS discusses environmental impacts associated with the construction and operation of tritium supply and recycling facilities at Pantex. As presented in table 4.5.3.1-1, siting the APT technology at Pantex would require 173 acres of land. Three areas (A, B, and C) have been designated for future industrial sites at Pantex. The APT land requirement translates into 30, 23, and 19 percent of the available land for areas A, B and C, respectively. Although Pantex has the smallest total acreage of all the candidate sites, it has sufficient land to accommodate any of the proposed tritium supply technologies and recycling facilities.*

01.04 The commentor expresses the opinion that the PEIS should include in its analysis the current and future value of the land surrounding Nevada Test Site (NTS) (the new facility could have an effect on its value).

Response: *As discussed in section 4.3.3.1 of the PEIS, the construction and operation of the proposed tritium supply site (TSS) facility would be consistent with the NTS Site Development Plan and have no impacts on prime farmland, grazing allotments, other agricultural activities, or other land uses on site. Offsite land will not be directly affected since no tritium facilities will be constructed there. The socioeconomic analysis presented in the PEIS assesses the potential impacts of the proposed tritium supply alternatives on directly-affected sectors of the economy including labor supply and demand, income, and public finance, as well as impacts on housing and transportation. The analysis does not cover speculative issues such as the impacts to future property values and business location or expansion decisions. Potential changes to socioeconomics in the region, which may indirectly affect land values, are discussed in section 4.3.3.8. For example, the increase in population created by some of the alternatives could increase demand for housing.*

01.05 The commentor asks whether land use assessments are being made on DOE-owned land, such as those previously done for other interested landholders.

Response: *As discussed in section 4.1.1 of the PEIS, changes in land use are expected to occur at most, if not all, of the DOE candidate sites for tritium supply. The PEIS contains an analysis of the impacts the proposed tritium supply and recycling facilities would have on the future use or development of land at each DOE site. The PEIS considers land use plans and policies, zoning regulations, specially protected lands, and existing land use. Changes in land use within existing DOE site boundaries and on lands adjacent to or in the vicinity of DOE sites (i.e., non-DOE land) that may result from the proposed alternatives are considered in the PEIS.*

01.06 The commentor notes that in section 4.5.2.1 of the PEIS, area farmland is considered by the Soil Conservation Service as "prime farmland when irrigated." The commentor suggests any "loss" of such potential prime farmland on Pantex to an industrial use would be slight, relative to the expanse of cultivated and irrigated lands across the high plains of Texas and the regional "Golden Spread." The commentor is of the opinion that such a loss could be balanced by application of blowdown cooling tower waters as irrigation to the immediate area.

Response: *Sections 4.5.2.1 and 4.5.3.1 of the PEIS discussed environmental impacts to land use as a result of the proposed construction and operation of the tritium facility at Pantex. Three areas have been designated within the existing industrial core of Pantex to accommodate the tritium supply and recycling facilities. Although classified as prime farmland, these areas are essentially removed from agricultural use by ongoing plant activities. There would be no loss of prime farmland within or outside of the Pantex site boundary.*

As described in section 4.5.3.4 of the PEIS, there would be no discharge of cooling system blowdown waters at Pantex. Any pretreated utility, process, and sanitary wastewater not recycled for tritium *supply water needs would be discharged to the playas in accordance with the Pantex National Pollutant Discharge Elimination System (NPDES) permit. These wastewater discharges are not suitable for crop irrigation without advanced treatment processing.*

01.07 The commentor notes that section 4.5.3.1 of the PEIS identifies the Bureau of Land Management Visual Resource Management (VRM) classification of Pantex as Class 4. The commentor is of the opinion that the program would not downgrade that classification. In fact the commentor points out that the "most sensitive viewpoint" from the Texas Plains Trail, at the intersection of US 60 and Farm-to-Market Road 2373, designates the existing industrial structures at Pantex as a "point of interest." Therefore, the commentor believes that siting the tritium supply and recycling facility at Pantex would enhance the visual resource.

Response: *As discussed in sections 4.5.2.1 and 4.5.3.1 of the PEIS, the tritium supply and recycling facilities would be visible from the key viewpoint from any of the proposed industrial areas at Pantex. The VRM classification would not change with the construction and operation of any of the technologies because existing views already include industrial facilities.*

01.08 The commentor states that the installation of transmission and distribution lines does result in some land use and visual impacts. However, in the Pantex area, that is, flat plains, and along existing corridors, the commentor believes that incremental visual impacts would be slight. In addition, the commentor also believes that effects on land resources during construction would be slight. The commentor also suggests that effects on land resources during construction would be temporary, and effects on land use, such as grazing or farmlands, likely would be slight as well, not only because transmission structures occupy little land, but also because likely routes would be along highway rights-of-way and/or existing power supply corridors.

Response: *As discussed in sections 4.5.2.1 and 4.5.3.1, environmental impacts to land and visual resources in the Pantex area are anticipated to be minimal. Any of the proposed technologies for this site would be supported by a new electrical substation and additional electrical transmission lines. In order to minimize the potential impacts to natural resources, new transmission lines could be sited along existing rights-of-way. In addition, the presence of sensitive habitats (for example, wetland, prime farmland) would be considered if the construction of new rights-of-way are needed.*

01.09 The commentor references pages 3-23, 3-35, 3-38, and 3-60, noting that in the previous Environmental Impact Statement (EIS) for a New Production Reactor (April 1991), the land area required for each reactor concept (Heavy Water Reactor (HWR), Advanced Light Water Reactor (ALWR), Modular High Temperature Gas-Cooled Reactor (MHTGR)) varied by site, but was never less than 360 acres (for an HWR at Savannah River Site (SRS)). The MHTGR had the largest requirement at only one site, and only during construction. The commentor points out that in this Draft PEIS, the land area requirements are constant from site to site, and no extra land is needed during construction. The commentor questions why the MHTGR now requires the most land, in spite of the fact that only three modules are now needed compared with eight in 1991. Since none of the reactor concepts is modular, the commentor believes it is not logical that their land requirements would decrease more than the MHTGR requirements. The commentor is of the opinion that either the MHTGR requirements are overestimated or the requirements of the other concepts are underestimated. For these reasons, the commentor feels that the land use impacts need to be reevaluated.

Response: *Land use requirements for the MHTGR and other technologies are discussed in sections 4.2 through 4.6 of the PEIS for each of the candidate sites. As discussed in section 3.4.2.2, the MHTGR technology will require only three modules instead of six to eight identified in the New Production Reactor EIS (April 1991) and disturb approximately 360 acres of land. Land requirements* *given in the New Production Reactor document included acreage for reactor facilities and support facilities for tritium production, plutonium product, and spent fuel processing. In addition, the New Production Reactors were site-specific designs incorporating infrastructure and environmental features of the candidate sites.*

02 SITE INFRASTRUCTURE

02.01 Commentors express the opinion that the analysis of the site infrastructure impacts in the PEIS is unclear and vague, particularly with regard to electrical needs, and that DOE needs to be more explicit and thorough in its analysis of the environmental impacts and costs associated with either additional electrical consumption or a new power plant. The commentors believe that the PEIS should consider various energy sources (e.g., nuclear, coal, hydro) for additional power and that the choice could be based on the composition of the regional power pool. Commentors also state that DOE should clearly indicate the quantity of additional water that will be needed for the additional electricity, the size (physical and electrical) of the additional power plant, and an analysis of the impacts associated with buying electricity from power pools inside and outside the area of each of the five proposed sites. In addition, one commentor states that 6 years might be required to construct a 500 to 600 megawatts electric (MWe) coal-fueled steam electric plant rather than the 3 years estimated in section 4.8.

Another commentor notes that in volume I, page 4-3, column 2, paragraph 4, the PEIS states, "A detailed quantitative analysis based on the proportional contributions from each fuel source, would be conducted..." The commentor expresses the opinion that apportionment of power requirements on the basis of the current mix of fuel sources would probably be inappropriate, especially for the APT which has large power requirements, and especially for the northwestern United States (e.g., at Idaho National Engineering Laboratory (INEL)), where current electric power use relies heavily on hydroelectric plants, and where significant expansion of hydroelectric generating capacity may be unlikely. The commentor also believes that the impact of a 500 to 600 MWe power requirement would be similar to that described in section 4.8.2 (pages 4-443 to 4-446), whether it is filled by a dedicated collocated plant or by increased generating capacity elsewhere.

Response: *The site infrastructure methodology found in section 4.1.2 of the Draft PEIS explains in detail to what extent the electrical impacts are assessed. The discussion presented in the PEIS presents data and impacts in a programmatic context. For all of the technologies, the electrical requirements to support each technology is added to the projected site No Action requirement to determine the total site electrical requirement for each of these technologies. These requirements are listed in tables 4.2.3.2-1, 4.3.3.2-1, 4.4.3.2-1, 4.5.3.2-1, and 4.6.3.2-1 for INEL, NTS, Oak Ridge Reservation (ORR), Pantex, and SRS, respectively. The peak power and the total annual energy required for each of these technologies were then compared against the capacity margin and the total electricity production of the appropriate subregional power pool. These comparisons are presented in tables 4.2.3.2-2, 4.3.3.2-2, 4.4.3.2-2, 4.5.3.2-2, and 4.6.3.2-2 for INEL, NTS, ORR, Pantex, and SRS, respectively. In all cases, it appears that the subregion can adequately support all of the technologies. However, as a bounding case for the APT option, the construction and operation of a dedicated natural gas fuel power plant at each site has been analyzed. Cost is not addressed in this PEIS but the cost studies being prepared for the decision maker include the cost of buying electricity and the income from selling it, as appropriate. The cost studies are included in the Technical Reference Report available in DOE reading rooms.*

The detailed quantitative analysis referred to in the comment would not necessarily show that the current mix of fuel sources is expected to equate to the future mix. The usefulness of site-specific tiered NEPA documents is that they are more able to focus on the unique power characteristics of a *chosen site (and its respective utility and power pool) and determine whether or not a proposed impact analysis methodology is appropriate for further consideration. The electrical contributions from the ALWR and the MHTGR are taken into account in the environmental analysis since the designs of these reactors and the operating requirements used in the PEIS are based on the fact that they generate electricity. The economic benefit of this electricity production is included in the cost analysis presented in the Technical Reference Report available in DOE reading rooms.*

02.02 Commentors express the opinion that DOE should consider the possibility of using alternative energy sources such as wind or solar energy to meet additional electricity requirements for the various technologies. In addition, one commentor believes that this possibility should be addressed in the PEIS. The commentors state that solar-generated electricity from a proposed central receiving and photovoltaic facility could be used for NTS. This could be handled by a private company, according to the commentors.

Response: *The possibility of utilizing solar energy to supply additional electrical power for the various technologies will be evaluated at NTS where a solar power demonstration project is scheduled for implementation. The potential contribution of electric supply from the central receiving and photovoltaic facility at NTS proposed by the Corporation for Solar Technology and Alternative Resources has been included in the Final PEIS analysis for NTS. Descriptions of the facility, the proposed construction and operation schedule, power output, and the contribution to the NTS energy system are discussed in section 4.3.2.2.*

02.03 Commentors state that the technology options which are capable of producing electricity result in avoided environmental impacts because they would displace existing generating capacity and/or new capacity, and that this should be discussed in the PEIS. One commentor also notes that the PEIS discusses at length the adverse impacts of transmission lines but provides no discussion of the avoided impacts that are realized by not having to build other generating capacity to supply the needs of the surrounding service area.

Response: *The PEIS does recognize the fact that the ALWR and MHTGR technologies can produce electricity. The benefit of selling this electricity is accounted for in the cost analysis included in the Technical Reference Report available in DOE reading rooms. Section 4.8.1 of the PEIS discusses the potential of the ALWR and MHTGR reactor technologies to produce power by a power conversion facility. This section also describes the potential for impacts associated with offsite distribution of that power. Incident to producing the tritium requirements, the ALWR and MHTGR technologies would also generate significant quantities of electricity (approximately 600 MWe, 1,300 MWe, and 400 MWe for the Small ALWR, Large ALWR, and three-module MHTGR respectively). Electricity produced from any of these reactors would likely be sold in accordance with Section 44 of the* Atomic Energy Act, *and DOE has incorporated the revenues from such electricity sale into the cost estimates for these reactors. The PEIS also addresses the potential environmental impacts of generating this electricity. In addition to this cost benefit, the benefit of not building future electrical production facilities could be realized. These so-called "avoided environmental impacts" are acknowledged for both the ALWR and MHTGR, and are discussed below.*

Primarily as a result of the Energy Policy Act *of 1992, the electric power industry is undergoing significant changes, most notably related to the transmission of electric power. It is expected that electric power will be more freely "wheeled" from one power pool to other power pools, essentially nationalizing the transmission of electric power. Transmission of electric power will be more efficient because there will be fewer barriers to the use of available and future electrical generating capacity. Thus, the demand for electricity in one part of the country could be met by an electrical generating facility operating in a different part of the country.*

A tritium production facility that also produces electric power would provide an additional 400 MWe to 1,300 MWe of electric power to supply future electrical demands, and could, thus, obviate the need to build some electrical generating facility in the future. This means that the potential environmental impacts of this additional facility could indeed be avoided. However, given the situation described above regarding the national wheeling of electric power, it would be speculative to say where the environmental impacts of a 400 MWe to 1,300 MWe would be avoided, or what type of electrical generating facility (e.g., coal, gas, nuclear, etc.) would not have to be built. About all that can be said with any certainty is that the environmental impacts of such a facility could be avoided. Nonetheless, this PEIS provides an environmental impact assessment of building 400 MWe to 1,300 MWe reactors at various sites around the country, and also assesses the environmental impact of constructing and operating a dedicated 550 MWe gas-powered facility at these same sites. These general types of impacts for 400 MWe to 1,300 MWe could be avoided because of the ALWR or MHTGR.

02.04 The commentor states that the analysis of regional power pool capacities and needs in the PEIS for Tritium Supply and Recycling is incorrect. The excess capacity for regional power pools is not extra electricity, but electricity needed by these power pools. The commentor is of the opinion that the PEIS projections for future growth in power pool regions may be inaccurate and this may force utilities to build new facilities if the APT technology is selected. In addition, the commentor also notes that the PEIS also incorrectly identifies the regional electrical power pool from which Pantex, through Southwestern Public Service Company, draws service. Southwestern Public Service is connected to the Southwest Power Pool, and has additional access to the Western Systems Coordinating Council and the Electric Reliability Council of Texas (refer to sections 4.5.2.2, 4.5.3.2, and 4.8.1, and table 4.5.2.2-2). The commentor suggests that DOE will want to review tables 4.5.2.2-2 and 4.5.3.2-2. As a result of this mistake, the commentor believes that the percentages shown in the public meetings as "percent power pool capacity margin" may be incorrect. Another commentor states that the future need for power in the southeastern United States should be assessed as part of the EIS. Commentors further suggest that the document should address how the APT may affect reserve electrical capacity within the proposed power pools in general and should fully evaluate the environmental effects and electricity-rate-based real costs of the additional electricity. One commentor believes that the risk analysis needs to take into account the additional risk if a power plant is needed to produce the additional power required for the APT.

Response: *The PEIS does not equate generating capacity reserve margin with excess electricity availability. Capacity margin is defined by the North American Electric Reliability Council as the amount of generating capacity available to provide for scheduled maintenance, emergency outages, system operating requirements, and unforeseen electrical demand. The PEIS recognizes that the reserve margin is an amount of electricity that is ineligible for use by all but the aforementioned activities. This is evidenced by the statement in section 4.5.3.2, site infrastructure, that additional energy and power required by the tritium supply and recycling alternatives would be accommodated with approximately 9 miles of transmission lines and a new electrical substation. This shows that the utility, and ultimately the subregional and regional power pools, could be expected to provide all of the equipment necessary to transmit the additional power, but does not imply that the additional power is to be supplied out of the reserve margin. Rather, the statement that the tritium supply and recycling alternatives would require between 0.47 and 4.28 percent of the reserve margin is an indication of what the subregional power pool would suffer in terms of loss of reserve margin if implementation of the tritium supply and recycling alternatives were not accompanied by new power generation, power imports, or demand side management. The PEIS defers to the decision of the respective utility and power pool as to exactly how this extra power would be supplied.*

The PEIS projections are only as accurate as the North American Electric Reliability Council pro-

jections. In an effort to limit errors in projections, North American Electric Reliability Council-projected data for 2002 was used as the estimate for 2005. This was done because the PEIS does not purport to assess electrical impacts for 2005 by further manipulating data that have already been estimated for 2002. The power pool analysis for the Pantex site has been corrected in the Final PEIS to reflect the West Central Subregion of the Southwest Power Pool as the primary provider of electricity to the site. This PEIS provides an indication of what the particular power pool would suffer in terms of loss of reserve margin if tritium supply and recycling alternatives requirements were not accompanied by new electrical generation.

02.05 The commentor is of the opinion that the PEIS should include a more detailed analysis of the proposed transmission lines for the tritium facility. The commentor further suggests that the analysis should include the proposed route of the lines, whether they will be underground, what the costs will be, and any potential impacts to human or natural resources in the area.

Response: *The location of tritium facilities on any of the five potential sites is merely representative and does not lend itself to the detailed analysis suggested in the comment. Based on the representative site, the electrical utility requirements, including amounts of new transmission lines, were assessed. Following the Record of Decision (ROD) on this PEIS, a site-specific tiered NEPA analysis could be performed in which a specific location of the facility on the chosen site would be evaluated. This would enable a more detailed analysis of the proposed transmission lines.*

02.06 The commentor states that the electrical power loads would range from 62 MWe to 566 MWe. The commentor states that the power requirements, depending on the technology, would require additional transmission lines and additional supply. The commentor points out that the Nevada Power Company is assumed as the supplier. The commentor suggests that the proposal should consider Valley Electric Power Company as a primary source for NTS as well. The commentor feels the proposed Solar Enterprise Zone may offset environmental impacts associated with power generation by providing a "cleaner" source of electricity for some of the additional load requirements.

Response: *The California and Southern Nevada Power Area Subregion is the assumed source of any additional power that the Nevada Power Company would obtain. Any more detailed analysis of procurement from other local power companies would be analyzed in the site-specific tiered NEPA documents. The possible impact of the proposed Solar Enterprize Zone on power requirements at NTS has been added in the Final PEIS.*

02.07 The commentor notes that the PEIS does not propose to use the existing natural draft cooling tower constructed for the K-Reactor at SRS. The commentor believes that the PEIS should consider the use of this facility, if technically feasible, because of pollution prevention considerations. Under the mitigation section (page 4-432), the commentor points out that the PEIS states that the existing treatment facilities could be used. The commentor expresses the opinion that these facilities (for example, liquid low-level waste (LLW) waste processing facilities, the saltstone process, and the proposed Consolidated Incineration Facility) should be maintained and upgraded as a preferable alternative to constructing new facilities.

Response: *DOE acknowledges that the K-Reactor cooling tower exists and that there is a potential for its use and it may represent a cost savings at that site. This information will be factored into the decision to select the tritium supply and recycling facility location. In addition, the use of other existing facilities such as waste management facilities mentioned in the comment would also be considered for use or possible upgrade in site-specific tiered NEPA analysis as an alternative to constructing new facilities to do the same job. The use of the natural draft cooling tower built for the*

K-Reactor will be considered in a site-specific tiered NEPA document if SRS is selected as the site for a new tritium supply reactor.

02.08 One commentor suggests obtaining cost estimates from commercial electrical companies and finding out if the power pools can support the APT electrical requirement. Another commentor also urges DOE to consider what would happen if the electricity for the APT were cut off (that is, how reliable are the commercial electrical companies).

Response: *Cost is not addressed in this PEIS but the cost estimates being prepared for the decision maker include the cost of buying electricity and the income from selling it, as appropriate. Reliability concerns for all of the technologies are being addressed in separate studies (feasibility reports) for the decision maker to consider. The cost and technical feasibility studies are included in the Technical Reference Report available in DOE reading rooms.*

02.09 Commentors are of the opinion that the PEIS should include the fact that some of the reactor technologies could produce electricity (or steam for conversion to electricity) and, as a result, would not require a new electricity source and might even be able to contribute electricity to the regional power pool. The commentors further suggest that the PEIS should consider this a potential benefit for selecting a reactor technology and DOE should incorporate this into their final selection of a technology. One commentor states that the evaluation in section 4.8.1 (page 4-442) of the sale of steam from tritium supply technologies is grossly unbalanced. According to the commentor, the PEIS states that the impacts of the sale are "too speculative" to be addressed at this time. Concerns regarding the separation of military and commercial nuclear technology are also raised by the commentor. In fact, the commentor states that the N-Reactor at Hanford sold electricity to the local utility. Furthermore, the commentor notes that this issue was addressed during the New Production Reactor Program. Initial discussions with the utility companies in the service areas of the candidate New Production Reactor sites were quite positive, according to the commentor. The commentor also believes that any precedents established at that time should be cited as a basis under which the sale of electricity from the tritium supply reactors could proceed. The commentor is of the opinion that there is sufficient basis from the New Production Reactor Program for assuming that electricity sales would take place. The commentor believes that the positive environmental impacts that result need to be considered.

Response: *It is reasonably foreseeable that electricity generated by the ALWR or MHTGR incident to the production of tritium would be sold, as allowed by Section 44 of the* Atomic Energy Act. *Thus, the PEIS includes an analysis of these potential impacts. Section 4.8.1 discusses the prospect of capturing the useful by-products (that is, steam and/or electricity) of operating either the ALWR or MHTGR to produce tritium. In both reactors, steam is produced. However, at the end of the first paragraph in section 4.8.1, the question of what to do with this steam (whether it is sold or used to generate electricity which is in turn sold) is clearly deferred to a separate site-specific tiered NEPA document. The sale of electricity is similar to the sale of steam in that both transactions require an in-depth analysis of site-specific utility and power pool electricity supply and demand projections. Again, this is more appropriately left to the separate site-specific tiered NEPA document mentioned above.*

02.10 The commentor states that DOE should not locate a new tritium facility at NTS because there is no experience in this area for the construction of a new nuclear reactor facility.

Response: *Technical feasibility and the schedule feasibility reports for completing the various tritium supply technologies at each candidate site have been made available to the decision maker and are reported in the Technical Reference Report available in DOE reading rooms.*

02.11 The commentor references the following statement in volume II, page I-10, APT: siting the APT at INEL "would utilize 4.15 percent of the regional power pool capacity margin." With the possibility of decreased generation by Bonneville Power Administration to help salmon recovery along the Columbia River, the commentor believes this large draw could become very problematic and needs significant discussion.

Response: *In the event of decreased generation by the Bonneville Power Administration, the Northwest Regional Power Pool Subregion in which INEL is located would adjust its resources to compensate for this loss of generating capability independent of the requirements generated by the APT at INEL. In any event, the APT electrical requirements could be supplied by constructing a dedicated natural-gas fueled power plant at INEL if the power was not available commercially. This option has been added to the Final PEIS and is evaluated on a site-specific basis.*

03 AIR QUALITY AND ACOUSTICS

03.01 Commentors express the opinion that there are some inconsistencies, flaws, and omissions in DOE's analysis of the potential impacts to air resources resulting from the proposed action. In general, one commentor believes that DOE should be more concerned about increased pollution levels and the effects these could have on visibility and air quality. Another commentor suggests that the analysis should include the increased pollutant levels resulting from additional power plants that may be needed or increased levels from existing plants. In addition, another commentor suggests that the emissions analysis in the PEIS for Tritium Supply and Recycling should clearly state where the data for each technology originated. Finally, if a nuclear facility is selected, one commentor believes that DOE should limit air exposures to more stringent standards than those currently established. The commentor believes that the air exposures should not exceed 1/10 of the existing standards. In the commentor's opinion, this would provide some room for error and avoid future shutdowns in the event these standards are not achieved.

Response: *The Final PEIS has been revised to consider the impact of an additional power plant which could be used to support the APT alternative. Air quality impacts for all the alternatives at each candidate site are conservatively estimated and discussed in sections 4.2.3.3, 4.3.3.3, 4.4.3.3, 4.5.3.3, and 4.6.3.3 of the Final PEIS. DOE believes that the current air quality standards which were used in assessing impacts and the modeling approach used are sufficiently conservative to assure that the public and environment are adequately protected. Sources of input data for the air quality analysis are referenced for each of the alternatives throughout the document and technical support data are presented in appendix B. Source documents are provided in DOE reading rooms. The air emission standards for criteria pollutants, hazardous/toxic, and radiological emissions are set by the Environmental Protection Agency (EPA) and/or the states to protect workers and the public and already include an additional margin of safety. DOE intends to meet these standards and, for most categories, operations would result in small increases to the site emissions. The resulting total emissions would still fall below regulated standards.*

03.02 The commentor references section 4.1.3, air quality and acoustics, (volume I, page 4-5, column 1, paragraph 1) and appendix B, methodology and models, (volume II, page B-2, column 1, paragraph 1). The commentor is of the opinion that the assumptions described for modeling the effect of toxic/hazardous pollutant emissions are not necessarily conservative, especially the artificial placement of sources at the center of a large site, such as the INEL.

Response: *The sources are centrally located within the complex of facilities at the proposed TSS, not within the entire site. The phrase "within the complex of facilities" has been inserted after "centrally located" in the two locations noted above for clarification. The emissions have been "double* *counted" to ensure that the baseline is conservative. The proposed TSS emissions are accurate as described above. There will always be limitations associated with modeling.*

03.03 The commentor questions why no mention was made of the proposed action's impacts on global climate change. According to the commentor, the Draft PEIS indicated that if the electrical power for the New Production Reactor was fossil fuel generated, then the combustion could produce "...about 0.01 percent of the total United States emissions of the gas (carbon dioxide) with potential significant cumulative effects on global warming." The commentor recommends the addition of a clarifying statement concerning potential project impacts on global climate change.

Response: *The emissions of greenhouse gases for the reactor alternatives (HWR, ALWR, MHTGR) range from approximately 64 tons per year for the light water reactor at Pantex to approximately 230 tons per year for the MHTGR at NTS, ORR, or Pantex. Compared to the estimated 5 billion tons per year of carbon dioxide released in the United States each year, these emissions represent less than one-hundredth of a percent increase.*

The APT emissions of greenhouse gases is approximately 13 tons per year without an associated electric power facility. Emission of greenhouse gases from a 600 MWe natural gas-fired turbine facility would generate approximately 1 million tons per year of greenhouse gases. These combined emissions would be greater than those for the reactor alternatives, but would still be less than two one-hundredths of a percent of the carbon dioxide released in the United States each year.

03.04 Referring to sections 4.5.2.3 and 4.5.3.3, air quality and acoustics, several commentors note potential advantages in the area of air emissions at Pantex. The commentors see no emission rates in appendix table B.1.4-4 that would trigger Prevention of Significant Deterioration review or permitting for any of the technologies at Pantex, although section 4.5.3.3 states that Prevention of Significant Deterioration permits may be required. The commentors find no evidence that Prevention of Significant Deterioration permits could be triggered by the Pantex tritium program and strongly encourage DOE to revisit this section of the EIS. The commentors also note that Pantex is in the air quality attainment zone for automobile and industrial pollution, that this is not true of other candidate sites, and that there are no Prevention of Significant Deterioration Class I areas in the vicinity.

Additionally, one commentor points out that the estimated impacts of toxic hazardous air pollutants from any of the tritium supply technologies and recycling facilities at Pantex clearly would comply with applicable air quality regulations and standards, which protect human health and welfare and the environment with an ample margin of safety. The commentor also notes that the Pantex area, by wide margins, is in compliance with all air quality standards - with the one exception of the 30 minute standard for hydrogen chloride (exceeded occasionally at the Burning Ground, where a high explosives treatment/disposal facility is expected to reduce the hydrogen chloride emissions so that even the short-term standard is not exceeded). The commentor states that there appears to be nothing in the Tritium Supply and Recycling Program that would degrade the air quality at Pantex. Equally, nothing in the program is anticipated to degrade the area acoustically, according to the commentor.

Response: *The rationale for the text statement "that Prevention of Significant Deterioration permits may be required" at Pantex is as follows: As shown in table 4.5.3.3-1, the 2010 No Action Pantex emissions for nitrogen dioxide plus incremental nitrogen dioxide emissions from the MHTGR facility would exceed the Prevention of Significant Deterioration applicable 100-ton-per-year emission criterion. Pantex would therefore be designated as a major source. Also, the MHTGR facility would result in a significant net increase in emissions of nitrogen dioxide (greater than 40 tons per year) at Pantex. Therefore, the increase of nitrogen dioxide would subject it to a Prevention of Significant Deterioration review.*

03.05 The commentor notes that the proximity of the Great Smoky National Park, a Prevention of Significant Deterioration Class I area, to ORR may require significantly more stringent mitigation for air resource impacts. The commentor recommends that this be noted in the impacts section of the PEIS.

Response: *The following sentence has been inserted in sections 4.2.3.3 (INEL) and 4.4.3.3 (ORR) of the Final PEIS: "The proximity of Prevention of Significant Deterioration Class I areas may require significantly more stringent mitigation for air resource impacts."*

03.06 The commentor states that on page B-33, the value of 4.60 under APT should probably be under ALWR as it was in the previous four tables.

Response: *The commentor is correct and the appropriate changes have been made in the Final PEIS.*

03.07 Regarding section 4.4.3.3, the commentor suggests providing a cost structure for the possibility of lowering the airborne emissions for each tritium supply technology.

Response: *A cost structure to lower the airborne emissions for each tritium supply technology is beyond the scope of the PEIS, although no exceedances of regulatory limits were identified. Additional detail will be provided as appropriate in site-specific tiered NEPA documents.*

03.08 The commentor states that it is difficult to locate references in the PEIS. For example, on page 4-275, "EPA 1974a" is not even listed in the reference section (page 6-10). The commentor also notes that on page 4-273 table 4.5.2.3-1 has no reference.

Response: *EPA 1974a is listed in the February 1995 draft as follows:* "EPA 1974a Environmental Protection Agency (EPA), Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, (550/9-74-004), Office of Noise Abatement and Control, Arlington, VA, March 1974." *The references for table 4.5.2.3-1 are listed under "Source" at the bottom of the table. Both source documents are listed in the references.*

03.09 The commentor claims that NTS does not and did not perform any modeling for criteria and non-criteria pollutants. The commentor wants DOE to explain the origins of the results on page 4-108.

Response: *The modeling for NTS was performed in accordance with the methodology presented in section 4.1.3, air quality and acoustics, and further described in appendix B.*

04 WATER RESOURCES

04.01 Surface Water

04.01.01 The commentor is of the opinion that DOE should be concerned about surface water discharge from the APT once-through cooling system. An analysis of this discharge should be included in the PEIS, according to the commentor.

Response: *As discussed in section 4.3.3.4 of the PEIS, cooling system blowdown and sanitary wastewater from the APT would be treated and recycled for reuse as cooling system makeup. The treated effluent from the process treatment would be discharged to evaporation ponds. Treated effluent would be monitored to comply with the NPDES permit and other discharge requirements. There would be no discharges to surface water from operation of the tritium supply technologies at NTS.*

04.01.02 The commentor expresses several concerns about surface water at ORR. Regarding chapter 4, table 4.4.2.4-1, page 4-185, the commentor requests that DOE explain how the "Average Water Body Concentration" values were derived. In the paragraph "surface water rights and permits" on page 4-186, the commentor believes that DOE should include the following: "Dependent on intake location, construction may require a 26A permit from Tennessee Valley Authority, review by the Watts Bar Inter-Agency Working Group, State Aquatic Resources Alteration Permit, or a Corps of Engineers 404 permit with State 401 certification."

Response: *Regarding table 4.4.2.4.-1, the average water body concentration values were derived from monitoring data provided by ORR. The site average water body concentration is derived by taking an average of the samples collected throughout the year (monthly or quarterly), and taking an average of the results of the analysis. The text in section 4.4.2.4 of the Final PEIS under surface water rights and permits has been changed to incorporate the commentors suggested revision: "Dependent on intake location, construction may require a 26A permit from the Tennessee Valley Authority, review by the Watts Bar Inter-Agency Working Group, State Aquatic Resources Alteration Permit, or a Corps of Engineers 404 Permit with State 401 certification."*

04.01.03 The commentor states that in the PEIS Los Alamos National Laboratory is described as infeasible and impractical as an alternative site for APT-generated tritium because of cooling water requirements. However, the commentor notes that there are similar water limitations in southeastern Idaho. At a minimum, the commentor believes that the PEIS should acknowledge that surface water in southeastern Idaho is the subject of ongoing court adjudication. The commentor notes that the outcome of this process cannot be predicted at this point, but ultimately it could affect INEL's water rights.

Response: *The text has been modified in section 4.2.2.4 of the Final PEIS under surface water rights and permits indicating that surface water in southeastern Idaho is the subject of ongoing court adjudication.*

04.01.04 Commentors note that DOE is currently involved with remediation of East Fork Poplar Creek (near ORR) under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) because the creek was contaminated by past releases from the Y-12 plant. Significant cleanup activities are required onsite and offsite. The commentors suggest that any activities (e.g., cooling tower blowdown) involved with tritium production that include discharges to the creek causing scouring, erosion, and flooding may be unacceptable and contrary to the goals of the remedial activities.

Response: *The following text has been added in section 4.4.3.4 of the Final PEIS under surface water and groundwater "As discussed in section 4.4.2.4, DOE is currently involved with remediation of East Fork Poplar Creek under CERCLA. Any discharges, including cooling tower blowdown, involved with tritium production that may potentially impact East Fork Poplar Creek would require engineering design mitigation measures to avoid interference with the goals of the remediation effort."*

04.02 Groundwater

04.02.01 Commentors express the opinion that the water resources analysis in the PEIS lacks consideration of some reasonable and superior alternatives, and unfairly favors other sites over Pantex. For example, treated wastewater from the sites or the surrounding communities could be used to provide the water and cooling requirements of the various technologies and decrease or eliminate the need to withdraw groundwater from the Ogallala aquifer and eliminate any aquifer drawdown at Pantex. In addition, the commentors believe DOE should evaluate water conservation practices (such as those employed by the city of Phoenix) and advanced technologies that could also be employed to reduce water use impacts, particularly at Pantex and other "dry" sites. Other commentors note that the region around Pantex is dependent on the Ogallala aquifer and DOE should examine all program and other activities, such as the red bed drilling and pumping that are in process in and around Pantex, that could cause aquifer drawdowns. In addition, any activities that could introduce contamination into groundwater (either directly or indirectly through playa discharges) should be analyzed in detail.

Response: *No wastewater will be directly discharged to groundwater. All wastewater will be recycled or treated prior to any discharge to the playas. Furthermore, such discharges will be monitored and controlled by permits. Groundwater contamination is a result of past operations and with proper wastewater treatment methods will not present a problem in the future. Based on public comment and new information, only reclaimed wastewater has been evaluated for cooling system water usage for the proposed tritium supply technologies at Pantex. Groundwater is not proposed to be used for cooling and other production operations. The reclaimed wastewater would be obtained from the city of Amarillo Wastewater Treatment Plant. The red bed drilling and pumping that are in process in and around Pantex would be examined in site-specific tiered NEPA documents if Pantex is selected as the TSS. The following text has been added in section 4.5.2.4 in the Final PEIS under surface water: "Since the 1960s, reclaimed waste effluent has been used for cooling water processes on the Texas High Plains. There are two potential sources of reusable wastewater available in the vicinity of Pantex Plant: the Hollywood Road Wastewater Treatment Plant and the Pantex Plant Wastewater Treatment Facility."*

The Hollywood Road Wastewater Treatment Plant is located on the southside of Amarillo, approximately 20 miles from Pantex. Currently the Hollywood Road Wastewater Treatment Plant is discharging approximately 7 MGD (2,555 MGY) of advanced secondary treated water that has gone through a filter treatment and is then discharged to the Prairie Dog Town Fork of the Red River. This amount is anticipated to increase to 12 MGD (4,380 MGY) by the year 2010. A commitment has been made by the city of Amarillo to develop this wastewater to reduce the amount of groundwater withdrawals and slow the annual decline rate of the Ogallala aquifer. In addition, a commitment has been made between the city of Amarillo and DOE to use reclaimed wastewater from the Hollywood Road Wastewater Treatment Plant. The analysis of water resources for tritium supply at Pantex now includes use of reclaimed wastewater in lieu of groundwater.

04.02.02 Commentors believe that the water requirements for the APT are significant at NTS. Commentors also suggest that DOE study NTS basin recharge rates to clearly understand the amount of groundwater available to the project. In addition, commentors believe that DOE should also confirm that future NTS water needs were considered in addition to current and tritium supply and recycling requirements. Considerations should include impacts on local water needs, financial and environmental costs associated with aquifer drawdown, and increased water consumption as a result of future and concurrent projects at the site, according to the commentor. Commentors also believe that the PEIS should include an analysis of the impacts from potential existing or future contamination of aquifers associated with DOE activities.

Response: *When a site has been selected, a site-specific evaluation of water resources will be performed on local water needs (farmers, businesses, etc.). The site water requirements were based on future projects and site workload reasonably foreseeable at this time. Previous recharge rates furnished by NTS have been modified by the site and the new recharge rate numbers have been used to re-evaluate the tritium supply and recycling facilities. The new recharge rates indicate that none of the technologies would exceed the new recharge rates. The units for flow rate of a particular area are gallons per day or year. All data were based on studies that used recharge rates or flow over a* *given amount of time and over a given area. The text has been modified so the recharge rates are not averages, but various estimates of flow exemplified among authors. All authors rely on similar methodologies and assumptions, so the uncertainty in recharge and discharge estimates is based on a lack of complete data and different initial assumptions. However, the following specific revisions have been made.*

The discussion of groundwater in section 4.3.2.4 of the Final PEIS has been expanded to include the following: "A study by the United States Geological Survey (Harrill et al., 1988) balanced the amount of recharge and discharge throughout the Great Basin and estimated a total of 32 BGY recharge for the entire Death Valley System. Of this total, about 11 BGY flowed through or near Frenchman Flat into the Ash Meadows discharge area to the south. A study by the Desert Research Institute (A Deuterium-Calibrated and Discrete-State Compartment Model of Regional Groundwater Flow, Nevada Test Site and Vicinity (DOE/NV/108, March 1992)) modeled groundwater flow through discrete areas of the Death Valley system and concluded that of 16 BGY total system recharge, about 7 BGY flowed through Frenchman Flat. These differences in estimates of flow exemplify common variations among authors of a factor of 2 or 3 but rarely of as much as a factor of 10. All authors rely on similar methodologies and assumptions, so the uncertainty in recharge and discharge estimates is based upon a lack of complete data and different initial assumptions."

The discussion of groundwater availability, use and rights in section 4.3.3.4 has been expanded to include the following: "Some proportion of the estimated flow through Frenchman Flat (11 BGY) is available for use by the tritium technologies. The exact amount available would have to be determined through site-specific studies to determine potential impacts on Ash Meadows and Devil's Hole and surrounding users. Harrill et al., 1988 estimated that there is four times as much water in storage as there is in annual recharge. Thus, there is the capacity to buffer the effects of annual or multi-year droughts through the use and replenishment of stored water. In addition, substantially more water could be made available by using resources in the Alkali Flat-Furnace Creek Ranch Subbasin to the west (service area D of figure 4.3.2.4-1)."

04.02.03 One commentor notes that NTS and the city of Las Vegas use completely independent and separate groundwater basins to meet their water needs. Therefore, the commentor believes that water resources should not be an issue at NTS. Another commentor expresses the opinion that the need for jobs and an economic boost outweigh the needs to conserve a water source which only serves the needs of NTS.

Response: *The city of Las Vegas, like the NTS, is located in the Great Basin. Even though most of the city of Las Vegas's potable water is obtained from surface water resources, approximately 15 percent of the water is obtained from groundwater wells, making groundwater a vitally important natural resource. Because a portion of the community relies on groundwater to supply a portion of its freshwater needs, it will be directly affected by groundwater usage and quality. The proper water resources for the tritium facility to operate effectively would also relate to additional jobs and economic benefit to the surrounding communities. Both the impacts to water resources and socio-economics will be weighed by the decision maker.*

04.02.04 Several commentors note that the PEIS for Tritium Supply and Recycling should have a more thorough analysis of the potential for aquifer contamination at INEL. Commentors state that past practices at the site have resulted in tritium contamination to the Snake River Plain aquifer. The aquifer is vital to southern Idaho and the commentors suggest that the PEIS identify all possible pathways (including those initiated by earthquakes) through which discharges (radioactive or not) could reach the aquifer or the land. The commentors also want DOE to provide additional information about groundwater supply impacts on the Snake River aquifer if the APT is selected for INEL.

Another commentor refers to the section on groundwater quality in volume I, page 4-26 of the PEIS, and offers several changes. According to the commentor, the following sentence is inaccurate: "Two groundwater monitoring networks are operated at the INEL, one by the United States Geological Survey, the other by Radiological Environmental Science Laboratory." The commentor points out that there are several "networks" of monitoring wells drilled and maintained by the USGS. These include the INEL-wide facility groundwater monitoring group and well networks for *Resource Conservation and Recovery Act* (RCRA) and CERCLA-required monitoring. In addition, the commentor notes that groundwater beneath the INEL is monitored by groups including the USGS, DOE's site contractor, Lockheed Idaho Technology Company, other DOE contractors, and the State of Idaho. The commentor quotes further from page 4-26: "No tritium is currently disposed of at the INEL..." The commentor suggests that this statement should read: No tritium is currently disposed to the groundwater at the INEL.

Continuing on page 4-26, the commentor also refers to this statement: "Other radionuclides of significance include strontium-90, cesium-137 and iodine-129. The first two, especially cesium-137, are strongly held on mineral grains in the soil. Therefore, it is unlikely that either will reach the aquifer in significant quantities." The commentor contends that this statement suggests that all strontium-90, cesium-137, and iodine-129 in the aquifer had to migrate through the vadose to reach the aquifer. From ORR and Cecil, 1991 (DOE/ID-22096), the commentor notes that in 1988 there was an area of about 1 mi^2 where the strontium-90 concentrations exceeded the Maximum Containment Level. There are significant enough quantities of strontium-90 present to exceed the Maximum Containment Level over this region. In addition, the commentor states that recent CERCLA investigations at the Idaho Chemical Processing Plant under the Federal Facility Agreement/Consent Order indicate that there is a significant source term of strontium-90 in the vadose and the current strontium-90 levels in the aquifer are as great as when direct injection of strontium-90 bearing wastes was occurring. The commentor believes that this discovery, with supporting information from vadose monitoring wells, suggests that strontium-90 levels in the aquifer may increase in the future.

Response: *Water sampling at INEL includes both onsite and offsite groundwater monitoring with samples taken from the Snake River and other surface streams and tributaries in the INEL vicinity, some of which flow onto the site and sink into its porous soils. Because the Snake River Plain aquifer, which lies beneath INEL, serves as one of the primary sources for drinking water and crop irrigation in the Snake River Basin, the USGS has an extensive monitoring program to maintain surveillance of the aquifer, and perched water bodies above it, on INEL and at a few locations beyond the southern and western boundaries. Results of monitoring of surveillance activities that are published in USGS reports are summarized in the* INEL Site Environmental Report *annually. At INEL, not all environmental monitoring responsibilities reside within the same organization. Operating contractors at each INEL facility are responsible for monitoring of effluents (releases) and for any ambient environmental monitoring or surveillance performed within the facility fences. The most extensive of these is conducted by EG&G Idaho. The Environmental Monitoring Unit conducts a radiological environmental surveillance program which includes water.*

Low, but detectable, concentrations of tritium, the most mobile low-level radioactive contaminate in the water of the aquifer, were reported in samples from wells just inside the INEL boundary in 1983. However, tritium from INEL has never been detected in any of the wells south of the boundary. Thus atmospheric transport is the principal potential exposure pathway from the site. Therefore, liquid-borne radioactive materials disposed to surface disposal ponds could percolate down through the porous soils into the Snake River Plain aquifer and into pumped water supplies. In addition, air to surface transfer of airborne radioactive materials could go to the Big Lost River (intermittent stream) and affect upstream fish migration, or air to surface transfer of airborne radioactive materials could fall on soils and percolate downward to the Snake River Plain aquifer. Assessments, *including monitoring programs and self-assessments, are being conducted onsite and offsite, as discussed in the INEL baselines, section 4.2.2.4. With regard to earthquakes, all proposed project structures would be built to meet DOE design standards applicable to the seismic area. In addition, facilities such as the tritium supply would meet the standards of 10 CFR 100, appendix A. Additional information about groundwater supply impacts on the Snake River aquifer if the APT is selected for INEL will be addressed in site-specific tiered NEPA documents.*

In the Final PEIS the first few sentences under groundwater quality, section 4.2.2.4, have been rewritten as follows: "There are several 'networks' of monitoring wells drilled and maintained by USGS. These include the INEL sitewide facility groundwater monitoring group and well networks for RCRA and CERCLA required monitoring. Groundwater beneath INEL is monitored by groups including USGS, DOE's site contractor, Lockheed Idaho Technology Company, other DOE contractors, and the State of Idaho." Text in the second paragraph of section 4.2.2.4 has also been rewritten to read: "No tritium is currently disposed to the groundwater at INEL; however, tritium plumes are present in the Snake River Plain aquifer and in perched groundwater under these sites (figure 4.2.2.4-2 (in USGS 1988a)."

04.02.05 Commentors assert that DOE needs to address and clarify some issues involving the playas at Pantex. The commentors express the opinion that the PEIS should address whether the discharge of water at high temperatures to the playas has any impacts, whether pollutants discharged into the playas will seep into the aquifer (high explosives and nitrates have been found in the aquifer), whether the characterization of the playas as dry lakes is accurate, and the possibility that discharges to the playas actually sustain species and play a beneficial role (currently in the PEIS, wastewater discharges are portrayed as degradations).

Response: *All discharges would be in compliance with existing NPDES permits and no impacts were identified in the analysis or are anticipated. In addition, the following text has been added to section 4.5.3.4 in the Final PEIS under surface water: "Closed-cycle cooling systems include cooling ponds and towers. Because it is a closed system, water is recirculated through the plant and tower or pond and replenished only to the extent that it evaporates. These systems discharge heat to the atmosphere rather than to water. The only water that is to be discharged to the playa is treated sanitary wastewater of the same type currently discharged. All wastewater discharged from the wastewater treatment plant is at ambient temperature."*

04.02.06 The commentor believes that salt deposition from cooling towers may impact groundwater quality. The commentor notes that salt was not addressed as a potential source of groundwater contamination. The commentor is of the opinion that the PEIS should address the potential effects of supply and recycling activities on downstream and downgradient public water supply systems.

Response: *Impacts associated with tritium supply and recycling activities on public water supply systems would be addressed in site-specific tiered NEPA documents once a site is selected. Additional information has been added to all sections regarding salt deposition from the cooling towers. Any salt coming from the cooling tower originated from the ground or surface water depending upon the site. At dry sites (that is, Pantex, NTS, and INEL), dry cooling towers will be used, and salt would not be released at all from the cooling tower. There could be some concentration of salt in the blowdown water, but that can be treated. The dry cooling tower with blowdown recycle would couple reverse osmosis with an evaporator and crystallizer system that would remove the dissolved solids from blowdown so that water could be recycled to the cooling tower. This system would reduce peak requirements for makeup water and discharge would not require disposal. The solids from the crystallization processes would be disposed of as waste. This system would reduce the salt from the cooling tower as well as from blowdown.*

At wet sites (that is, SRS and ORR), because the salt is concentrated in a wet cooling tower, it can damage vegetation in a small area near the facility. At all the wet sites there is adequate rainwater and groundwater flow such that the salt from the cooling tower would be flushed into the groundwater and diluted. The groundwater and surface water systems are connected such that the salt originating from the major surface water body (that is, Clinch River and Savannah River) and reaching the groundwater will return to the river and the total amount of salt in the ecological system would remain the same.

04.02.07 Commentors believe that there are some additional water resources issues that DOE should address in the PEIS for Tritium Supply and Recycling: DOE should provide documentation of the reasoning behind the groundwater numbers in the PEIS; the water usage numbers at the sites should be adjusted for the relative humidity at the sites; DOE should acknowledge and address the fact that recent studies have suggested that Pleistocene groundwater in the western United States may be a nonrenewable resource and that "dry" years are causing more drawdown than DOE indicates; aquifer water levels in the PEIS should be shown as depths, not only as elevations; DOE should ensure that an adequate number of groundwater drawing sites are present at each site; and, DOE should indicate exactly where drawdown is being measured and whether those measurements adequately characterize the total area drawdown.

Response: *The PEIS groundwater quality numbers were derived by taking groundwater samples from existing monitoring or water production wells, running an analysis and comparing water quality criteria and standards to the sample results. Groundwater usage numbers were derived from current data on what is being used at the candidate sites. No Action (2010) water usage was derived by each site based on projected mission and related activities. No Action also included any new reasonably foreseeable projects or missions that could be added to the site and their expected water usage. Total water requirements for construction and operation are calculated by adding No Action water requirements with the requirements for each tritium technology. The percentage increase in water use due to the proposed tritium supply project was then calculated based on the No Action usage.*

The relative humidity at each candidate site was not included in the engineering analysis to determine water requirements. The preconceptual design of the proposed tritium supply technologies is not of the quality to determine the increase or decrease of water usage based on each sites environmental setting. In addition, the preconceptual designs were "greenfield" (the same design was evaluated at each site without any modifications to take advantage of existing infrastructure, resources, or environmental setting) except for the designation of "wet" and "dry" sites and the change in cooling systems. At the programmatic level of analysis, the water usage numbers for each technology are of sufficient quality to identify differences for selection of a tritium supply. When a tritium supply technology and site are selected, the site-specific tiered NEPA document will consider all these factors, including the effects of relative humidity on water requirements for the selected technology.

The commentor is correct in stating that recent studies have suggested that Pleistocene groundwater in the Western United States may be a nonrenewable resource and that "dry" years are causing more drawdown. These are just a few of the reasons why alternative water sources, such as reclaimed wastewater from the city of Amarillo Hollywood Road Wastewater Treatment Plant, have been proposed as potential water sources for new tritium supply facilities.

The map indicating water elevations was provided by the Panhandle Groundwater Conservation District No. 3. In that region water depths are measured by the district in elevations because it gives *a better indication of the areas that contain more or less water because of the land surface. The average elevation of the land surface 3,550 feet must be subtracted from the elevation to show the depth to the groundwater surface.*

The groundwater drawdowns reported in the PEIS were measured from the city of Amarillo water production supply well field area. Further groundwater withdrawal analysis at the Pantex site and in the surrounding area would be addressed in site-specific tiered NEPA documents if Pantex is selected as the TSS. Based on public hearing comments and information received during the public review of the Draft PEIS, however, reclaimed wastewater is analyzed as the source of cooling water for the tritium supply technologies at Pantex in the Final PEIS.

04.02.08 In reference to volume I, page 4-28, groundwater availability, use and rights at INEL, the commentor expresses concern about the following statement: "The combined pumpage of the 27 onsite production wells averaged approximately 2,100 MGY from 1982 through 1985." The commentor suggests that more recent data are available and are used in the Spent Nuclear Fuel INEL Environmental Restoration and Waste Management EIS. The more recent data are slightly less, at about 2,000 MGY. The commentor also expresses concern about another statement in the section: "This is 40 percent of the 5,280 MGY of groundwater withdrawn from the aquifer in the Eastern Snake River Plain." The commentor notes that Lindholm, 1993 (USGS Open-file Report 91-98), states that in 1980, 1.9 million acre feet of water was pumped for irrigation on the Eastern Snake River Plain at 3.0689 acre feet per million gallons, that is 619,114 million gallons. Since irrigation accounts for an estimated 96 percent of all groundwater use, the commentator notes total pumpage from the Eastern Snake River Plain aquifer is about 645,000 MGY. Therefore, the commentor contends that water pumped by the INEL is more like 0.3 percent of all water pumped from the aquifer.

Response: *The text has been rewritten in section 4.2.2.4 in the Final PEIS under groundwater availability, use and rights, considering the new information in Lindholm, 1993 as follows: "The combined pumpage of the 27 onsite production wells averages approximately 2,000 MGY. This is 0.3 percent of the 645,000 MGY of groundwater withdrawn from the aquifer in the Eastern Snake River Plain. Most of the water withdrawn from the aquifer in the Snake River Plain (619,114 MGY) is used for agriculture (Lindholm, 1993)."*

04.02.09 At SRS the need for excavation and dewatering for the APT, as well as the gas-cooled reactor, may lead to upsets in the natural flow of surface and ground water, in one commentor's opinion. The commentor contends that mitigation and monitoring will be extremely important to ensure that there is no potential for significant flow of contaminants into the construction area because of the extensive groundwater contamination already present at the site. Another commentor states that the tritium facility should not be located at SRS in order to preserve the quality of the Savannah River for drinking water.

Response: *The text in section 4.6.3.4 has been modified and clarified, so the reader will have a better understanding of the process of dewatering and mitigation measures that will be implemented during the process to ensure that there is no potential for significant flow of contaminants into the construction area.*

04.02.10 Several commentors have serious concerns about the APT and its effect on water resources, especially at the dry sites. One commentor requests clarification of the GPY that the APT would require, as the number seems inflated. Additional commentors believe that DOE has overstated the water requirement for the natural gas-fired plant. One commentor notes that if treated wastewater is used for the APT, an assessment must be performed on the area to which the wastewater is currently discharging. Another commentor requests clarification on the term N/A for the APT closed loop system, i.e., if this means that the APT would not be located at a dry site.

Response: *The water requirements for the various technologies were provided by an independent engineering contractor, based on preconceptual designs. Until the technology and site location have been chosen, the numbers will remain generic to the technology and type of site (wet vs. dry). Future site-specific tiered NEPA documents will further analyze water requirements and their impacts. The APT is being considered for location at all five candidate sites.*

04.02.11 Regarding section 4.4.2.4, page 4-186, 2nd paragraph, the commentor asks that DOE provide more detailed information on the flow of groundwater in the vicinity of the proposed TSS, identify sources of information used in the groundwater section, and clarify where the "class" of aquifers originated.

Response: *The text has been modified to add more detail on the flow of groundwater in the vicinity of the proposed TSS. The sources for the groundwater discussion in section 4.4.2.4 are DOE and the site documents cited in chapter 6. As of 1988, the sole source aquifer (SSA) program allowed individuals and organizations to petition the EPA to designate aquifers as the "sole or principal" source of drinking water for an area. The program was established under section 1424(e) of the* Safe Drinking Water Act (SDWA) *of 1974. The primary purpose of the designation is to provide EPA review of Federal financially assisted projects planned for the area to determine their potential for contaminating the aquifer. The EPA has developed a three-part classification system for the groundwaters of the United States:*

Class 1: Special Groundwaters are those that are highly vulnerable to contamination because of the hydrological characteristics of the areas under which they occur and that are also either an irreplaceable source of drinking water or ecologically vital in that they provide the base flow for a particularly sensitive ecological system.

Class II: Current and Potential Sources of Drinking Water and Waters Having Other Beneficial Uses are all other groundwaters except Class III.

Class III: Groundwaters Not Considered Potential Sources of Drinking Water and of Limited Beneficial Use because the salinity is greater than 10,000 mg/L or the groundwater is otherwise contaminated beyond levels that can be removed using methods reasonably employed in public water-supply treatment.

The EPA uses this classification scheme in promulgating rules and regulations at the Federal level. The highest degree of protection is given to Class I groundwater.

04.02.12 The commentor is concerned about the groundwater contamination at SRS. The commentor states that tritium from the SRS has contaminated wells in Georgia. In addition, the commentor suggests that DOE must address this issue carefully and ensure that no further contamination occurs.

Response: *Groundwater contamination at SRS is a legacy of past waste disposal and operational activities. Groundwater Quality Assessment reports have been submitted to the State of Georgia for numerous years. There are no longer discharges of waste to groundwater under present operational discharge controls. All waste water is treated and discharges controlled by the permit process. The status of current operations is reported annually to the public in the SRS Environmental Report.*

Industrial solvents, metals, tritium, and other constituents used or generated on the site have contaminated the shallow aquifer beneath 5 to 10 percent of the site. These aquifers are not used for *drinking water or for SRS operations; however, they do discharge to site streams and eventually to the Savannah River. During operations of a tritium supply and recycling facility, no direct discharges to groundwater will be made. All wastewater will be treated and then discharged to SRS streams. Discharges made to SRS streams that discharge to the Savannah River will be within NPDES permits and will comply with South Carolina Water Quality Standards. Currently there are several onsite and offsite remediation efforts being performed.*

05 GEOLOGY AND SOILS

05.01 Commentors suggest that the PEIS for Tritium Supply and Recycling should address general seismic and volcanic effects on new facilities, as well as site-specific conditions, when selecting a site for the proposed activities. One commentor states that future nuclear testing at NTS could increase the seismic risk to any tritium facilities located there. Another commentor further states that INEL is located in an earthquake-prone zone and is not a safe place to site the proposed tritium facilities. Other commentors add that site-specific issues, such as proximity to capable faults, should be addressed in the PEIS.

Response: *Sections 4.2.2.5, 4.3.2.5, 4.4.2.5, 4.5.2.5, and 4.6.2.5 of the PEIS discuss geology and soils for the INEL, NTS, ORR, Pantex, and SRS sites, respectively. Issues such as volcanic hazard, seismicity, and proximity to capable faults were addressed in those sections. The five candidate sites are considered to have little or no volcanic hazard. As discussed in the summary of environmental impacts for each site (sections 4.2.3.5, 4.3.3.5, 4.4.3.5, 4.5.3.5, and 4.6.3.5), the seismic risks ranged from negligible to moderately low. The existence of a low or moderate seismic risk would not preclude the safe construction and operation of the proposed facilities at any of the sites. NTS and INEL are the only two sites where capable faults exist; however, no faults are directly located on the proposed location of the proposed TSS facility. No known capable faults were detected at the other sites, and for those areas ground shaking rather than ground rupture would be more likely. The proposed TSS facilities would be designed for earthquake generated ground acceleration in accordance with DOE Order 5480.28 and accompanying safety guides.*

05.02 Commentors are of the opinion that seismicity and geology have been totally ignored in the PEIS and that Pantex is by far the superior site for the tritium production facility. The commentors categorize the following as advantages at Pantex: no evidence of active faults has been found at Pantex; seismic hazards are minimal; engineering load-bearing capacities of soils and ground sediments are superior to other candidate sites; Pantex has less than 7 percent land area designated as wetlands; the site may be excavated safely on steep, stable slopes; and it is suited for cut and cover construction.

Response: *Sections 4.2.2.5, 4.3.2.5, 4.4.2.5, 4.5.2.5, and 4.6.2.5 of the PEIS discuss seismicity, geology, and soils at all candidate sites. These factors identified by the commentor, as well as many others, will be considered and evaluated in the decision process leading to the selection of the tritium supply technology and the preferred site.*

05.03 The commentor states that in terms of seismic-induced impacts, the PEIS failed to address the relationship between nuclear testing and tritium production at NTS. The commentor also states that although a moratorium on nuclear testing has been extended indefinitely, the Administration's current defense policy requires DOE to retain the capability to resume nuclear testing (The President's fiscal year 1996 includes $206 million to support the nuclear testing readiness program at NTS).

Response: *The PEIS did not address a relationship between nuclear testing and tritium production. Although underground testing was halted in 1992, NTS maintains the capability to resume testing if* *required. In terms of seismic-induced impacts, although NTS is located in an area of moderate historic seismicity as discussed in section 4.3.2.5, facility designs ensure no adverse effects. As described in section 4.3.3.5, facilities would be designed for earthquake-generated ground acceleration in accordance with DOE Order 5480.28 and accompanying safety guides.*

05.04 The commentor states that in sections 4.5.2.5 and 4.5.3.5, geology and soils, the Draft PEIS correctly characterizes the soils that underlie Pantex as Pullman-Randall and characterized by "very low permeability clays and clay loams." The commentor also states that this fact greatly mitigates possible concerns (on page 4-305) about percolation to groundwater of treated wastewaters discharged to playas. The commentor asserts that DOE also correctly characterizes the seismicity of the Pantex area as low. However, the commentor notes that on page 4-278, one of the subject basins is incorrectly identified as the "Palo Verde Basin" rather than the "Palo Duro."

Response: *As discussed in section 4.5.3.4, reclaimed wastewater will be used to fulfill the water requirements for the construction and operation of any of the proposed tritium supply and recycling facilities at Pantex. Treated wastewater will be either recycled for cooling system makeup or discharged to the playas. Although there is no direct discharge to groundwater from the proposed facilities, treated sanitary wastewater discharged to the playas could percolate into the groundwater. Soils at Pantex, which are low permeability clay and clay loams, should help minimize the impacts associated with this possibility. In addition, a lined evaporation pond could be constructed to reduce wastewater seepage. Although permeability of these clays is low, the PEIS must consider percolation possibilities; therefore, any discharged wastewater would meet NPDES permit requirements. In section 4.5.2.5 of the PEIS, the sentence has been changed to read: "Seismicity in the Palo Duro Basin and at Pantex is low".*

05.05 Regarding page 4-385 of the Draft PEIS, the commentor states that the dewatering due to construction activities for the APT could be a significant problem, as could the potential spread of activation products in the soil. The commentor adds that should the APT design proceed, it is possible that the required underground depth may increase, resulting in further environmental impact.

Response: *As discussed in section 4.6.3.4 of the PEIS, dewatering due to construction activities of the APT could result in increases in stream flow and impacts to aquatic resources without proper mitigation. Dewatering discharge could be directed to Par Pond to prevent any impacts to Fourmile Branch. The potential for activation products to be spread through the soil is considered low. Section 4.6.3.5 of the PEIS discussed potential impacts to geology and soils from the proposed tritium supply and recycling facilities. The impacts associated with deep excavations for the APT technology would be evaluated in detail and potential mitigation measures identified in site-specific tiered NEPA studies.*

05.06 Because of the seismic concerns, the commentor doubts that either a reactor technology or the linear accelerator concept could be located at NTS.

Response: *As discussed in section 4.3.3.5, the construction and operation of tritium supply and recycling facilities at NTS would have no impact on geological resources. The presence of a moderate seismic risk at NTS does not preclude the safe construction and operation of the tritium supply and recycling facility onsite. The proposed facilities would be designed for earthquake, and any potential weapons-testing-generated ground acceleration in accordance with DOE Order 5480.28 and accompanying safety guides.*

05.07 The commentor states that seismic stability should be one of the criteria for site selection. The commentor considers the APT a more stable alternative. The commentor notes that APT has no waste production, therefore, in the event of an earthquake, wastes would not be released. The other alternatives are more vulnerable, according to the commentor. The commentor concludes that, compared to the other sites, NTS would be the best suited site because of lessened seismic activities.

Response: *Section 4.3.2.5 of the PEIS discusses seismicity, geology, and soils at NTS. These factors identified by the commentor, as well as many others, will be considered and evaluated in the discussion process leading to the selection of the tritium supply technology and the preferred site.*

06 BIOTIC RESOURCES

06.01 Commentors suggest that DOE carefully consider the potential impacts to area wildlife when selecting a site for the proposed activities. Commentors assert that special consideration should be given to sites such as Pantex that have several sensitive species and habitats.

Response: *An analysis of impacts on wildlife, including sensitive habitat and threatened and endangered species, is presented for each site. This analysis is presented for INEL in section 4.2.3.6, for NTS in section 4.3.3.6, for ORR in section 4.4.3.6, for Pantex in section 4.5.3.6, and for SRS in section 4.6.3.6. The analysis is presented at a programmatic level; however, since an analysis of project impacts on wildlife and sensitive habitats is dependent on a specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in tiered NEPA documentation.*

06.02 One commentor suggests that the PEIS for Tritium Supply and Recycling incorrectly identifies the desert tortoise as an endangered species. The commentor states that the PEIS should correctly classify the desert tortoise as a threatened species. Another commentor notes that the executive summary indicates the bald eagle could lose nesting habitat. This is not accurate and should be changed in the Final PEIS, according to the commentor.

Response: *References are made to the desert tortoise as a threatened species in sections 3.6, 4.3.2.6, table C-3, and table I.1-1. No references to the tortoise as an endangered species are included in the PEIS. The executive summary states that the bald eagle may be temporarily affected during construction but does not state that nesting habitat would be lost.*

06.03 The commentor states that the PEIS for Tritium Supply and Recycling asserts in a number of places that construction of a tritium facility would affect Federal-listed, Federal-candidate, or state-listed species, and could impact potential wetlands. More specifically, the commentor adds that pages I-31, I-32, I-35, and I-37 of volume II reference possible impacts on the bald eagle, the swift fox, and other species. The commentor asserts that this claim fails to recognize that construction activities would occur well away from any of the Pantex playas (whose soils are inherently unsuited for construction), which are the only potential nesting, foraging, and denning habitat for these animals (e.g., no bald eagle nests or nesting pairs have ever been observed on site). The commentor states that the Pantex playas constitute but 5 out of approximately 25,000 playas on the southern High Plains, and cannot be considered as critical habitat. According to the commentor, personnel from the United States Fish and Wildlife Service (USFWS) declined to support classification of any of the Pantex playas as "critical habitat" during a site visit in 1994. Further, notes the commentor, only a small proportion of the site (less than 7 percent) is designated as "playa wetlands". The commentor cautions that any prudent site plan for tritium facility construction will avoid these areas. The commentor also suggests that these claims in the PEIS should be corrected.

Response: *The commentor indicates that the PEIS assertions that the construction of a tritium facility would affect Federal-listed, Federal-candidate, or state-listed species, and could impact* *potential wetlands at Pantex are not warranted. These statements are conditional descriptions of potential impacts. Section 4.5.2.6 states that field surveillance would be required to determine the presence of listed species. The bald eagle is described as a wintering species rather than a nesting species and it is well documented that eagles are easily disturbed by human presence even in close proximity to perched birds. It is further stated that there is no critical habitat on Pantex. The playas are natural drainage areas for the Pantex site and the discharge resulting from project activities could alter the nature of these wetlands. Because an analysis of project impacts on biological resources is sensitive to specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in tiered NEPA documentation.*

06.04 The commentor states that the PEIS for Tritium Supply and Recycling does not provide a complete analysis of the impacts of the various alternatives on biotic resources. The commentor also states that it is unacceptable not to evaluate the impacts of radionuclides for onsite and offsite biota.

Response: *An analysis of impacts to biological resources is presented for each site at a programmatic level. This analysis is presented for INEL in section 4.2.3.6, for NTS in section 4.3.3.6, for ORR in section 4.4.3.6, for Pantex in section 4.5.3.6, and for SRS in section 4.6.3.6. Because an analysis of project impacts on biological resources is sensitive to a specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in tiered NEPA documentation.*

06.05 One commentor states that siting the tritium program at Pantex would not further threaten or endanger protected species. The commentor indicates that the PEIS notes on page 4-279 that no critical habitat for threatened and endangered species exists on Pantex, and on page 4-280 that there is little undisturbed habitat at Pantex that would accommodate any of the threatened, endangered, and other special status species listed in table 4.5.2.6-1. The PEIS also reports there are no Federal- or state-listed plant species known to occur at Pantex. The commentor states that individual animals (for instance, slow moving reptiles or small mammals) might be taken by construction activities but even this possibility could be avoided (by surveys and by capture and transplantation) if deemed appropriate. According to the commentor, the only consistently occurring Federal-listed species at the Pantex site is the bald eagle. The commentor notes that the eagle is highly mobile and the playa habitat it has used at Pantex is abundant nearby and common throughout a great region. The commentor asserts that neither construction nor operation of the tritium program would be expected to adversely affect the species. The commentor notes that a representative of a second Federal-listed species, the whooping crane, was reported at the site in 1990, as the draft relates. The rarity of occurrence of the species on the site mitigates concern that it may be harmed by the program.

Relative to aquatic species, the commentor notes that it appears the only effect of siting at Pantex would be positive (e.g., some small increase in the availability of habitat for amphibians (page 4-309)). Finally, another commentor points out that the terminology for some of the endangered species is printed in bold print for the Pantex data only. The commentor also states that there is also a grossly inaccurate statement in the PEIS on the foraging and denning habitats concerning bald eagles and other animals that roam the Pantex site. There will be no impacts to them, according to the commentor.

Response: *The terminology in bold print was not located in the document. Because an analysis of project impacts on biological resources is sensitive to specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in tiered NEPA documentation. Field surveillance would be conducted at that time to determine the presence of species and their foraging, denning, and nesting habitats.*

06.06 The commentor states that DOE should give more thought to the effects of the proposed facility on biotic resources. According to the commentor, the document states that impacts to wetland and aquatic resources will not occur because these resources are not located on project sites. The commentor adds that the conclusion that impacts will not occur may be incorrect because impacted onsite groundwater may flow offsite and may affect biotic resources. Furthermore, the commentor notes on page 4-139, the PEIS states that because impacts from construction occur only at the beginning of the project life cycle, it follows that impacts to biotic resources will be limited to only that time period. The commentor asserts that this may not be true and suggests that DOE revisit the biotic resources sections.

Response: *An analysis of impacts to biological resources is presented for each site at a programmatic level. This analysis is presented for INEL in section 4.2.3.6, for NTS in section 4.3.3.6, for ORR in section 4.4.3.6, for Pantex in section 4.5.3.6, and for SRS in section 4.6.3.6. Because an analysis of project impacts on biological resources is sensitive to a specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in tiered NEPA documentation. Onsite impacts to wetlands and aquatic resources at INEL and NTS were not predicted based on the fact that these resources do not occur on the proposed TSS. Impacts are also not expected to wetlands and aquatic resources located offsite since groundwater withdrawals are not expected to impact groundwater recharge rates at either INEL (section 4:2.3.4) or NTS (section 4.3.3.4). With respect to construction impacts occurring only at the beginning of the project life cycle, the statement made in section 4.3.3.6 referred specifically to the fact that all construction associated with the HWR, MHTGR, and ALWR would only occur at the beginning of the project but that additional construction (and hence construction impacts) could occur at a later date, as in the case of the APT if expansion of the facility were needed to meet future tritium requirements.*

06.07 Regarding section 4.4.3.6, page 4-224, first column, third paragraph, the commentor suggests that DOE provide information regarding the relationship between the number of threatened and endangered species at a proposed site and the ranking of the site in the selection process. For example, the commentor asks if a site has the potential to displace more threatened or endangered species than another site, is it ranked lower in the site selection process.

Response: *The function of the PEIS is to assess the potential environmental impacts resulting from the proposed tritium supply technologies and recycling facilities. The potential impacts on threatened and endangered species are identified in the PEIS. Environmental, cost, technical, and schedule factors are all considered in the siting decision process. The tritium supply and recycling site selection process will involve analysis of the environmental, cost, technological and schedule impacts which will be considered by the decision maker.*

06.08 In table 3.6-1, page 3-62, the ORR column, the phrase, "however this type of habitat is abundant in the area," should be removed, according to the commentor. The commentor asserts that this phrase appears to lessen the environmental impact of removing several hundred acres of nesting and foraging habitat for four state-listed raptors.

Response: *The appropriate changes have been incorporated into table 3.6-1 in the Final PEIS.*

06.09 The PEIS notes that no impact to biotic resources will result from supply and recycling activities, according to the commentor. For example, the commentor states that on page 4-64 the PEIS states, "...the Townsend's western big-eared bat could forage at evaporation and stormwater retention ponds. No adverse impacts are expected...." The commentor asserts that this statement is not supported by any factual data. Furthermore, the commentor notes that although no state biotic resource consultation was identified for INEL in table 5.3-4, DOE should confer with the appropriate state authorities to minimize impacts.

Response: *As a programmatic document, the PEIS discusses potential impacts and the relative level of impacts. Because an analysis of project impacts on biological resources is sensitive to specific site location and detailed project engineering data, further analysis will be conducted at the site-specific level in tiered NEPA documentation. Consultation with the Federal and state wildlife offices would be performed during the preparation of this level of NEPA documentation.*

06.10 One commentor states that in volume I, page 4-7, column 2, paragraph 3, the PEIS explains that radiological impacts to onsite biota were not evaluated because studies conducted at INEL have only detected sublethal effects in individual animals. The commentor asserts that the fact that past activities have not caused radionuclide levels of concern in animals is no indication that biota are not at risk. The commentor notes that the impacts of the proposed tritium alternatives must be evaluated in conjunction with potential releases from existing and proposed facilities, including the impacts from tritium releases into waters that may already have measurable amounts of tritium. For another, the commentor adds, the many studies conducted at INEL have shown elevated levels of radionuclides in the tissues of plants and animals at the site. In order to determine that the PEIS does not need to evaluate impacts on biota, there needs to be a more thorough discussion of the findings of studies done at INEL, according to the commentor. In addition, states the commentor, it must be shown that, cumulatively, tritium releases will not have a significant impact. Another commentor suggests that the PEIS provide details of biological and environmental impacts associated with introducing tritium from proposed TSS operations into waters that already have measurable amounts of tritium.

Response: *As noted in section 4.1.6, two studies have shown that man is the most sensitive organism to radiation (Radiation Biology (U.S. Atomic Energy Commission, 1968) and The Effects on Populations of Exposure to Low Levels of Ionizing Radiation (National Academy of Sciences, 1972)). In addition, the Environmental Standard Review Plans for the Environmental Review of Construction Permit Applications for Nuclear Power Plant, (NUREG-0555), notes that, "although guidelines have not been established for acceptance limits for radiation exposure to species other that man, it is generally agreed that the limits established for humans are also conservative for other species." Information presented relative to INEL recognizes that measurable effects of radionuclides on individual plants and animals have occurred, but that such effects at the population, community, or ecosystem level have not been detected. A more complete discussion of these findings can be found in the Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (DOE/EIS-0203-F, April 1995). *With respect to cumulative effects of existing radionuclide levels and those emitted from the proposed facilities, the second sentence of the third paragraph of section 4.1.6 has been changed to correctly state, "these releases when added to those associated with other site activities would be well below natural background levels and would also be within regulatory limits established to protect workers and the public." It is not believed that further discussion of radiological impacts to biota is necessary for this programmatic document.*

06.11 The commentor notes that, as a newly constructed facility, a tritium recycling operation would require radionuclide National Emission Standards for Hazardous Air Pollutants (NESHAP) approval by EPA. If applicable to the site, the commentor notes that EPA would evaluate the *Endangered Species Act* as a part of its radionuclide NESHAP decision-making process; that is, EPA would assess whether radioactive emissions permitted under a NESHAP authority would adversely affect any listed species under the *Endangered Species Act*. As a part of the determination, the commentor states that EPA would consult with the USFWS pursuant to section 7 of the *Endangered Species Act*.

In addition, the commentor also suggests that should DOE also need to consult with the USFWS, EPA is willing to work with DOE on a joint consultation effort.

Response: *DOE will consult with the USFWS concerning any impacts to threatened and endangered species that may occur as a result of constructing and operating a tritium supply and recycling facility, including potential impacts from radionuclides. This consultation would take place at the site-specific level in tiered NEPA documentation. This is necessary since preactivity surveys are necessary to determine if any special status species are present and their location relative to the proposed facility. DOE will make sure that all required permits are obtained and that all required consultations are conducted.*

06.12 Regarding section 4.4.3.6, page 4-226, first column, second paragraph, the commentor suggests that DOE provide details of the effect of sediment mobilization and changes in aquatic resources on *CERCLA* operable units in the area of the proposed TSS.

Response: *A discussion of the relationship between impacts to aquatic resources from the proposed tritium supply and recycling facility and CERCLA operable units is beyond the scope of the PEIS. If ORR is selected as the site for a tritium production facility, more detailed design, siting location information, and additional detailed project data would be developed and available to discuss any relationship between the proposed action and ORR CERCLA operable units. The analysis, if warranted, would be discussed in site-specific tiered NEPA documentation.*

06.13 The commentor believes that DOE overstates the environmental concern regarding the Pantex playas (sections 4.5.2.6 and 4.5.3.6). The commentor points out that there are an estimated 20,000 to 30,000 playas in the surrounding area whose sizes grow and diminish on a seasonal basis. The commentor states that the playas all support the same, or highly similar, plant and wildlife communities, and typically provide domestic livestock watering places as well. Furthermore, the commentor notes that wastewater discharge to the playas would not necessarily "cause a general degradation of the naturally occurring ephemeral wetland system at Pantex." In fact, the commentor suggests that the permanence of the playas in certain years may be "important to migratory birds and... valuable habitat for nesting and wintering birds and waterfowl."

Regarding statements on page 4-307 about an increase in open water habitat and on page 4-309 about shifts in the composition of wetland plant communities, the commentor suggests that DOE consider that it is the nature of playas to undergo temporary depth changes and limited increases and decreases in open water areas. The plant species have adapted to such changes, which have occurred down through the centuries (for example, following major thunderstorms or long, rainy seasons or droughts). Such changes do not "disturb" playa plant communities. Given the great commonality of habitats provided by the great numbers of playas and the fact that wastewater discharges would create changes in degree, not in kind, the commentor asserts that there is little practical reason for environmental concern about the Pantex playas.

Response: *While the commentor is correct in stating that a large number of playas occur in the area of Pantex, many have been converted to agricultural use. An important aspect of those occurring on the Pantex site is that, except for Playa 1, they are in a relatively natural state and are within a protected area (that is, the Pantex site boundary). The commentor is also correct in stating that playa vegetation has adapted to seasonal changes in water levels; however, existing vegetation would not be able to adapt to permanent inundation caused by wastewater discharges. The results would be a shift in plant communities toward those that are adapted to permanent inundation. In fact, natural plant communities in Playa 1 have been displaced by a nearly uniform stand of cattail, a plant adapted to inundation. The analysis in the PEIS is presented at a programmatic level and is* *intended to identify potential impacts which could occur as a result of constructing new tritium supply and recycling facilities. A more detailed analysis of potential impacts to site playas will be undertaken as part of a site-specific EIS if Pantex is selected as the site for the proposed facilities.*

06.14 In the PEIS, volume II, table C-3, under the plant section, the commentor states that: Amargosa Penstemon should be Penstemon fruticiformis ssp. amargosae and that Kingston bedstraw should be Galium hilendiae var. kinstonense.

Response: *In 50 CFR Part 17,* Plant Taxa for listing as Endangered or Threatened Species, Notice of Review *dated September 30, 1993, Amargosa Penstemon is listed as Penstemon fruticiformis var. amargosae, and Kingston bedstraw is listed as Galium hilendiae ssp. kinstonense. The appropriate changes have been made to the document.*

06.15 The commentor states that DOE should indicate in the PEIS any records documenting the existence of Parish's phacelia (Phacelia parishii) at NTS. The commentor adds that it has been recently added to the Federal candidate plant species list.

Response: *The appropriate changes have been made to the document.*

06.16 The commentor states that SRS has a wildlife population that is within one of the largest research sites in the United States. The commentor asserts that in order to preserve and maintain this wildlife, SRS needs to assume another mission, preferably the proposed Tritium Supply and Recycling Program. Continuation of DOE missions will ensure that the surrounding wildlife remains intact, according to the commentor.

Response: *Impacts of the proposed facilities on wildlife at SRS are discussed in section 4.6.3.6. The continuation of wildlife management and research programs, such as controlled hunts and National Environmental Research Parks projects, are not directly dependent upon the selection of the site for the proposed facilities.*

06.17 One commentor urges a more even-handed and consistent analysis of biotic resources in the executive summary and the PEIS. In addition, the commentor further notes that there are subtle discrepancies in the analysis between the sites, and Pantex is unfairly penalized due to the use of biased language. The commentor suggests that DOE check these sections for unnecessary bias and use consistent terminology and language. Another commentor suggests that table 3.6-1 list threatened and endangered species for each candidate site with at least the specificity found in the Pantex column.

Response: *The commentor suggests that the PEIS is written with a preconceived bias against Pantex and recommends the use of more consistent terminology and language in the executive summary, table 3.6-1, and site analysis of biotic resources in the PEIS. The entire PEIS including the biotic resources sections of the PEIS was prepared and peer reviewed without bias.*

07 CULTURAL AND PALEONTOLOGICAL

07.01 The commentor expresses concern that the undertaking may affect historic properties eligible for listing in the National Register of Historic Places (NRHP) at ORR. The commentor expresses the desire to review a cultural resources survey report for the area, in addition to DOE's assessment of the existence of historic properties within the area, and DOE's assessment of potential for project impact upon cultural resources for this project before any work commences.

Response: *Historic properties that are potentially eligible for inclusion on the NRHP may be affected, and are discussed in sections 4.4.2.7 and 4.4.3.7. If ORR is chosen as the preferred site, a site-specific tiered NEPA document will include a discussion of impacts to prehistoric and historic sites. In addition, if ORR is the preferred site, National Historic Preservation Act (NHPA) section 106 would require a cultural resources survey of any impacted acreage and a report of survey results. Cultural resources survey reports for ORR are available through DOE.*

07.02 The commentor states that a more even-handed and consistent analysis of cultural resources in the executive summary and the PEIS is needed. According to the commentor, there are subtle discrepancies in the analysis between the sites, and Pantex is unfairly penalized due to the use of biased language. The commentor asserts that DOE should check these sections for unnecessary bias and use consistent terminology and language.

Response: *These sections were reexamined for any biases in the way the information was presented. The language is similar among the different site descriptions in the PEIS and in the Executive Summary.*

07.03 The commentor references Native American resources text, under the Historic Resources section, and states that the PEIS neglects to include Native American resources when discussing compliance with Sections 106 and 110 of the NHPA, regarding the updating of the buildings and the decontamination and decommission (D&D) actions on these buildings and any historical properties. The commentor notes that the Native American resources are absent from the same 106 requirements, as specified in the PEIS, and it is only regarding the NEPA document. However, according to the commentor, other Federal laws are requiring consultation between the Federal Government and the tribal governments as mandated. In addition, the commentor references the last paragraph on page 4-9, regarding the Native American resources, and asserts that the language regarding the Native American resources does not apply the appropriate criteria. The commentor notes that the PEIS acknowledges only the Native American physical environment and belief systems; however, the issues go much deeper and are not being reflected within this document being provided for comment.

Response: *"Prehistoric resources" in the United States refers only to remains of Native Americans and their antecedents. "Historic Resources" includes remains of all groups, whether of European, African, Asian, Native American, or any other descent. Both historic and prehistoric resources are protected under NHPA Sections 106 and 110. Other relevant laws regarding tribal resources (American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act) are described in table 5.3-1.*

Impacts to land and water resources and other natural resources, which can also be considered to be Native American concerns, are discussed in the other chapter 4 sections (for example, in sections 4.2.2, 4.2.2.1, land resources; 4.2.2.2, site infrastructure; 4.2.2.3, air quality and acoustics; 4.2.2.4, water resources; 4.2.2.5, geology and soils; 4.2.2.6, biotic resources; 4.2.2.8, socioeconomics; and 4.2.2.9, radiation and hazardous chemical environment). More details can also be found in the appendixes.

The following text change has been made to section 4.1.7: "In addition, cultural values are placed on natural resources such as plants, which have multiple purposes within various Native American groups." Section 4.3.2.7 now includes: "It is worth noting that many natural resources at NTS are viewed as cultural resources by Native Americans. As one example, sagebrush is used as a tool, and for clothing and medicinal purposes."

07.04 The commentor references page 4-311 of the Draft PEIS and questions if "would" in the sentence "Some Native American (archaeological) resources would occur in Pantex site areas" should read "could."

Response: *The referenced sentence has been changed to "Some Native American resources could occur within any areas disturbed..."*

07.05 The commentor concurs that there exists a possibility of undiscovered cultural and paleontological resources at Pantex that might be affected by construction of a tritium supply and recycling facility. The commentor also concurs that such resources could be protected by typical mitigation measures.

Response: *Potential cultural and paleontological resources at Pantex are discussed in section 4.5.2.7. If known cultural and paleontological resources at Pantex (or at any other selected site) are within areas subject to potential impact, DOE would protect the resources to the extent possible, first through avoidance of the resources, and second, through mitigation of impacts. The possibility of undiscovered cultural and paleontological resources is always a consideration. Site-specific cultural resources analyses would be conducted as part of a subsequent, tiered EIS. In onsite areas having a high probability for cultural resource discoveries, measures that can be taken to minimize potential impacts include employment of an archaeological monitor during construction and stopping work in the event of an unforeseen discovery.*

08 SOCIOECONOMICS

08.01 The commentor suggests that DOE address in the PEIS the quality of jobs and benefits that will be created as a result of a new tritium facility. The commentor also states that DOE should include a comparison of the types of jobs that were associated with various cleanup activities at INEL with more complex and higher technology projects that would be associated with a new tritium facility.

Response: *Labor categories (types of jobs) were considered in the socioeconomic analysis, but were not specifically identified in the Draft PEIS. Instead, only total worker years were analyzed and compared. More detailed information on the labor categories involved is contained in the Technical Reference Report available in DOE reading rooms. Specific socioeconomic impacts will also be further considered in site-specific tiered NEPA documents.*

08.02 Several commentors express their support for this action in the NTS region. The commentors believe the project will increase the growth of the scientific community and science/technology related business; reinvigorate the area economy and tax base; stimulate light industry development in Las Vegas; and provide highly skilled technical and management positions to experienced craftsman, technicians, and scientists who may have lost jobs during the phaseout at NTS. One commentor also notes that there will be a lot of public support if DOE can assure the public that tritium transportation and production will be fairly safe. Another commentor states that NTS already has the available land, skilled craftsmen, technicians, and scientists to support the tritium supply and recycling facility.

One commentor suggests that siting the tritium supply and recycling facility at NTS can improve DOE's image within the community by working together to contribute to the positive growth of the community and its economy. Another commentor, expanding upon the idea that locating the tritium supply and recycling facility at NTS helps the community, states that NTS has been good to minority workers providing much needed training and experience. According to the commentor, NTS contributes a solid education for the workers and prepares them for other responsibilities and tasks. Another commentor believes that DOE has spent too much time on waste disposal capabilities, and suggests that DOE recognize the high-technology security work force as a valuable resource for stockpile stewardship and management activities.

Response: *The attributes of NTS as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision making process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. In addition, transportation analyses were performed for all materials considered in the PEIS, and risks were found to be low. Other DOE programs, including those evaluating stockpile stewardship and management activities, will also evaluate these candidate sites in accordance with NEPA and take socioeconomic factors into consideration.*

08.03 Several commentors state that DOE should review the socioeconomic analysis to incorporate the following: that construction jobs will only be temporary; scientists and skilled workers will be drawn to NTS because of the new facility; there are potential job losses in regions that are not awarded the Tritium Supply and Recycling Program; a review of the accuracy of the projected employment figures as new jobs may be staffed by former employees of shutdown DOE facilities; an analysis of jobs that will be created at facilities supporting the planning and engineering studies necessary for the tritium supply and recycling facility such as at Los Alamos; the need for skilled workers created by the new facility compared with the pool of skilled workers in each site's surrounding area; transportation, electrical, water, and other environmental impacts from out-of-region people who move to the area to work at Pantex; and the potential spawning of new production or fabrication facilities to support the tritium supply and recycling facility and its operation.

Response: *The PEIS identifies that construction jobs are temporary. The increase in construction jobs, the peak, and the decrease in construction jobs for each tritium supply technology at each candidate site have been analyzed and are presented in the PEIS. The PEIS also assesses the potential impacts caused by newly created jobs which lead to an in-migration. Labor availability is taken into account but employment estimates are conservative to measure in-migration and its effect on the surrounding communities. The projected employment numbers at each candidate site in the year 2010 were estimated based on the best available information on the expected mission and workloads for that site. It is not clear at this time without knowing the selected technology for tritium supply where the planning and engineering will take place or by whom, but it is unlikely that many new long-term employment would be created by this phase of the project. At the candidate sites, projected employment is expected to remain essentially the same or decrease as shown in table D.2.1-1. Although the number of employees may be the same, the types of jobs and staffing categories may be substantially changed.*

The tritium supply and recycling project will create employment opportunities wherever it is located. Only tritium recycling related jobs at SRS would be lost if tritium recycling is collocated with tritium supply at a site other than SRS. The impacts due to tritium recycling phaseout at SRS are evaluated in the PEIS.

08.04 Commentors express their support for this action in the SRS region. Some of the reasons for this support are: that the multipurpose reactor would create over 4,000 high-tech jobs in the SRS and Charleston region, offsetting defense-related cutbacks; there is a need for additional jobs in this area as there has been a recent manpower downsizing; a qualified work force exists at SRS with 40 years of experience; and if the tritium recycling responsibilities were removed from SRS, more than 800 people would lose their jobs, engendering long term impacts at SRS. As an example of local and political support, one commentor refers to an article in the Augusta Chronicle and points out that supporters of the tritium supply and recycling facility at SRS outnumbered "antis" at the workshops.

According to the commentor, the large number of participants, including United States Representative Graham, and the Metro Augusta Chamber Chair, lent support to SRS because of expertise and infrastructure already in place to build and sustain a multipurpose reactor.

Response: *The attributes of SRS as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. For SRS, the Replacement Tritium Facility, the amount of available land and water, compliance with environmental regulations and agreements, site waste management activities and facilities, and the surrounding local economies are all included in the environmental analysis of impacts. Although the local and political support for a multipurpose reactor have been voiced and are factors, they are not considered in the environmental analysis process presented in the PEIS.*

08.05 Commentors state that there is support for this action in the Pantex region for the following reasons: employees at a tritium facility are an asset to the Panhandle's economy; the business community in Amarillo would benefit and the jobs would be filled by people from the community; and there is an over-80-percent public approval of Pantex and its missions. On the other hand, another commentor states that in the event of an incident at Pantex, crops and livestock in the nation's "breadbasket" would be perceived to be contaminated, destroying a multi-billion-dollar annual agriculture industry.

Response: *The attributes of Pantex as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision making process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. The impacts referred to by the commentor are considered "secondary impacts." The secondary impacts of accidents affect elements of the environment other than humans. For example, a radiological release may contaminate farmland, surface and ground water, recreational areas, industrial parks, historical sites, or the habitat of an endangered species. Section F.3 of volume II discusses the potential secondary impacts that potentially could occur from a design-basis accident for a typical reactor at each of the sites considered in the PEIS (section F.3.4 deals specifically with the effects at Pantex).*

08.06 Commentors state that there is support for this action in the INEL region for the following reasons: the potential boost to Idaho's economy and technology base; the technology exists to handle nuclear waste; and that initiating tritium operations at INEL would help unemployment in the area.

Response: *The attributes of INEL as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site.*

08.07 Several commentors state that DOE should review the socioeconomic analysis, particularly for the NTS area, and incorporate the following: the economic multiplier for the NTS area should include not only indirect jobs, but also induced jobs (third level of job creation); Southern Nevada per capita income figures in the year 2010 seem low and may need to be adjusted; tourism may be affected negatively by the new facility; and the new facility may interfere with future housing and development needs or the new facility may have unforeseen effects on as-yet unbuilt housing.

Response: *The economic multiplier used in the PEIS analysis includes the household sector which also includes the induced employment in the multiplier. The term "indirect" includes both induced and indirect, and was used to be more understandable for the general public. The year 2010 per* *capita income figures presented in the PEIS were based on the Bureau of Economic Analysis most recent long-term published regional forecasts. Tourism in the Las Vegas area has continued to increase substantially over the years even in light of nuclear testing at NTS. It is highly unlikely that the addition of a tritium supply mission at NTS would affect tourism. The effects that any of the proposed tritium supply facilities would have on housing in the area of Las Vegas were examined in the PEIS and found to be negligible.*

08.08 Commentors express concern about the construction start times for the tritium supply and recycling facility and the availability of jobs in the NTS area. One commentor states that DOE should begin work on the tritium supply and recycling immediately at NTS and not wait until the year 2000 to begin construction to offset the ongoing downsizing and provide jobs and money to the local economy. Additionally, the commentor states that there is a shortfall of work, and that there is a risk of losing more skilled workers if the project does not begin soon. Another commentor notes that the local, experienced NTS workforce (25,000 union workers) has an excellent safety record at NTS and is in place right now and can begin immediately. The commentor states that DOE should be concerned that local people benefit from the jobs, instead of people from outside of the region. The commentor notes that many components for the tritium production facility could be manufactured locally. The commentor states an aggressive contracting program with an emphasis on obtaining required components locally would enhance the region's manufacturing base. Furthermore, according to another commentor, the PEIS should consider current and future downsizing in its socioeconomic analysis of the NTS area. The commentor also adds that the downsizing at NTS should also be taken into account when making a decision as to the location of the Tritium Supply and Recycling facility.

Response: *Construction start times and hence start dates vary depending on the technology. Start dates in the PEIS were established around a peak construction date of 2005. This was done so that the potential environmental impacts of each technology could be compared. However, the construction of a tritium supply facility would not occur before the appropriate tiered NEPA documents were completed, and detailed engineering designs of the facility completed. Labor availability is included as a component in the socioeconomic modeling performed in preparing the socioeconomic analysis for the PEIS to determine the potential in-migration of population and community effects caused by the proposed project.*

08.09 The commentor states that DOE should address the size and surrounding population density of ORR relative to other DOE candidate sites (to assess cumulative impacts). Also, relative population density maps would be helpful, according to the commentor.

Response: *As described in the methodology discussion detailed in appendix D, the Region of Influence (ROI) developed for each site was based upon where the current DOE employees and contractors reside, and assumes that any in-migration would locate proportionately in the same places. Any effects of in-migration in those communities where in-migration is most likely to occur would be indicated in the analysis regardless of current or expected population densities.*

08.10 Commentors state that DOE should be more accurate in determining the actual number of jobs that will be provided with this project. DOE's estimates for the total number of construction and operation workers for each of its technology alternatives appears to be inflated according to one commentor. This overestimation is unwise because various locales lobby to be chosen for a particular alternative based on these values. Another commentor asserts that, in the past, DOE often over-exaggerated the number of potential jobs associated with a proposed project to strengthen the selling point of the project. The commentor states that, when compared to the New Production Reactor project, the Tritium Supply and Recycling Program seems to have a longer employment period, making the Tritium Supply and Recycling Program appear attractive in job-starved regions. In addition, the commentor adds, the predicted projections may not be representative of the number of people in the region that benefit from the project. It seems grossly exaggerated that 12,000 jobs would be created in the ORR region, according to the commentor. Additionally, the estimate of an operational workforce of approximately 290 persons at a 500 to 600 MWe coal-fueled steam electric plant is double the staffing of similar plants, according to one commentor. Another commentor references page 5-21, finding the estimate for employment at a mixed-oxide facility seems to be high. However, if pit disassembly and conversion are included, then the number might be more reasonable.

Response: *The PEIS identifies that construction jobs are temporary. The increase in construction jobs, the peak, and the decrease in construction jobs for each tritium supply technology at each candidate site have been analyzed and are presented in the PEIS. The PEIS also assesses the potential impacts caused by newly created jobs which lead to an in-migration. Labor availability is taken into account but employment estimates are conservative to measure in-migration and its effect on the surrounding communities. The projected employment numbers at each candidate site in the year 2010 were estimated based on the best available information on the expected mission and workloads for that site. At the candidate sites, projected employment is expected to remain essentially the same or decrease as shown in table D.2.1–1. The estimated operational workforce for the coal-fueled steam electric plant has been revised from 290 persons to 145 persons. Pit disassembly and conversion is included in the estimate for employment at a mixed-oxide facility.*

08.11 Several commentors state that DOE should review the socioeconomic analysis pertaining to the Pantex area and incorporate the following socioeconomic issues: the economic multiplier that DOE used on their overheads appears wrong and, therefore, the PEIS should be checked for this mistake as well; and the River Road Independent School District north of Amarillo should be added to the Independent School District likely affected by the proposed action.

Response: *The economic multipliers used in the PEIS socioeconomic analysis were developed from the AFSEM model described in appendix D. This model is based upon United States Bureau of Economic Analysis Regional Inter-industry Multiplier System (RIMS) II multiplier coefficients, which are widely accepted and have been deemed to be accurate for the PEIS analysis. An underlying assumption used in this PEIS for addressing potential socioeconomic impacts was that the in-migrating population would locate in areas similar to the existing residents. Data on table D.3-52 shows that almost all the Pantex workers living in Potter and Randall Counties live in Amarillo and that only 58 workers live in unincorporated areas of Potter and Randall Counties. If all 58 workers lived in unincorporated Potter County this would be only 2 percent of the Pantex workforce. It was therefore determined that even if all 58 workers' children attended schools in River Road Independent School District that this would constitute only 2 percent of any effects that the proposed alternative would cause, and as such these effects would be negligible.*

08.12 The commentor states that this PEIS should not focus on jobs. According to the commentor, this element changes the focus from nuclear weapons to maintaining jobs and economic stability, thus causing a potentially wrong basis for a decision.

Response: *The purpose of the PEIS is to assess potential environmental impacts. In socioeconomics, potential impacts could be caused by too many jobs leading to larger in-migration too quickly for the community infrastructure to absorb. The increase in jobs as analyzed in the PEIS does not pose significant environmental impacts and some people consider the jobs a positive benefit.*

08.13 The commentor suggests that DOE clarify the basis for the calculation of the impacts to the NTS ROI. The population and housing projections assume that people would reside in cities and counties in the same relative proportion as the existing population. The commentor asks if the ROI includes only specific portions of the four-county area surrounding NTS and what the boundaries are. The commentor references volume II, table D.3-23, stating that the population estimates for Nye County appear to be underestimated. The commentor provides a contact for DOE to obtain current population figures.

Response: *The NTS ROI covers the entire four-county area surrounding the site, but the magnitude of the impacts was determined by the distribution of NTS employees within the ROI. Therefore, jurisdictions within the ROI with larger numbers of resident NTS employees would be more greatly affected by the proposed alternatives than those with fewer resident employees. The population estimates were based on the most recent Bureau of Economic Analysis regional projections, but because the NTS area is one of the fastest growing regions in the United States these projections are constantly changing. Nonetheless, given that Clark County is so much larger than Nye County, most of the impacts would still be found in Clark County, and any additional updating of the population estimates would not substantially change the results of the analysis.*

08.14 The commentor references volume I, page 4-313, and notes that the number of jobs in the Amarillo area would increase more if the No Action alternative was chosen. Therefore, the commentor supports No Action for Pantex.

Response: *Under No Action, Pantex employment is expected to decrease from the 1994 level and total employment in the Amarillo area is expected to increase. However, as shown in figure 4.5.3.8-1, total employment would increase over No Action if a tritium supply and recycling facility were located at Pantex.*

08.15 The commentor states that, in figure 4.4.3.8-5, it is presented that for most of the proposed alternatives, increases in revenue to the city of Clinton and the Clinton schools would greatly exceed increases in required public expenditure, while for all other ORR governments increased revenues would be about the same as increased expenditures. The commentor asserts that this prediction may be erroneous and suggests a check for errors be made in the economic models.

Response: *The purpose of the public finance analysis is to determine if there would be any adverse environmental impacts on local government fiscal health and the ability to provide services. Generally, most local governments tend to have fairly balanced financial statements and if there are negligible to minimal effects caused by a proposed alternative this balance would remain unchanged, although revenues and expenditures would rise. This was the case for most of the ORR local governments. The city of Clinton was an exception to this because its recent trend data indicated a disproportionately large fund balance which was carried forward in making No Action and project alternative predictions. It is likely that this excess was created and planned for spending on a capital project or some other expenditure and would not have been carried forward as in our analysis, and the result would be a more balanced expenditure-to-revenue ratio. However, our methodology (described in section D.2.3) cannot account for undocumented planned expenditures, and the analysis is concerned with the environmental aspects of whether or not a local government would be fiscally damaged by the proposed alternatives. This analysis shows that the proposed alternatives would not negatively impact the city of Clinton and would instead provide some financial benefit.*

08.16 The commentor references volume I, chapter 4, section 4.4.2.6, page 4-188, second column, second paragraph and suggests that an analysis be provided of the effects on the local economy (e.g., recreational sports, State of Tennessee wildlife resources license and permits sales) from displacing game animals from several hundred acres of regularly hunted land and possibly forcing those animals toward more contaminated areas of ORR.

Response: *Local government finances were evaluated in the PEIS. Licenses, permits, and fines were included in these analyses where local governments collected these types of revenues. These revenues are a small part of these local government budgets. Considering the small acreage involved with the proposed project and the extensive recreational opportunities in the ORR area, it is unlikely that there would be even a small effect on these governments' budgets. It should be noted that the primary purpose of conducting controlled hunts on ORR is to reduce collisions between deer and automobiles. Recreational and economic benefits of this activity are secondary to the primary goal of public safety. Deer displaced from the proposed TSS would migrate to other areas of the ORR. Since areas of the site that are a problem with respect to contamination are fenced and monitored, displaced deer would not have access to these areas. All deer harvested during controlled hunts are monitored for contamination prior to being released to the hunter.*

08.17 The commentor references volume II, appendix D and suggests that a comparison be provided of the cost advantages of labor vs. the cost of supporting the laid off workers, as some workers may be in pre-retirement years. In such cases, the newer employees would have to be hired and trained, according to the commentor.

Response: *Cost analyses associated with phasing out tritium recycling at SRS are included in the Technical Reference Report available in DOE reading rooms and will be factored into the ROD. All other candidate tritium supply and recycling sites would have job increases.*

08.18 The commentor references volume I, page 4-67, employment and local economy, under No Action: "...employment at INEL decreased to approximately 10,100 persons in 1994. This is a decrease of about 1,000 persons from the 1990 employment. INEL employment is projected to total almost 10,100 persons in 2010 and remain at this level through 2020." The commentor states that these figures need to be revisited. The commentor adds that in early 1995, approximately 1,200 INEL employees took early retirement or voluntary separation and another 1,000 may be laid-off later in 1995. The end of Naval reactor training at INEL and the departure of several hundred Navy personnel, many with dependents, also needs to be factored into the PEIS estimates, according to the commentor.

Response: *The size of the workforce at the affected DOE sites is constantly changing due to ongoing changes within the Complex. The employment figures used in the PEIS were the most recent figures obtained from INEL. The focus of the analysis was the assessment of the impacts associated specifically with the proposed alternatives using conservative assumptions, and it is not possible to analyze all possible future employment scenarios. However, under the scenario described by the commentor, potential negative socioeconomic impacts associated with the proposed alternatives (e.g., overcrowded schools, reduced housing availability, etc.) become less probable.*

08.19 In reference to volume I, pages 4-479 and 4-480, figure 4.15-2, the commentor states that there is a problem with the scale and/or positioning of the INEL site as shown on this map. The commentor points out that the INEL site does not extend into Montana. According to the commentor, the 50-mile circle on this map also appears to be too large and/or incorrectly positioned; it should be approximately tangent to the southernmost point on the Idaho-Montana border.

Response: *The commentor is correct. The graphic has been changed to depict INEL's location and 50-mile radius more accurately, similar to the depiction of INEL in figure 4.2-1.*

08.20 In reference to volume II, page D-8, table D.3-1, the commentor states that this table shows that approximately 74 percent of the INEL employees reside in Idaho Falls and 76 percent in Bonneville County. Yet, according to the commentor, the text that accompanies this section implies that the effects of building a tritium supply and recycling facility at INEL would be spread out over the region of influence. The commentor notes that such effects would be much more concentrated and localized than the PEIS indicates.

Response: *The PEIS examines the socioeconomic impacts within the entire ROI. As described in the methodology discussion in appendix D, the assumption was made that any in-migration would follow the same pattern as the existing workforce and, as such, effects would be proportionately greater in those places where the current workforce resides. The PEIS analysis measures the effects at the ROI, county, and city levels.*

08.21 The commentor references volume I, pages 4-477 and 4-478 of the PEIS, which discusses environmental justice considerations associated with the project, including maps depicting minority and low income population distributions in Idaho, Tennessee, Texas, and South Carolina, within 50 miles of the DOE proposed site. The commentor recommends that a Nevada map be added because the 1990 United States Bureau of Land Management Nevada state map shows the Las Vegas Paiute Indian Reservation is located approximately 40 miles from the southeast corner of the NTS.

Response: *Additional maps have been included in the Final PEIS depicting minority and low-income populations in the vicinity of NTS.*

08.22 The commentor notes that page 4-478 states that any disproportionately high, adverse health or environmental impacts on low-income or minority communities "would most likely result from toxic/hazardous air pollutants and radiological emissions." Although agreeing that such pollutants and emissions are highly significant, the commentor suggests that the PEIS analysis be expanded to assess groundwater withdrawals for NTS technologies. The commentor states, in light of the tremendous importance of groundwater in the western United States, that the PEIS assess any potential impacts to Native American communities and reservations associated with pumping groundwater, since the loss of groundwater to Native American populations can have a significant, adverse impact to agriculture- and livestock-based tribal economies.

Response: *As discussed in section 4.16, the analysis of impacts for each of the candidate sites indicates that even if there were any health impacts to minority and low income populations, these impacts will not have disproportionately high and adverse affects; therefore, adverse impacts to agriculture- and livestock-based tribal economies will be negligible. Based on revised recharge rates for the NTS aquifer system, no adverse impacts are expected. Implementation guidelines for the President's recent Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations are still in draft form. This issue will be analyzed in more detail in site-specific tiered NEPA documents once a site has been selected.*

09 INTERSITE TRANSPORTATION

09.01 The commentor believes that DOE should provide a separate EIS to address the issues of transportation in more detail.

Response: *The intersite transportation section 4.7.2 has been expanded based on public comments received during the review of the Draft PEIS. DOE believes the analysis of intersite transportation impacts presented in the Final PEIS is appropriate for a programmatic NEPA document. A more* *detailed intersite transportation assessment would be prepared for site-specific tiered NEPA documents when a tritium supply technology and site are identified.*

09.02 The commentor expresses the opinion that DOE should consider transportation as one of the selection criteria. Under that criterion, the commentor believes that NTS would be a suitable location because there is no need to transport wastes offsite. The commentor also notes that disposal options for all waste streams exist onsite.

Response: *Intersite transportation of Complex material is a consideration in the decision process and has been evaluated in this PEIS. Waste streams were also evaluated, including low-level radioactive waste. As stated in section 4.7.2.2, LLW can be disposed of at all candidate sites except Pantex. Impacts from the transport of LLW from Pantex to NTS are presented in table 4.7.2.2-2. The waste management program and facilities at NTS are discussed in section 4.3.2.10 and appendix H.2.2.*

09.03 The commentor urges DOE to ensure that shipments of solid LLW from Pantex to NTS or SRS are handled with the utmost precaution and personnel screening.

Response: *All DOE shipments of LLW, including those from Pantex to NTS, are shipped in the Department of Transportation (DOT)-approved containers/packages in accordance with all applicable Federal and state regulations, and DOE orders. DOE does not ship LLW from Pantex to SRS.*

09.04 Commentors express concern over the shipment of radioactive materials/waste to INEL. One commentor is opposed to such shipments while another commentor expresses concern about the safety of nuclear waste-carrying casks that are transported through the town of Shoshone, ID, "at 60 mph." In addition, the commentor believes that DOE should address in the PEIS the possibility of derailments, based on the four train derailments that have occurred in the last 6 months near the town of Shoshone. On a broader scale, another commentor feels that DOE must account for all INEL- and non-INEL-related radiological materials that are being transported across Idaho. The unprecedented level of radiological material movement associated with upcoming DOE decisions must be comprehensively evaluated.

Response: *As part of the Tritium Supply and Recycling Program, DOE is not proposing to ship any spent nuclear fuel or radioactive waste to INEL. Shipments containing radioactive materials would be made in compliance with Federal hazardous materials transportation regulations (DOT and/or NRC, as applicable). As stated in section 4.7.1.1, tritium shipments are made almost exclusively by air, and not by rail. Radioactive material shipments are required by Federal regulations to be made only in high integrity packaging. The DOE safety record is exemplary, as there has never been a transportation accident involving a release of radioactive material.*

09.05 Commentors express concerns with railroad transportation at NTS. If the APT is selected for supply and recycling, one commentor believes that there is no need for a railroad line to NTS for tritium production. In addition, another commentor also states that an emergency management plan/structure for accidents on rail or road is needed for NTS. The commentor believes that responsibilities involved in such a plan should be clearly defined as to whether it is local, state, or Federal responsibility. DOE's planning in this area is not adequate and should incorporate the Department of Defense (DOD) experience and knowledge in shipping hazardous waste.

Response: *There is no requirement for a railroad for the APT option at NTS and it has been deleted from table 4.3.3.2-1. Tritium would be transported by air (not rail, and rarely by truck). DOE has an established emergency response program, which is promulgated in DOE directives (principally* *in series 5500). These directives are implemented and supplemented by NTS's emergency response procedures. In any case, DOT is responsible, under the* Hazardous Materials Transportation Uniform Safety Act of 1990, *for coordinating Federal training programs and for providing technical assistance to states, tribes, and local governments for emergency response training and planning.*

09.06 The commentor notes that DOE uses inconsistent terminology in the intersite transport section of the executive summary. The commentor believes that the wording of the "relative transportation risk of tritium" paragraphs should be changed to make this section consistent.

Response: *The phrasing of the relative transportation risk is different between the executive summary and section 4.7, although both are correct. The discussion in section 4.7 has been revised to be more consistent with the summary.*

09.07 The commentor references volume I, page 4-14, column 2, paragraph 3 and pages 4-437 to 4-441, section 4.7, and asks whether an assessment of the impacts of transportation of reactor fuel or spent fuel from the sites was analyzed. At a minimum, the commentor believes the rate of spent fuel generation in metric tons of heavy metal should be provided so that it can be compared to other sources.

Response: *The transport of reactor fuel and highly enriched uranium for HWR and MHTGR fuel fabrication has been added to the Final PEIS analysis. Reactor fuel would be provided from and transported by commercial vendors. Reactor fuel is routinely transported throughout the United States. The radiological health risks from transporting reactor fuel are expected to be very low and would not vary significantly regardless of the site selected. This transportation risk would be evaluated in more detail in site-specific tiered NEPA documentation once a site is selected. Spent fuel would be stored onsite during the life of the project. The Final PEIS now includes the spent fuel generation in metric tons of heavy metal.*

09.08 The commentor suggests that the DOD share shipping knowledge with other agencies.

Response: *DOE and DOD must comply with and ship materials in accordance with the same DOT regulations (49 CFR). Shipments of tritium and other weapons complex materials between DOE and DOD sites are closely coordinated.*

09.09 Commentors express concerns about the transportation of large amounts of tritium. One commentor suggests that the nuclear weapons stockpile stewardship and management program may be centered at a distant site (other than SRS) where the tritium recycling facility is presumed to be located in the year 2010. This raises questions concerning transportation of large amounts of tritium to and from another location (other than SRS) according to the commentor. The commentor is concerned that the cost impact of this transportation of tritium is not being evaluated; and inquires whether states, counties and municipalities can stop such shipments from passing through their jurisdictions to make this proposition invalid in 2010. Another commentor also asks what the risk is to transport tritium to and from assembly and disassembly sites. While the PEIS addresses the risk of moving low-level waste from Pantex to a DOE disposal site, the commentor believes the analysis fails to consider the risk of transporting tritium containers from the assembly/disassembly site to the tritium site. In addition, the commentor notes that the executive summary states that the relative transportation risk of tritium at NTS is 30 percent lower than the No Action alternative and asks how this was concluded since, under the No Action alternative, Pantex is the assembly/disassembly site.

Another commentor references the PEIS alternative of producing tritium at one facility and then recycling the tritium at SRS. According to the commentor, other than the transportation of virgin tritium, which is addressed in section 4.7.2.2, the environmental impacts associated with extracting the tritium at the production facility, loading it into some sort of transport container, transporting the containers from the production site to SRS, and then unloading the containers at SRS are not addressed in the Safety Analysis Report. In any case, some commentors feel the increased costs of the additional handling, along with unnecessary health/environmental risks associated with transportation of tritium and related hazardous wastes, would seem to argue for a collocation alternative with the facility at one site.

Response: *The PEIS evaluates environmental impacts due to intersite transport of project radioactive materials; cost impacts are not addressed in the document. The cost analysis for each tritium supply technology can be found in the Technical Reference Report available in DOE reading rooms. The cost analysis along with the PEIS results will be evaluated and considered as part of the ROD. Transportation of tritium between all candidate sites (not just SRS) is addressed in the PEIS. Shipments would be made in compliance with Federal hazardous materials transportation regulations that supercede those of state and local jurisdictions. Inconsistent state and local regulations are preempted by the* Federal Hazardous Materials Transportation Uniform Safety Act of 1990. *Placing only tritium supply at INEL, NTS, ORR, or Pantex and transporting tritium by air to SRS would increase the relative risk by approximately 2 percent per year, as explained in section 4.7.2.2. Handling was considered in determining the consequences of an accidental tritium release during transport. The relative transportation risk of shipping tritium is related to the current location of the tritium recycling facility at SRS and the assembly/disassembly facility at Pantex. Moving the tritium supply to NTS and retaining assembly/disassembly at Pantex would decrease the risk by 30 percent due to the shorter distances involved.*

09.10 The commentor references volume I, chapter 3, table 3.6.1, intersite transport, page 3-95, ORR column, first paragraph and asks for clarification on why no intersite transport of LLW would be required.

Response: *For the purposes of this PEIS analysis, the planned LLW disposal capability at ORR was assumed to be available in 2002; thus, no offsite transport of LLW would be required.*

10 WASTE MANAGEMENT

10.01 Commentors suggest that the Nevada Test Site has a superior waste management capability. The commentors further note that since it has existing low-level radioactive waste disposal facilities, it could avoid the need for transporting wastes from tritium production facilities if such production were located at NTS. According to the commentors, NTS is isolated, has plenty of room for expansion, and has been a repository for other sites' wastes.

Response: *The waste management capability at NTS has been discussed and analyzed as part of the tritium proposal in the PEIS. The PEIS analysis, including waste management issues, and other supporting program reports will be considered in the process leading up to the decision presented in the ROD.*

10.02 Commentors note that DOE needs to seriously address the short-term and long-term nuclear waste disposal issue before undertaking a new project that will generate more spent fuel, more LLW, more hazardous waste, and more sanitary waste. The commentors state that no new wastes should be generated until all other wastes have been cleaned up, as cleanup should be a first priority. Commentors are of the opinion that there is no way to dispose of spent nuclear fuel in the United States, and the operation of the tritium supply and recycling facility will further add to the volume, no matter where it is located. One commentor states that disposal of high-level radioactive waste in the vadose zone will prove to be unacceptable, resulting in longer delays in putting a repository into operation. Moreover, commentors believe wastewater from tritium production could pollute groundwater resources in Amarillo. Adding additional waste at NTS, which has become a weapons waste dumping ground in the commentors' opinion, would only add to the problem there. Commentors feel that the costs of short-term and long-term cleanup should also be presented in the PEIS. Another commentor states that Oak Ridge needs money to clean up radioactive mess left by past practices.

Response: *As stated in chapter 2, DOE is responsible for developing and maintaining the capability to produce nuclear materials that are required for the defense of the United States. This responsibility includes the production of tritium. Because tritium decays over time, a new supply of tritium will be needed in the future. A major thrust of the Tritium Supply and Recycling Program has been, and will continue to be, the minimization of wastes through an overall philosophy of pollution prevention. Tritium supply and recycling facilities that will support the nuclear weapon stockpile requirements (both new and existing facilities) would treat and package all waste generated into forms which would enable long-term storage and/or disposal in accordance with all applicable Federal and state regulations and DOE orders. Materials will be stored until a final disposition is determined. The alternatives include a technology that does not generate spent nuclear fuel. Dry site designs for the various tritium supply technologies include provisions for maximum recycle of any wastewater in order to minimize liquid discharges from the facility. Any liquid discharges would be fully permitted by the applicable Federal and/or state regulatory authority.*

10.03 One commentor suggests that DOE should analyze long-term waste management costs from the tritium production facility throughout its life and after closure. The commentor also asks that DOE use correct LLW figures in the "Waste Management" overhead used at the public hearings. Moreover, the commentor believes DOE should be alarmed by the massive increase in LLW generation (from 25 yd^3 per year to 15,980 for HWR). Commentors urge DOE to break down wastes by type, volume, disposal methods, and costs.

Response: *The PEIS does break down waste by type and volume. In the waste management environmental impacts section for each site the disposal method was discussed for each waste type. The cost analysis for each tritium supply technology can be found in the Technical Reference Report available in DOE reading rooms. To the extent practical, the long term management of those wastes is addressed in the Technical Reference Report. The cost analysis along with the PEIS will be evaluated and considered as part of the ROD. As shown in table A.2.1.1-4, section A.2.1.1 the annual LLW volume to be disposed of is 1,870 yd^3 for the HWR. This would be added to the 117 yd^3 (table 4.2.2.1-4, section A.2.2.1) from the recycling facility for a total of 1,987 yd^3 per year.*

10.04 The commentor indicates that spent fuel wastes from a multipurpose reactor program will be treated in the same manner as spent fuel from commercial reactors and this is an important characteristic of such an option.

Response: *The management of spent nuclear fuel from a multipurpose reactor would be done in the same manner as that described for the tritium supply reactors. A spent nuclear fuel storage facility capable of stabilizing and storing the spent nuclear fuel generated during the design life of the reactor will be constructed as part of the facility. If, at some point in the future, a Spent Fuel Repository is established, then the fuel would most likely be transferred there.*

10.05 The commentor expresses the opinion that the planned liquid LLW facility at NTS should be considered by DOE.

Response: *A sentence has been added in section 4.3.3.10 under the No Action paragraph between the sentences in line 22 as follows: "A liquid LLW treatment facility is planned for the treatment of wastewater from soil decontamination." Liquid LLW is not transported by DOE, it must be solidified first. The treatment facility would have to be collocated with the other facilities. If sited at NTS, the potential utilization of the facility would be evaluated in a site-specific document.*

10.06 One commentor addresses the disposal of spallation products in the APT, and suggests that the accelerator design should comply with NRC and EPA standards since minute but extremely hazardous radioactive elements may be produced. Another commentor believes that wastes from a coal plant to generate the power required to operate the APT should be factored in.

Response: *All tritium supply and recycling facilities would treat and package all waste generated into forms that would enable long-term storage and/or disposal in accordance with the* RCRA, *and other applicable statutes. The management of DOE radioactive waste will be conducted in accordance with DOE Order 5820.2A, Radioactive Waste Management. Hazardous waste will be managed in accordance with RCRA. NRC does not provide regulatory oversight for DOE wastes, but does review DOE orders which are developed through a formal regulatory development process. The PEIS has added an analysis to the environmental impact sections for each site throughout sections 4.2, 4.3, 4.4, 4.5, and 4.6 to account for the power required to operate the APT; however, the environmental parameters are based on a gas-fired power plant not a coal plant.*

10.07 The commentor is of the opinion that the PEIS should include an analysis of long-term waste management costs, including facility life and afterward, past 2050.

Response: *Costs are not analyzed as part of the environmental impacts. However, costs are part of the input into the analysis for the ROD.*

10.08 One commentor notes that the large volume of spent fuel waste associated with the MHTGR includes the moderator. According to the commentor this technology does not produce more fission products than other reactor types. Another commentor feels that the PEIS does not make it clear that additional storage space (above that required by the other reactor technologies) would be needed for MHTGR spent fuel generation. This need is due to the thermal (criticality) requirements of storing spent fuel, and the PEIS needs to mention this, according to the commentor.

Response: *In addition to the volume of the spent nuclear fuel, which for the MHTGR includes the moderator, the heavy metal content has been added to the waste tables in section 3.4 and appendix A.2 for all of the reactors for a more equitable comparison.*

10.09 Commentors state DOE should not consider spent nuclear fuel as an asset.

Response: *Spent nuclear fuel was considered a resource by DOE when it was reprocessed to obtain special nuclear materials. With the reduction in the Nation's nuclear weapons stockpile, supplies of these special nuclear weapons became more than sufficient to satisfy needs for the foreseeable future. Accordingly, the decision to discontinue reprocessing was made and spent nuclear fuel is presently being stored only until a suitable repository becomes available. Processes similar to reprocessing may be utilized for treatment and stabilization.*

10.10 One commentor questions why there is no consideration for onsite storage and disposal at Pantex (unlike the other sites under consideration) and why the city of Amarillo needs to change its landfill design. Another commentor suggests that additional solid waste from a tritium supply and recycling facility sited at Pantex would not have substantial impact on current landfill capacity even if the city's landfill were utilized.

Response: *The current site practice for sanitary waste disposal at Pantex is to utilize the landfill for the city of Amarillo. If Pantex were to construct an onsite sanitary landfill, it would certainly be used. Since the solid sanitary waste would increase by a factor of 13 to 20 depending on the technology chosen, there would be a substantial impact on current landfill capacity. There is no statement that a landfill design change is required; however, the increase in solid sanitary waste volume could affect the planned lifetime of the current landfill.*

10.11 The commentor states that the Tritium Supply and Recycling Program would add only an incremental increase in wastes compared to previous DOE projects which have contaminated ORR. In the commentor's opinion, this seems to position ORR as a likely candidate by avoiding more prominent impacts at another site.

Response: *The Tritium Supply and Recycling Program would add an incremental amount of waste to any site selected. It is true that the increment is more of an impact at a site such as Pantex as opposed to ORR or SRS. However, the waste impacts are only one input into the overall decision process.*

10.12 The commentor refers to page 3-87 and notes that in the previous EIS for a New Production Reactor (April 1991), the hazardous solid waste generated for each reactor concept (HWR, light water reactor, MHTGR) varied from site to site, but was generally more for the light water reactor than for the MHTGR and HWR by factors of 7 to 24. Here, the MHTGR allegedly produces 2.5 times as much as the light water reactor and HWR, and even produces more in three modules than it produced in 1991 in eight modules. The commentor indicates they have been unable to obtain the reference document to check the basis for these numbers, but there appears to be an error. According to the commentor, this should be re-evaluated.

Response: *The data for the PEIS were prepared by DOE's architectural and engineering contractor by extrapolating data from the New Production Reactor Program to include ensuring consistency across all tritium supply and recycling alternatives. The reactors assessed for the Tritium Supply and Recycling Program were down-sized to meet the decreased tritium requirements outlined in the Nuclear Weapons Stockpile Memorandum. The production of plutonium and the reprocessing of spent nuclear fuel were also eliminated from the proposed New Production Reactor Program.*

10.13 The commentor is of the opinion that DOE should consider the possibility of reprocessing tritium from spent fuel.

Response: *There is little or no tritium that can be recovered by the reprocessing of spent nuclear fuel. It is for that reason that specially designed target rods must be used to manufacture tritium in a reactor.*

10.14 The commentor notes that spent fuel storage is a function of heat. Therefore, the less heat generated, the less storage required. The commentor asserts that the document does not adjust the environmental impacts for storage of spent fuel as function of heat.

Response: *Spent fuel storage requirements and environmental parameters were developed by DOE's architectural and engineering contractor. The PEIS analysis assumed that the spent fuel storage requirements and environmental parameters did account for the difference in spent fuel* *characteristics of the various technologies. Assumptions about volume requirements for a repository based on heat load are speculative.*

10.15 The commentor suggests that DOE present the percentage of spent fuel to be handled in the Tritium Supply and Recycling Program relative to total amount of spent fuel currently managed. The commentor believes that a more accurate perspective of the differences between reactor and APT technologies would result.

Response: *The residual heavy metal content of the spent nuclear fuel for the reactor technologies has been added to the Final PEIS. For comparison purposes, the DOE inventory in the year 2035 as reflected in the ROD from the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (2,742 metric tons) and an estimated inventory in the year 2030 of commercial spent nuclear fuel (85,700 metric tons) has been added. The tritium supply reactor technologies would contribute the following amounts of heavy metal per year: Large ALWR (105 metric tons), Small ALWR (68 metric tons), MHTGR (0.3 metric tons), and HWR (0.2 metric tons).*

10.16 The commentor believes the Final PEIS should express LLW in curies or mass units (in addition to yd^3 and $acres^3$).

Response: *LLW is defined as waste that contains radioactivity but is not classified as high-level waste, transuranic waste, spent nuclear fuel, or as "11e(2) by-product material" as defined by DOE Order 5820.2A, Radioactive Waste Management. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic waste is less than 100 nanocuries per gram. LLW is not typically measured in terms of curies, it is quantified in terms of cubic yards. Analyses of environmental impacts are not based on curie content per se but rather on the number of curies potentially released.*

10.17 The commentor, who was present at a public hearing at NTS, refers to a slide which indicates the need for a new organic mixed-waste facility and asks what are the primary constituents of this waste stream. The commentor also wonders if it is the same as mixed LLW. The commentor believes DOE should clarify this.

Response: *This is a solid mixed waste stream consisting typically of contaminated oils absorbed on wipes, contaminated protective clothing, and plastics in relatively small volumes. NTS does not have a facility capable of treating this waste. Currently NTS sends such wastes offsite for treatment. If the tritium supply were located at NTS, an organic mixed-waste treatment capability would be needed either onsite or offsite.*

10.18 In reference to volume I, chapter 4, table 4.4.3.10-1, page 4-254 (transuranic (solid) row, disposal method column, second and third statements), one commentor suggests that since the status of events cannot be accurately projected as to the opening of such a repository, DOE should remove the phrase "Federal repository in the future." Another commentor states that reactor technologies would generate from 7 (HWR) to 30 (MHTGR) yd^3 of spent fuel a year. If Yucca Mountain is chosen, this commentor states that the projected disposal needs already exceed capacity. INEL and Spent Nuclear Fuel Final EIS appear to address only how to manage DOE spent nuclear fuel over next 40 years until final disposition options are available.

Another commentor references volume I, chapter 4, section 4.4.2.10, page 4-201, and asks for clarification of where the LLW disposal area would be located and if acreage has been committed for the amounts of excess LLW waste identified in the table 3.6.1 under waste management. Assuming that LLW disposal facilities will be available on ORR, the commentor believes that waste disposal siting options by the NRC should be discussed. One commentor also asserts that there is much uncertainty about the location of an onsite LLW storage facility since there is no progress on the storage problems already existing at ORR.

Response: *It is agreed that the status of events cannot be accurately projected as to the opening of a Federal repository for transuranic waste; however, the discussion still accurately depicts DOE's future plans. It should be noted that it is widely accepted that such a facility will have to be built sometime in the future. As shown in the PEIS, current plans call for the Class II LLW disposal facility to be operational in 2002. This disposal facility is part of the overall LLW management program at ORR and is not being proposed to be constructed solely to meet the requirements of the Tritium Supply and Recycling Program. There are many factors that could affect the schedule, location, and capacity of this facility. These include: (1) Defense Nuclear Facilities Safety Board recommendation 94-2, concerning performance assessments for LLW disposal facilities, (2) the National Disposal Working Group, (3) the ROD from the Department of Energy Waste Management Programmatic Environmental Impact Statement, (4) future funding, and (5) the ORR environmental restoration program. The acreage quoted in the PEIS is the amount required to dispose of the LLW from the proposed action based on the current land usage factor for the proposed Class II facility. Currently DOE LLW disposal facilities are not licensed or regulated by the NRC. The management of LLW is outlined in DOE Order 5820.2A. The DOE Committee on External Regulation of DOE Facilities is now looking into the possibility of external oversight of DOE facilities by NRC.*

10.19 One commentor refers to page 4-208 which states that radioactivity limits for Class L1 wastes are 560,000 curies per yd^3. But the commentor believes that no amount of radioactive material produced in this program, however diluted, can be below regulatory concern. Another commentor believes that because of the waste hazard, no nuclear waste should be placed in Tennessee or anywhere near people.

Response: *The LLW generated as part of the Tritium Supply and Recycling Program is not considered to be below regulatory concern. The management of LLW is outlined in DOE Order 5820.2A, Radioactive Waste Management. As stated in the DOE order, it is DOE policy that "low-level waste operations shall be managed to protect the health and safety of the public, preserve the environment of the waste management facilities, and ensure that no legacy requiring remedial action remains after operations have been terminated."*

10.20 The commentor notes that Pantex does not currently generate high-level radioactive waste; however, three of the production reactors would create high-level waste. This would force the Panhandle to deal with storage of both plutonium and high-level waste, according to the commentor. The commentor feels that this is unacceptable to residents since there is no storage facility for these wastes.

Response: *The three production reactors would generate spent nuclear fuel. Because this spent nuclear fuel is not being reprocessed, there is no generation of high-level waste. The design of the production reactors includes spent fuel storage. The preconceptual design has sufficient capacity to store the spent nuclear fuel for the life of the facility.*

10.21 The commentor suggests that the volume I summary should provide information about LLW generated for each technology, maintenance frequency, and effort.

Response: *The PEIS does provide the amount of LLW generated from each of the reactor technologies (see appendix A, section A.2). The PEIS also provides the amount that requires disposal in a LLW disposal facility (see effluent column for technology in appendix A, section A.2). As described in section 3.1.2, the volumes of waste described in this PEIS are intended to be bounding for each technology as they are based at the maximum production level that the facility could achieve.*

10.22 In reference to volume I, chapter 3, table 3.6.1, page 3-71, ORR column, second paragraph, the commentor asks for clarification on whether there would by any liquid releases associated with tritium supply and recycling operations at ORR. The commentor notes that tritium, as well as other radionuclides, is already found in groundwater at ORNL.

Response: *Section 4.4.2.4 discusses potential liquid releases for all the technologies at ORR. Potential impacts of these releases are given in section 4.4.3.4 for ORR.*

10.23 The commentor refers to volume I, chapter 3, section 3.6 and asks that NRC data on the nature of fission by-products from reactors and spallation-induced products from APT be provided and that waste characteristics from each alternative be compared.

Response: *The comparison table in section 3.6 presents the waste data for each of the various technologies and compares it among sites. The data for the comparison requested by the commentor is available in the table. The data used that describe the fission by-products from reactors and the spallation-induced products from the APT are included in appendix E, as tables listing radioactive releases for normal operations for each of the technologies, and in appendix F, as source terms for various accident scenarios.*

10.24 The commentor believes that siting tritium supply and recycling facility at Pantex will create toxic wastes affecting environmental health in the Panhandle.

Response: *The PEIS acknowledges that waste generation at Pantex would increase from the proposed action. The PEIS also states that tritium supply and recycling facilities would treat and package all waste generated into forms that would enable long-term storage and/or disposal in accordance with the* Atomic Energy Act, Resource Conservation and Recovery Act (RCRA) *and other relevant statutes. The management of DOE radioactive waste would be in accordance with DOE Order 5820.2A, Radioactive Waste Management. Hazardous waste would be managed in accordance with RCRA. There are no wastes estimated to be generated that are regulated under the Toxic Substances Control Act. DOE is committed to manage any waste generated from the Tritium Supply and Recycling Program in a manner that assures protection of the health and safety of the public, DOE and contractor employees, and the environment.*

10.25 The commentor believes that DOE needs to consider if new processes, management/handling criteria, or containment will be required to dispose of the spent lead and tungsten targets from the APT.

Response: *The lead target assemblies from the LiAl option and the tungsten targets from the He-3 option have high activity levels immediately after irradiation. However, the total amount of activity decreases rapidly with time since the activation products have such short half-lives. As noted in the PEIS, the lead target assemblies are temporarily stored in pools until the activity levels have decreased to the point that the lead target assemblies can go through metal recycling to recover the lead or be macro-encapsulated to be disposed of as solid mixed LLW. The tungsten targets would be disposed of as solid LLW. If the APT is the selected technology, new processes would be investigated as part of refining the design.*

10.26 Commentors state that the PEIS should include a discussion of the different types of wastes from the four technologies and how they will be disposed of. Another commentor believes that the PEIS should breakdown waste numbers for each technology.

Response: *The PEIS does provide a discussion of the types and quantities of wastes that will be generated from each of the tritium supply technologies (see sections 4.2.3.10, 4.3.3.10, 4.4.3.10, 4.5.3.10, 4.6.3.10, and appendix A, section A.2). As stated in the PEIS, the tritium supply and recycling facilities would treat and package all waste generated into forms that would enable long-term and/or disposal in accordance with applicable Federal and state regulations, and DOE orders.*

10.27 In reference to volume I, chapter 4, section 4.4.3.10, page 4-252, the commentor requests clarification on whether the new storage facility for spent nuclear fuel and the new treatment facility would be placed on the tritium supply and recycling site or existing facilities at ORR.

Response: *Due to capacity limitations, there are no plans to use existing facilities. The third sentence has been revised to read "As part of their design, all reactor technologies would provide stabilization and storage of spent fuel for the life of the facility."*

10.28 The commentor wonders how LLW figures were generated and for what timeframe.

Response: *For the HWR and MHTGR the LLW figures were generated using New Production Reactor data that were reviewed and revised to account for smaller reactors and waste minimization initiatives. For the ALWR and APT LLW estimates were taken from preconceptual design information on NRC documentation. The timeframe used was a 40-year lifetime of the facilities.*

10.29 The commentor believes that DOE should include in the Final PEIS analyses of the costs to and impacts of a pipeline carrying wastewater from Amarillo to Pantex on the environment and surrounding communities, as well as the effects and costs of a pipeline carrying wastewater to the new tritium supply and recycling facility.

Response: *A pipeline carrying reclaimed water to Pantex from Amarillo will be constructed regardless of the Tritium Supply and Recycling Program and, therefore, is not analyzed. However the use of this water at the Pantex plant for cooling purposes has been added to the analysis in section 4.5.3.4. The wastewater generated by the tritium supply and recycling facility would not be recycled and would leave the plant site.*

10.30 The commentor refers to volume II, page H-12, LLW and the statement: "...(incinerator, which was shut down for modifications, completed startup and resumed limited operations in 1994)." The commentor indicates that while sizing and compaction have resumed at Waste Experimental Reduction Facility (WERF), the incinerator has yet to restart actual waste incineration. According to the commentor, some incinerable LLW from the INEL is currently being sent to Tennessee for processing with stabilized ash and returned to the INEL for disposal. Once incineration at WERF resumes, it will be mainly low-level mixed waste that will be incinerated.

Response: *The referenced sentence in section H.2.1 has been changed to read: "...which was shut down for modifications, is in startup and is expected to resume operations in 1996.)"*

10.31 The commentor suggests that the following statement be clarified in volume II, page H-12, transuranic waste: "Approximately half of the TRU wastes are expected to be reclassified as alpha contaminated LLW in the future. These wastes do not meet INEL waste acceptance criteria for LLW, and therefore will be managed as TRU waste." The commentor indicates that current plans are to ship the majority of INEL TRU waste to Waste Isolation Pilot Plant (WIPP) for disposal. Only low-level TRU waste can be disposed of in WIPP. The alpha-contaminated waste will likely be treated and disposed of elsewhere.

Response: *Transuranic wastes contain transuranic contamination over 100 nanocuries per gram. Alpha LLW contain transuranic contamination of more than 10 but less than 100 nanocuries per gram. While the wastes are in interim storage at INEL, they will be managed similarly. However, the transuranic waste will be certified for disposal at WIPP or another suitable repository should the WIPP prove unavailable. The Waste Characterization Facility will be utilized to determine which wastes are in the alpha contaminated category. The alpha contaminated low-level waste will be packaged to contain the alpha-type contamination and to permit disposal as LLW. The last sentence of the transuranic waste paragraphs (section H.2.1) has been modified as follows: "These wastes do not meet INEL waste acceptance criteria for LLW, and therefore will be managed as TRU waste until they can be characterized and repackaged to contain the alpha-type contamination to permit disposal as LLW."*

10.32 The commentor suggests that in volume II, page H-11, transuranic waste, the statement "INEL contains 30 percent of DOE's TRU wastes," should be more like 60-65 percent.

Response: *The Final PEIS referenced text has been revised to state: "Since that time, TRU wastes have been segregated into contact-handled, remote-handled categories, and packaged and stored for ultimate retrieval and transport to an offsite repository at WIPP or another suitable repository should the WIPP prove unacceptable. INEL contains more than 50 percent of DOE's TRU wastes."*

10.33 The commentor notes that in volume I, pages 4-94 to 4-99, the amounts of various waste types that would be generated by the different technologies are discussed. The commentor states that while there would be increases to all waste streams by all technologies, the increases in low-level radioactive waste, which is disposed of on INEL by shallow land burial, would be the most significant. The increases in possible site-wide disposal range from 109 percent with the HWR to 18 percent with the ALWR (small) and APT. With such large increases the commentor wonders whether the subsurface disposal area, where LLW is disposed of, would be able to meet the performance criteria for LLW disposal contained in DOE Order 5820.2A. The commentor further notes that while the current subsurface disposal area performance assessment indicates that operations conducted on a scale similar to the present and recent past will likely meet the performance criteria, the performance assessment's sensitivity analysis indicated that subsurface disposal area performance might be close to the upper limit allowed.

Response: *Under DOE Order 5820.2a, INEL must establish performance objectives for the management of LLW to protect human health and the environment. INEL is responsible for implementing and maintaining performance assessment documentation to certify that the dose limitations are not exceeded. The performance assessment is based on assumptions for engineered barriers and packaging. The text in section 4.2.3.10 of the EIS, in the last paragraph under Potential Mitigation Measures, states "Utilization of these facilities would require site-specific engineering and NEPA analysis." The isotopic analysis was not available for the projected waste streams when this document was completed. The reported waste volumes to be disposed of are also assumed to have not undergone any volume reduction other than compaction. INEL uses both onsite and offsite commercial incineration of LLW.*

10.34 In reference to page 4-288, section 4.5.2.10, waste management, the commentor notes that the last sentence in the third paragraph which begins: "In September..." is incomplete. After the second sentence, the commentor suggests the text should be modified to add, "after the public comment period on the proposed listing for Pantex, the NPL ranking score increased from 34.42 to 51.22."

Response: *The sentence has been revised to read: "In September 1991, DOE submitted to EPA its technical comments regarding the proposed listing." The NPL ranking score was judged as not being necessary for a programmatic EIS.*

10.35 The commentor refers to the following statement in volume I, page 4-49, nonhazardous waste: "INEL has eliminated the commercial/industrial waste streams that had previously been generated and disposed of in the commercial/industrial landfill." The commentor is of the opinion that this statement needs to be clarified or corrected. It is the commentor's understanding that the solid, non-hazardous waste generated on the INEL is, with one exception, classified as a commercial/industrial waste and the landfill is an industrial waste landfill.

Response: *Section 4.2.2.10 has been changed. The referenced sentence (last sentence under non-hazardous waste) has been deleted and replaced with: "Continuation of existing programs will require expansion of the industrial/commercial landfill, adding 225 acres to provide capacity for the next 30 years."*

10.36 In reference to volume I, chapter 4, section 4.4.2.10 page 4-201, second column, third paragraph, "high-level waste," one commentor requests that the relationship that the proposed tritium supply and recycling facility would have with NRC regulations be described. In addition, the commentor suggests that spent nuclear fuel produced by the proposed facility should be defined and regulated as high-level waste by NRC. Another commentor states that consistent with the assumption by the DOE Office of Fissile Materials Disposition that options for the disposition of plutonium would have to be licensed by NRC to be deployed, the DOE should assume that the tritium supply technology will be licensed by NRC. The commentor notes that NRC can provide the necessary independent review and oversight, and it is likely that the NRC would be required to oversee the confirmatory inspections, tests, analysis of the ALWR if selected for tritium supply so that the conditions of certification are validated for licensed operation. The commentor states that the Defense Nuclear Facility Safety Board is judged not to be equipped for this task without using the NRC as permitted under law. The commentor states that it would be best not to burden the process with the Defense Nuclear Facility Safety Board when the NRC has a proven track record for nuclear safety assurance based on the licensing and ongoing regulation of over a hundred commercial reactors and numerous nuclear materials facilities. The commentor points out that the NRC has also provided DOE with the independent reviews for Naval Reactors, the Fast Flux Test Facility and the Light Water Breeder Reactor at Shippingport.

Response: *In response to concerns that DOE needs regulatory oversight at its nuclear facilities, the Secretary has created an independent Task Force on External Regulation. This task force is presently reviewing various alternatives for external oversight of activities at DOE's nuclear facilities and will submit a report, with recommendations, early in 1996. The NRC currently does not have regulatory authority over DOE facilities. DOE differentiates between spent nuclear fuel and the waste that results from the reprocessing of spent nuclear fuel. The DOE management of spent nuclear fuel is reflected in the ROD for the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Enviornmental Impact Statement (DOE/EIS-0203-F). The definitions of spent nuclear fuel and high-level waste are in appendix H, table H.1.1-1. Since spent nuclear fuel is not reprocessed, the tritium supply and recycling proposed action would not generate any high-level waste.*

10.37 One commentor refers to volume I, page 3-4, column 1, second bullet and notes that a comprehensive assessment of ultimate disposition of spent fuel is not yet possible. Yet, the commentor believes that a comparison of the amount of fuel (in units of metric tons of heavy metal) that would be disposed from the proposed facility to that from other government and commercial sources would be helpful in assessing the impact of the tritium facility and its contribution to the cumulative impact of management and disposition of spent fuel from various sources. Another commentor references volume I, section 3.4.2, pages 3-32 to 3-39 and pages 4-92 to 4-99, volume II, appendix A (tables), and suggests that spent nuclear fuel quantities in metric tons of heavy metal (instead of or in addition to yd^3) should be provided in order to compare to quantities currently being stored at DOE facilities and expected to be produced in the future from other sources. In addition, several commentors state that they are extremely supportive of DOE's efforts to reduce its hazardous waste generation and encourage DOE to include appropriate waste minimization commitments as an integral component of the proposed course of action in the project's ROD.

Response: *The PEIS has been modified to include the residual heavy metal mass content of the spent nuclear fuel generated from the various reactor alternatives. These data are included in the waste tables in section 3.4 and appendix A.2. DOE recognizes that pollution prevention (as opposed to pollution control) is the preferred option to waste management. This approach has been emphasized by both former President Bush and President Clinton. As outlined in DOE Order 54001, it is also DOE policy that any new facility is required to incorporate waste minimization/pollution prevention principles and practices into its design.*

10.38 The commentor observes that waste minimization/pollution prevention is mentioned frequently throughout this PEIS and the PEIS claims that it is a concept that will be incorporated into the design and operation of all the proposed technologies. The commentor points out that the PEIS also states that INEL has an active waste minimization/pollution prevention program. The commentor argues that, in reality, there seems to be a lack of long-term commitment to the program on the part of DOE-Idaho and its contractors. For example, the commentor notes that funds have been cut for waste minimization/pollution prevention activities and the program has been "zeroed out" for fiscal year 1996. The commentor notes that in fiscal year 1997, it falls below the available budget and will probably not be funded. The commentor also states that in day-to-day dealings with waste management operators at the site, they have experienced an opinion that waste minimization/pollution prevention is not a waste management function. Therefore, the commentor believes that there is some question as to whether it should be funded from EM-30.

Without a strong commitment to waste minimization/pollution prevention, the commentor believes that the costs and environmental impacts associated with the proposed tritium technologies will increase. In other words, the commentor asserts that it makes good economical and environmental sense to avoid the creation of waste in the first place. The commentor acknowledges that waste minimization capability can be built into the design of a new facility, but without a commitment from the operators of the facility, many of the benefits mentioned in the PEIS are unlikely to be realized. Another commentor refers to volume I, page 3-4, first column, first bullet, which states that consideration has been given to waste minimization and pollution prevention in the design goals for new facilities with regard to their eventual D&D. The commentor suggests that consideration should also be given to the minimization of waste from facility operation.

Response: *DOE recognizes that pollution prevention (as opposed to pollution control) is the preferred option to waste management. This approach has been emphasized by both former President Bush and President Clinton. As outlined in DOE Order 54001, it is also DOE policy that any new facility is required to incorporate waste minimization/pollution prevention principles and practices into its design. The second sentence of the first bullet has been changed in section 3.1.1 of* *the Final PEIS to read: "The design goals of all new facilities include consideration of waste minimization and pollution prevention to minimize the generation of wastes from operation and facility and equipment contamination thereby making the future D&D of these facilities as simple and inexpensive as feasible."*

11 HUMAN HEALTH

11.00.01 The commentor believes that radiation monitoring at NTS has been inconsistent over the past 30 years. The commentor expresses the opinion that the radiation baseline used in the PEIS is not accurate; therefore, the radiation analysis is not accurate. In addition, the commentor suggests that DOE needs to ensure consistent monitoring in the future, and that the PEIS should take into account this inconsistent monitoring.

Response: *The PEIS baseline is taken from the annual site environmental report which is filed annually by the sites with appropriate regulators. This is believed to be the most consistent information available and receives independent review by the EPA. It is also generally available in site reading rooms. The data from these reports is used to determine the calculated annual dose for the No Action alternatives as presented in sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9.*

11.00.02 One commentor states that the number of cancer fatalities per year for the APT versus the other technologies appears to be misleading. The APT considers only the risks associated with construction of the facilities, whereas the risks associated with the other technologies include both the construction and operational risks. The commentor suggests that DOE include in the PEIS the risks associated with constructing and operating the electrical source to power the APT, whether the source is coal-fired or nuclear powered.

Response: *A generic and site-specific analysis of impacts for a dedicated gas-fired power supply to support the APT has been incorporated in the Final PEIS, throughout sections 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3. For the APT, both construction and operation are included in the PEIS.*

11.00.03 The commentor indicates that recent epidemiological research suggests that a large influx of people in a region may lead to higher rates of leukemia. This unknown phenomena may result from viral transmissions in an unstable population. The commentor believes that the document should attempt to include this in the human health section.

Response: *The sections on health effects studies that were summarized in the affected environment sections, and which were reviewed in more detail in appendix sections E.2 and E.3, did not include unknown phenomena. Only published study findings were reviewed and presented in the PEIS. Quantifying impacts from unknown phenomena was deemed speculative due to the current state of research and information available on this type of impact.*

11.00.04 The commentor states that construction deaths (industrial accidents) will exceed cancer deaths from the tritium supply and recycling facility. The accident deaths in the PEIS result from radiological releases or accidents, not industrial accidents. The PEIS should account for industrial accidents.

Response: *Section 5.5 of the PEIS addresses project compliance with the Occupational Safety and Health Administration (OSHA), including the regulations regarding workplace safety and accidents. Included in that section is a discussion of potential impacts that might result from industrial accidents during construction. This issue will be further addressed in following site-specific tiered NEPA documents.*

11.00.05 The commentor believes that the document should include information relating how DOE intends to monitor radiation health within a 50-mile radius, as well as the techniques it will use.

Response: *The monitoring of human health is discussed in section 4.1.9 under the subtopic "Epidemiological Studies." Information on specific epidemiological studies already performed or planned around each site are presented in appendix E, sections E.2 and E.3. A discussion of study methods is also presented in section E.4.*

11.00.06 The commentor believes that there are some minor changes that would improve the document. On page E-3 of volume II, the commentor notes the internal committed doses are combined with external effective doses. For convenience, the sum is also called the committed effective dose equivalent in the Draft PEIS. Although this may be convenient, the commentor notes that it is not correct or conventional. A committed dose has a specific definition that involves only radioactive materials taken internally in the body. The definition implies that an intake today results in a dose received over subsequent days or years depending on the radiological and biological half-life of the specific radionuclide. For external effective doses, the dose ends when the person or the source is removed from the area of influence. Therefore, the commentor believes it is more correct to call this combined dose a total effective dose equivalent or just effective dose for that year of practice.

Response: *The commentor is technically correct and it was a matter of choice as to what nomenclature is used for such combination. The definition is included as used in section E.2.1.1 so as not to confuse readers.*

11.00.07 One commentor contends that the comparison of health effects between the APT and the reactor technologies is not a fair comparison. According to the commentor, the human health effects that result from the high electromagnetic effects of an APT are unknown. The commentor states that the American Nuclear Society would not accept the comparison. In addition, the commentor notes that the history of the five reactors at SRS shows an excess of leukemia. In the commentor's opinion, the human health section would not be accepted by professionals in epidemiology. The commentor argues that DOE is presenting a narrow analysis to the public by displaying only radiation exposure. The Final PEIS should include the health risks from the electromagnetic radiation produced by the APT, according to another commentor.

Response: *The basis of the human health effects analysis is outlined in appendix E, section E.2. The Final PEIS presents information on health risks from electromagnetic radiation in appendix E.2.3.4.*

11.00.08 The commentor believes that the draft seeks to preempt NRC licensing standards by placing significance upon accidents that might happen every 100,000,000 years. The commentor notes this particular accident frequency was chosen as significant but the basis for selection is not explained in the Draft PEIS. According to the commentor, in establishing the safety goal for ALWRs, the NRC stated that "the overall mean frequency of a large release of radioactive materials to the environment from a reactor accident should be less than 1 in 1,000,000 per year of reactor operation." The commentor notes that the Electric Power Research Institute proposed that ALWRs meet a conservative goal of accident frequencies less than once every 1,000,000 years for any accidents that produce releases exceeding 25 rem whole body dose over 24 hours at 0.5 miles from the reactor site boundary, for example. According to the commentor, the NRC's Final Safety Evaluation Report for the System 80+ design, Electric Power Research Institute concluded that the probability of exceeding the 25 rem criterion was once every 20,000,000 years. The commentor notes that this probability is about 20 times better than the Electric Power Research Institute goal. The commentor further points out that the NRC also noted that "the risk is very low compared to the current generation of operating plants." The commentor states that the total exposure over a 50-mile radius was estimated to be 17 person-rem over a 60-year plant-life based upon population and weather data developed by Electric Power Research Institute to bound 80 percent of the reactor sites in the United States. Using the conversion factors proposed in the Draft PEIS, such an exposure would result in no measurable latent fatalities, according to the commentor. The commentor states that based upon these and many other findings, the NRC issued a final design approval of the System 80+ design in July 1994. The commentor feels that the Draft PEIS should not preempt the NRC's safety findings by placing relevance upon extremely low probability accidents. Instead, the commentor believes that Draft PEIS should incorporate the NRC results, thereby presenting an accurate dose value for the Large ALWR.

The commentor suggests that the Draft PEIS grossly overstates the potential for radiation releases from ALWRs during "low-to-moderate consequence accidents." According to the commentor, the results outlined in the table on page F-28 are completely wrong. The commentor states that what would be correct for System 80+, is that there would be no measurable offsite release and no fatalities. The probability of a large break loss of coolant accident is less than once every 1,000,000 years, because the reactor piping meets the NRC criteria of "leak before break." Even if such an accident did occur, the plant is designed to withstand it. No fuel rod failures would be expected and, therefore, no measurable radiation releases would result.

Response: *As described in appendix F, dose information has been revised using more representative accident scenarios. New values are located in appendix F and sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9. The results are more consistent with NRC licensing reviews.*

11.00.09 The commentor expresses the opinion that the PEIS should display the current regulatory limits to be met and their history, and predict what these limits may be in the future.

Response: *DOE expects any tritium supply facility would comply with 10 CFR 100, DOE 6430. 1A dose limits, the Secretary of Energy SEN-35-91 safety goals, and the International Commission on Radiological Protection ICRP 26/10 CFR 834 recommendations regarding acceptable radiological risks. Appendix table E.3.3-1 gives regulatory limits for hazardous chemicals that could be documented for each alternative and at each of the sites analyzed. Table E.3.2-1 gives other pertinent information about each of the hazardous chemicals. Since it would be speculative, at best, to predict what limits might be applied to the very large number of chemicals cited and because limits are based on current toxicological, epidemiological and occupational information, it would be inappropriate to predict the regulated limits for any chemicals.*

11.00.10 Commentors state that the proposed tritium facility will not appreciably affect the public. One commentor states that construction and operation of facilities to rejuvenate and maintain tritium supply will not jeopardize the safety of his family. In addition, the commentor states that DOE's process of documenting every activity or hazard and designing mitigation features virtually eliminates consequences to the public. Another commentor states that more fatalities will occur as a result of electrical accidents than of nuclear radiation. Additionally, another commentor states that DOE should take into consideration the fact that, in general, construction and operation workers are healthier than the general population. This fact may influence the conclusions of the human health section. Another commentor references pages 4-421 and 4-385, and notes that the severe accident risk for ALWRs is stated as being low when compared to the risk of cancer fatalities from all other causes. The comment that "the results of the analysis indicate that the tritium supply technology with the highest severe accident sequence is the ALWR" seems misleading and should be deleted, according to the commentor.

Response: *DOE is very concerned about the safety of the public. All designs would meet or exceed applicable environmental, health and safety regulatory standards for workers. The risk associated with all technologies is low; however, the statement concerning the ALWR is correct.*

11.00.11 The commentor states that the fatality figures presented in the document are misleading because there is a large disparity between the technologies.

Response: *As explained in section F.1.3, the accident consequences were estimated using accident source terms from the best available public documentation and the GENII and MACCS computer codes. The computer models used the same weather conditions and population patterns associated with a specific site for the comparison of candidate technologies at each candidate site. Disparities would be expected between different technologies because of differences in their designs and accident scenarios, not because of a difference in how the analyses presented in the PEIS were performed.*

11.00.12 Commentors express general concerns about tritium, radiation and human health. Commentors state that tritium production will create additional environmental, safety, and health risks for the general population as well as the workers themselves. One commentor states that tritium is a radioactive gas with the potential for causing cancer and birth defects, in addition to genetic, chemical, and toxic health effects. The PEIS should analyze for all of these effects, according to the commentor. Another commentor states that increased radiation dose to workers and public is not acceptable. The people and their health are too valuable an asset to have them destroyed by a pipe dream of DOE, according to the commentor. Other commentors believe that SRS has released hundreds of thousands of curies of radiation into the air and water and that this is harmful to those who live along the Savannah River. Another commentor states that the safety of the tritium supply and recycling and its waste products is very difficult to maintain and there is always the danger of an accident or low-level radiation leak that is harmful. For this reason, the commentor does not want the tritium supply and recycling at ORR, fearing contamination of the Tennessee River. The commentor is also opposed to a tritium supply and recycling facility near any area universities, cities, land, or near the Smoky Mountains. Another commentor believes that to have nuclear waste stored directly above the largest aquifer in Idaho is unwise. The commentor is concerned that the safety of thousands is at stake should the inevitable accident occur. Another commentor states that the proximity of current and future schools and housing projects to the new facility should be fully analyzed in the PEIS. The commentor is specifically concerned about radiological risks to school and housing posed by tritium supply and recycling facility. The document should also include the projected construction worker fatality rates in the human health section, according to the commentor. Finally, another commentor feels the risk assessments for the project may be insufficient considering the health effects at ORR are significant.

Response: *The radiological and chemical doses, risks and health effects presented in the PEIS include the impacts associated with tritium production. The analyses demonstrate that the operation of all tritium supply and recycling facilities would result in impacts that are within regulatory limits, and the risks of adverse health effects to the public and to workers would be small. Impacts to aquifers from chemical or radiological contamination are not expected due to the Tritium Supply and Recycling Proposal. When the selected tritium supply technology is identified in the ROD, more detailed site-specific tiered NEPA analysis will be performed to further analyze the potential of aquifer contamination. Impacts from past operations at SRS are under study and are discussed in section 4.6.2.9 and appendix section E.4.6.*

11.00.13 The commentor expresses the opinion that there is new scientific evidence that there exists a threshold of radiation and this may not be able to be accounted for in the document.

Response: *The basis of the human health effects sections are outlined in appendix E, section E.2.1.2. The PEIS analysis is based on the more conservative scientific opinion that any radiation causes an associated human health impact. This is consistent with the generally accepted report on health consequences of radiation exposures, the BEIR V report discussed extensively in that section.*

11.00.14 The commentor states that risks depend on the choices people make. For instance, the commentor notes that radiation may cause cancer but people may choose radiation to cure cancer.

Response: *The PEIS presents a full disclosure of all the human health risks associated with each of the alternatives based on best available data.*

11.00.15 One commentor, referring to page E-14, states that the 170 person-rem exposure for the reactor and tritium extraction is inconsistently high. System 80+ conservatively estimated 79 person-rem and defended this number successfully to NRC as shown on page 12-11 of the *Final Safety Evaluation Report* (NUREG 1462), according to the commentor.

Response: *The value of 170 person-rem is taken from DOE's Data Report on Advanced Light Water Reactor Tritium Supply Plant (February 1995). This value includes contributions from the tritium extraction which was not part of NUREG 1462. This source is consistent with the sources used for all technologies evaluated.*

11.00.16 The commentor claims that in table 4.5.2.9-2, the doses of $2x10^{-5}$ mrem for the maximally exposed individual (MEI) and $5x10^{-5}$ person-rem for the population within 50 miles are incorrect numbers to calculate risk.

Response: *The dose values reported in the Draft PEIS were taken directly from the Pantex Plant Site Environmental Report for Calendar Year 1992. The environmental report is provided to regulatory agencies and the public as a tool for assessing the environmental performance of the Pantex Plant.*

11.00.17 The commentor expresses the opinion that the PEIS is significantly flawed without assessing and accounting for the safety and health effect uncertainties and confidence values usually associated with the immaturity of APT, which has never been operated or the concept demonstrated for an APT "machine" the size the PEIS is proposing. The commentor believes that DOE risk analysts must figure in these "additional penalties" directly into the APT results. The commentor further suggests adding in the "common mode failure factors and Baysian update methods" to account for APT lack of experience.

Response: *Although the APT design has yet to be demonstrated, most of the technologies required for this facility are sufficiently mature to yield the required quantity of tritium. The technical risks, which take into account the maturity of the design, are evaluated in the Technical Reference Report available in DOE reading rooms. If the APT technology is selected, a more detailed analysis of safety and health impacts will be presented in site-specific tiered NEPA documents.*

11.00.18 The commentor contends that if the APT technology is selected and found to require additional power from a facility which will be constructed in the future, then the document's evaluation is short on latent fatalities from the associated electricity production.

Response: *A generic and site-specific analysis of impacts for a dedicated gas-fired power supply to support the APT has been incorporated in the Final PEIS in sections 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3.*

11.00.19 In reference to page F-25, commentors state that the treatment of the alternative concepts is obviously imbalanced, as revealed by the selection of an event for the MHTGR that includes multiple failures, whereas single failures were considered for the other concepts. According to one commentor, the event to analyze should include an isolated containment from the start of the event, as was assumed for all the other reactor concepts. The commentor notes that this discrepancy was present in the April 1991, Draft EIS for the New Production Reactor, was commented upon, and DOE agreed to resolve the issue. Unfortunately, the issue remains according to the commentor. The commentors further state that the assumption of 1.0×10^{-2} per year for the MHTGR event frequency is extremely and unfairly conservative for an event with multiple failures of safety systems, especially when an event with a single failure is assumed for the ALWR to have a 1.0×10^{-3} per year frequency. For the releases given, numerous safeguards would have to fail which would lower the event frequency to the 1.0×10^{-6} range. The commentors assert that this event should be less likely than the initiating event frequency of 2.1×10^{-4} per year. This affects footnotes to tables F.2.2.2–2 and F.2.2.2–3, according to the commentors.

Response: *Appendix F has been revised to include a spectrum of low-to-moderate and high consequence accidents for the tritium supply technologies. The spectrum of accidents has been selected from the best available public documentation for each of the tritium supply technologies. The applicable page number or table number in the reference document for source terms, release fractions, core inventories, accident frequencies etc. have been cited. All of the tables that present accident consequences have been changed to reflect the results of new accident analyses. In addition the complementary cumulative distribution functions have been reformatted to provide risk-based summary comparisons.*

The ALWR accident source term used in the analysis was designated by the reactor vendor as a design-basis accident in a submittal to the NRC. The postulated design-basis accident was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. The documentation submitted to the NRC did not define the accident frequencies for design-basis accidents. The ALWR accident analyses have been revised to evaluate a spectrum of design-basis and beyond design accident source terms that had been submitted to the NRC as part of safety analysis reports. The design-basis accident analysis postulates the normal complement of safety systems for accident consequence mitigation.

11.00.20 Commentors indicate problems and some errors in the PEIS regarding safety and environmental results and comparisons of the alternate technologies. In reference to page F-10, a commentor states that the source term for the Advanced Boiling Water Reactor appears incomplete, since the list of nuclides is significantly shorter than for the other reactor concepts, including the Simplified Boiling Water Reactor. The commentor asks about the inclusion of strontium, ruthenium, antimony, tellurium, barium, lanthanum, and chlorine. Commentors refer to table F.2.2.3.5, volume II, page F-29, and state that the 1,500 cancer fatalities at ORR from a low-to-moderate consequence Advanced Boiling Water Reactor accident is unrealistic and argue that no one would permit such a reactor to be licensed. The commentors feel DOE should follow the NRC approach so that anyone who examines and compares results would recognize that risks are essentially identical for present power reactors and the proposed DOE production reactor. Another commentor references page F-29, and states that, according to page 3-80, the individual cancer fatality at NTS for the Large ALWR is 4.9×10^{-5}, which is more reasonable than 4.9×10^{-4}. The commentor suggests that table F.2.2.3-4 be fixed.

Response: *Appendix F has been revised to include a spectrum of accidents for the ALWR technologies based on source terms that are part of safety analyses submitted to the NRC as part of safety analysis reports. The applicable page number or table number in the reference document for source* *terms, release fractions, core inventories, etc. have been cited.*

The ALWR accident source term used in the analysis was designated by the reactor vendor as a design-basis accident in a submittal to the NRC. The postulated design-basis accident was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. Accident analyses submitted to the NRC normally define the doses at the site boundary to demonstrate that the doses are within acceptable NRC guidelines. The analyses do not assess the impact of propagating the accident consequences on the population within 50 miles of the plant. The ALWR accident analyses have been revised to evaluate a spectrum of design-basis and beyond design accident source terms that have been submitted to the NRC as part of safety analysis reports. The design-basis accidents postulates the normal complement of safety systems for accident consequence mitigation.

DOE agrees with the commentors opinion on licensing such a reactor. A re-analysis of the reactor accident scenarios was conducted for the Final PEIS which indicates this number is substantially lower and more in line with expected licensing documents.

11.00.21 The commentor expresses concern with the creation of gamma radiation from spallation.

Response: *A detailed discussion of the APT is presented in appendix A. The amounts and types of radiation expected are given in table E.2.3.4-1 in appendix E. Argon-41, which emits gamma rays, is included in this table. Anticipated doses to the worker population from the APT and all its support facilities with spallation-induced lithium conversion target have been provided in section E.2.3.4.*

11.00.22 The commentor suggests that in volume II, appendix E, information on why ORR is a viable option having the highest risk associated with working onsite and also to the public calculated on an annual dose basis (to the maximally exposed member) as compared with other sites be provided.

Response: *The dose for the No Action alternative at ORR is noted in section 4.4.3.9 as 17 mrem and is near the same for a site worker at INEL and SRS as noted in sections 4.2.3.9 and 4.6.3.9. The risk is also similar. The No Action alternative risk for the public is higher at Pantex and INEL than at ORR, as noted in sections 4.5.3.9 and 4.2.3.9.*

11.00.23 Commentors suggest corrections and explanations for numbers and text in the human health section. The commentors request that DOE explain how ORR can have a higher chemical hazard index (by a factor of 100) than Pantex, and yet have no cancer risk while Pantex does. Also, the commentors believe that the cancer risk for Pantex is incorrect based on the chemicals listed. A Pantex employee does not have a 1 in 100 chance of cancer death as stated in the PEIS. An onsite contractor, using the same methodology as DOE, calculates the risk at $7.7x10^{-7}$. Furthermore, one commentor notes that SRS has a higher hazard index than Pantex, yet has a lower cancer risk. Finally, the commentor notes that the executive summary of the PEIS references potential cancer fatalities at only one site - Pantex, which is also the only site upon which a review of nonradiological factors is done. The commentors feel DOE should correct the data and explain the errors as soon as possible.

Response: *As stated in section E.3.1, the Hazard Index (HI) applies only to noncancer adverse effects, whereas the cancer risk considers only carcinogenic chemicals that have been classified as such and for which a slope factor or unit risk exists. There were no carcinogens identified from the site emissions reported for ORR. Since only chemicals that posed health hazards other than cancer were reported, it is not unexpected for the HIs to be higher than at Pantex. For the same reason it is also possible for any given site (e.g., SRS) to have a larger HI and the cancer risk to be lower compared to the other sites. However, the data from Pantex listed compounds that were carcino-*

genic or chemical categories containing carcinogens. Based on inadequate information concerning the carcinogens, a worst case representative was chosen for analysis which resulted in the high cancer risk values presented in the Draft PEIS. Subsequent information supplied by Pantex clarified the carcinogen issues and these results have been incorporated in the Final PEIS.

11.00.24 The commentor states that the risk assessments from exposure to hazardous chemicals at Pantex are incorrect. In reference to table E.3.4-28 in volume II, the commentor contends that the 0.01 number for total cancer risk is incorrect. The commentor suggests that DOE check all the numbers in this table and make sure they performed the correct analysis.

Response: *Based on the information available (data call response from Pantex, i.e., L.M. Paradee, L.M. 1992 a:10) at the time of preparation of the Draft PEIS, the analysis was appropriate for the best available information, given the uncertainties about contents within generic chemical classes and the information reported in the data call. However, corrections and explanations received from Pantex [received 4-11-95 and 4-21-95] have been factored into the recalculations from which the risk was significantly lowered to acceptable values, i.e., ~$1.7x10^{-9}$ and $7.7x10^{-7}$, for the maximally exposed individual for the public and onsite worker, respectively. The regulatory threshold generally accepted by EPA for cancer risk is $1x10^{-6}$.*

11.00.25 The commentor suggests revising the second and third sentences in the discussion concerning electromagnetic field and transmission lines to read: "Electric field levels associated with transmission lines and distribution lines are a function of the voltage of the line, while magnetic field levels are a function of the current carried by the conductors. Both field magnitudes are affected by the size of conductor, conductor separation distance, and the distance from the conductor." The commentor also suggests inserting after the present fifth sentence, "The magnitude of the fields and the time duration of exposure will both affect exposure levels. No correlation between various exposure levels and adverse health affects has been determined." Finally, the commentor suggests the present sixth sentence should begin a new paragraph.

Response: *DOE agrees and the appropriate changes have been made to section 4.8.1 of the Final PEIS.*

11.00.26 One commentor, referring to page E-11, table E.2.2.2-1, states that one set of numbers (perhaps the second group) should be for general population consumption instead of both being for maximum individual consumption.

Response: *The commentor is correct and the appropriate changes have been made to table E.2.2.2-1 in section E.2.2.2 of the Final PEIS.*

11.00.27 The commentor references volume I, table 3.6-1; volume II, page I-66; and tables E.2.3-1 and E.2.4.1-2. According to the commentor, radiation doses and cancer risks for workers under the heading "tritium supply alone" in table 3.6-1 apparently include the doses and risks from other site activities as well as those from tritium supply (by comparison to table E.2.3.-1) but not those from tritium recycling. However, the commentor notes the dose and cancer risk in table 3.6-1 and on page I-66 under "tritium supply alone" to the maximally exposed individual (MEI) from the APT (helium-3) alternative at INEL are less than those derived from those in table E.2.4.1-2. If the "tritium supply alone" doses include those from other site activities, then the commentor states that the dose and risk to the MEI cannot be less than those from the other activities alone (No Action alternative). The commentor suggests that this apparent discrepancy be corrected or explained.

Response: *The doses in question are for average workers, not MEIs, and are consistent throughout the document.*

11.00.28 In reference to pages F-30 and F-31, the commentor states that, for all of the preceding concepts, when no frequency of occurrence was estimated the PEIS assumes one. However, no such assumptions are presented for the APT alternatives, according to the commentor. The commentor suggests that treating the concepts differently should be avoided. Another commentor, referring to section F.2.2.4.1, page F-30, states that the selection of an administrative violation instead of an equipment failure as the design-basis accident for the APT severely negates the credibility of this PEIS, since it is not consistent with the fact that equipment failures are considered for all the other concepts.

Response: *The APT design-basis accident frequency of occurrence would be expected to be in the range of $1.0x10^{-4}$ to $1.0x10^{-6}$. The design-basis accident for the APT was initiated by equipment failure and is described in appendix section F.2.2.4.2 and F.2.2.4.3. The incorrect administrative procedure accident only applied to the APT beam transparent system.*

11.00.29 One commentor believes that siting considerations of the tritium facility at Pantex should be conducted in such a manner as to ensure that the safety of area residences is held paramount. In addition, another commentor suggests that any current and future functions at Pantex must be conducted in a safe and environmentally sound manner.

Response: *The final siting of a tritium supply technology at Pantex, if selected, would include considerations of public health as well as the environment. DOE is committed to operating the Pantex Plant as well as all of its facilities in a safe and environmentally sound manner.*

11.00.30 The commentor refers to volume II, appendix E, footnotes on tables E.2.4.1-2, E.2.5.1-2, E.2.6.1-2, E.2.7.1-2, and E.2.8.1-3, where annual background radiation doses are presented for INEL, NTS, ORR, Pantex, and SRS sites as 350, 323, 306, 323, and 315 mrem, respectively. The commentor questions why different values are presented in volume I, section 4, tables 4.2.2.9-1, 4.3.2.9-1, 4.4.2.9-1, 4.5.2.9-1, and 4.6.2.9-1. Section 4 of the Draft PEIS lists background radiation doses for INEL, NTS, ORR, Pantex, and SRS as 418, 382, 371, 411, and 380 mrem, respectively. The commentor notes that there should be only one referenced value for background used, despite the fact that the values come from different referenced sources. This commentor believes such discrepancies will confuse and mislead the reader. In addition, the commentor states that the reported values from NCRP 1987a are annual effective dose equivalents and not committed effective dose equivalents as the column heading in the volume I tables indicate.

Response: *The footnotes to the tables in appendix E present natural background radiation values while those in section 4 include manmade radiation, e.g., diagnostic x-rays. The footnotes have been clarified. The use of the term "committed effective dose equivalent" for both internal and external radiation is for convenience, as is noted in appendix E, section E.2.1.1. Also, refer to the response to comment 11.00.06.*

11.00.31 The commentor refers to volume II, appendix E, footnotes on tables E.2.4.1-3, E.2.5.1-3, E.2.6.1-3, E.2.7.1-3, and E.2.8.1-4, where collective doses to the population within 50 miles from background radiation in the year 2030 are presented for INEL, NTS, ORR, Pantex, and SRS as 52,600, 5,770, 325,000, 88,500, and 240,000 person-rem, respectively. The commentor questions why different values are presented in volume I, section 4, tables 4.2.3.9-1, 4.3.3.9-1, 4.4.3.9-1, 4.5.3.9-1, and 4.6.3.9-1. Section 4 of the Draft PEIS lists the collective doses to the population within 50 miles from background radiation in the year 2030 for INEL, NTS, ORR, Pantex, and SRS as 53,270, 5,860, 329,800, 99,470, and 233,300 person-rem, respectively. In addition, the commentor notes that individual background radiation doses differ between these tables (for example, table E.2.5.1-2 and table 4.3.3.9-1 gives 323 and 317 mrem respectively; table E.2.7.1-2 and table 4.5.3.9-1 gives 323 and 346 mrem, respectively; and table E.2.4.1-2 and table 4.2.3.9-1 give 350 and 353 mrem, respectively).

Response: *The natural background radiation levels for each site are now consistent in the appendix E and section 4 tables in the Final PEIS.*

11.00.32 The commentor notes that in volume I, table 4.4.2.9-2 and table 4.4.2.9-3, page 4-199, are incorrectly titled, 'Doses to the General Public from Normal Operations at Nevada Test Site, 1992'. The corrected version should read '... at Oak Ridge Reservation'.

Response: *The commentor is correct and the appropriate changes have been made to tables 4.4.2.9-2 and 4.4.2.9-3 in section 4.4.2.9 of the Final PEIS.*

11.00.33 The commentor states that there is at least one error in the first paragraph of summary page S-21. The commentor believes that the cancer risk value in the second line (first column) should be 1.4×10^{-10} and not 7.1×10^{-6}. The commentor also states that the other numbers are part of the MACCS or GENII output and cannot be easily checked.

Response: *The commentor is correct and the appropriate changes have been made to the discussion of radiological and hazardous chemical impacts during normal operations and accidents for SRS in the summary of the Final PEIS.*

11.00.34 The commentor believes that the summary should more clearly state that: (a) "The calculated consequences are based upon the accident occurring and that the accident, particularly the high consequence accident, is a low probability event. The probability is included in each summary paragraph, but the commentor believes it is not emphasized. The commentor also notes that a "risk-based" summary comparison, such as tables 4.2.3.9–3 and 4.2.3.9–4 should be included in the summary. According to the commentor this may compensate for higher doses with lower frequencies; (b) also, while this will affect every system, the summary presents the consequence levels as absolute, i.e. "this exposure would result in 230 cancer fatalities" (see page S-2). The tables in appendix F state that the numbers are mean values (based on variations in meteorological conditions for an accident occurring throughout the year), which is typical of this type of analysis. The commentor suggests that all values, i.e., doses, cancer risks, and fatalities are mean values and the summary should acknowledge this. Therefore, overlap of the consequence level from different systems is possible and likely.

Response: *Appendix F has been revised to include a spectrum of accidents for the candidate tritium supply technologies. The complementary cumulative distribution function figures have been reformatted to provide risk-based summary comparisons. Appendix F now identifies all accident consequence numbers as mean values. All of the tables in volume I and in appendix F that present accident consequences have been changed to reflect the results of the new accident analyses. In addition, the associated complementary cumulative distribution functions have been reformatted to provide risk-based summary comparisons.*

11.00.35 The commentor states that tritium occurs naturally and is far less toxic/deadly than plutonium. The commentor suggests that DOE take steps to ensure that the public understands this to avoid irrational fears about the gas.

Response: *Additional discussions regarding the relative toxicity of tritium versus other materials have been added to appendix E.*

11.00.36 The commentor quotes from the document "Deadly Defense: Military Radioactive Landfills" (1988) that events occurred at SRS, where DOE was producing and disposing of tritium. On May 2, 1974, 180,000 curies of tritium oxide were released to the air in 1.5 minutes. In December 1975, 480,000 curies of tritium gas were released to the air in 4 minutes. As of 1988, about 1/4 of the 420,000 curies of tritium that had been discharged to seepage basins had migrated to Four Mile Creek. The tritium plume in the groundwater under the burial grounds exceeded EPA's drinking water standard by 3,500 times. The commentor notes that the PEIS executive summary (page 24) states that no individual exposure data for chemical worker exposures are available. If DOE and its predecessors have not kept good health records on their employees proving their operations are safe, the commentor contends that the public is justified in withdrawing its support of DOE's nuclear weapons activities. Regarding the estimated cancer risk among workers and the public at the various alternative sites and with the alternative technologies, the commentor believes it is unacceptable for the Federal Government to knowingly proceed with a project that they know will cause these levels of cancer.

Response: *The PEIS evaluates the potential environmental impacts for the PEIS alternatives. To the extent possible, past activities are accounted for in describing the affected environment. The potential impacts to human health will be factored into the ROD.*

11.00.37 One commentor states that the tables and figures that contain information relative to latent cancer deaths (for example, figure 4.6.3.9-1) must also identify the risk alongside or as an integral part of the figure or table. Otherwise, the commentor believes that this latent cancer information out of context may be misunderstood or misused. Another commentor states that in the appendices, the explanation of the complementary cumulative distribution functions is incorrect, although the error again affects each system. The commentor suggests rewrites for the following statements on the AP-600 system (page F-13, second column): "The curves show the possibility that the number of cancer fatalities that may result when an AP600 ALWR severe accident exceeds the value N on the horizontal axis. The curves assume that the accident has occurred." The commentor believes that the text should be replaced with the following: "The curves are based on the assumption that the accident has occurred and show the variation in cancer fatality magnitude based on the site meteorological conditions, that is, to account for an accident occurring throughout the year. Therefore, the actual probability of a specific consequence level (that is, fatality magnitude) is equal to the probability of the accident times the conditional probability of the consequence level."

Another commentor refers to volume II, pages F-4 to F-16, and states that the patterns of probability curves in most of the figures showing conditional probability vs. latent cancer fatalities for high consequence reactor accidents are similar; they are essentially shifted to the right or left. However, states the commentor, the pattern in figure F.2.1.3.4-1 for the Simplified Boiling Water Reactor is quite different; there is a much greater difference between the NTS curve and those for the other sites. This difference should be explained or corrected according to the commentor. The commentor states that the tables of population dose in person-rem and cancer fatalities do not appear to show this difference; the ratio of INEL population dose to NTS population dose, or of INEL cancer fatalities to NTS cancer fatalities is consistently about 10 in all of the tables.

Response: *The complementary cumulative distribution functions (e.g., figure 4.6.3.9-1) have been reformatted based on this and other comments.*

11.01 Human Health - Normal Operations

11.01.01 The commentor notes a three orders of magnitude difference for the release of tritium between the MHTGR and ALWR. The commentor believes this to be an error.

Response: *Table E.2.3.2-1 (MHTGR), table E.2.3.3.1-1 (Large ALWR), and table E.2.3.3.2-1 (Small ALWR) show tritium releases between $2.1x10^3$ (MHTGR) and $1.62x10^4$ (Small ALWR). This range is less than a factor of 10 and is not in error.*

11.01.02 The commentor states that it would be deplorable for DOE to site the Tritium Supply and Recycling Program at Pantex, since it is in this agricultural area that the food chain begins and any contamination risk to the agricultural industry would devastate Texas. Texas High Plains is one of the most diversified agricultural areas in the world, with 14 million acres of agricultural land, commercially producing 25 crops and generating more than 100,000 jobs.

Response: *The PEIS presents the potential impacts of the Tritium Supply and Recycling Program, including an analysis of human health (e.g., radiation exposures, potential accidental releases, etc.) and socioeconomic resources. Potential secondary impacts on agricultural areas due to an accident are discussed in appendix F.3.*

11.01.03 The commentor states that DOE fails to consider diseases other than cancer fatalities resulting from the operation of a tritium production facility. According to the commentor, tritium causes birth defects. The commentor believes that DOE should examine what other health effects a new tritium production facility would have upon populations.

Response: *Health impacts from radiation exposure, whether from sources external or internal to the body, generally are identified as "somatic" (affecting the individual exposed) or "genetic" (affecting descendants of the exposed individual). Radiation is more likely to produce somatic effects rather than genetic effects. Therefore, for this PEIS, only the somatic risks are presented. The somatic risks of most importance are the induction of cancers. Except for leukemia, which can have an induction period (time between exposure to carcinogen and cancer diagnosis) of as little as 2 to 7 years, most cancers have an induction period of more than 20 years.*

11.01.04 In reference to volume II, page E-10, paragraph 2, the commentor questions whether the writers intended to use two different time periods: 1989 to 1992 versus 1982 to 1992.

Response: *Only the 1989 to 1992 time period was used. The appropriate changes have been made to the discussion of food production and consumption data in section E.2.2.2 of the Final PEIS.*

11.01.05 The commentor references volume II, page E-71, section E.3.1, and states that this section is very sketchy, especially the third paragraph, outlining how HQs were calculated. The commentor notes that it appears that all HQs were summed to yield HIs for all options relevant to the site. The commentor requests a definition for "options relevant to the site." The commentor also notes that HIs should only be summed for HQs when the individual chemicals contribute to the same toxicological endpoint and the toxicity is additive, otherwise, effect-specific HIs need to be calculated. The commentor questions whether the HQ and HI modeling methods consider Short Term Exposure Limits and ceilings. According to the commentor, ceiling values are used by all included agencies' exposure limits, so why were they not considered in the background statement (e.g., n-butyl alcohol). The commentor further notes that the only stated exposure time frames were 15 minutes and 8 hours and asks in addition to ceilings, what about 16 hour (double shift) or 4-10 hour workdays or overtime in general.

Paragraph one in this section, further states that risk assessors calculated the risk of long-term low-level (chronic) and short-term high level (acute) exposures. However, paragraph two states that workers are assumed to have a low exposure 8 hour day, 40 hour work week. The commentor asks about acute exposures and chemicals which have Short Term Exposure Limits or ceilings. In such cases, the commentor notes that the 8 hour day, 40 hour work week assumption would not apply. If all exposures are going to be maintained at less than the exposure limits, the commentor wonders whether a health risk assessment for workers should be performed. The commentor states that the slope factors for all carcinogens are multiplied by the inhaled dose to determine the cancer risk and suggests that the fourth sentence in paragraph 3 should read: "The inhalation slope factors for all carcinogens are multiplied by the inhaled dose to determine the cancer risk from inhalation." The overall cancer risk for each chemical is determined by summing the lifetime cancer risks for each relevant route (ingestion, inhalation, and dermal) of exposure. Different slope factors often exist for each route of exposure. Finally, the commentor notes that Permissible Exposure Limits were used in the calculations and asks whether Threshold Limit Values, Recommended Exposure Limits, and Short Term Exposure Limits, which were mentioned earlier in this section and those listed in the exposure limit table E.3-2, were used.

Response: *"Options relevant to the site" means "alternative actions" relevant to the site. The text has been changed using "alternative actions" in place of options for clarity and consistency with other PEIS sections.*

EPA's Superfund guidance allows for preliminary screening methods to be used, such as summing all of the HQs regardless of toxicity endpoint in order to eliminate unnecessary calculations and evaluations. Hence, summing the HQs for an overall HI tells the evaluator whether a potential problem exists. If the HI exceeds a value of 1.0, then one would proceed with the analysis based on common toxicity endpoints, but if the total HI value is less than 1.0, the sum of effect-specific HQs will be less than 1.0. Based on the screening analysis, effect-specific HIs are not needed for the PEIS. It should also be pointed out that by using single point emission concentrations at site positions close to the source terms, the values will be conservative compared to other approaches, e.g., Monte Carlo simulation results (Risk Analysis, Aug. 1994, page 437) which utilize multiple points to generate a range of HIs or cancer risks. It is also useful to point out that one should calculate from single point exposures as a first step in risk assessment before proceeding with more complex procedures as a way to save resources without compromising the integrity or usefulness of the analysis to the risk manager (Risk Analysis, Aug. 1994, page 478). The modeling methods could have, but did not consider Short Term Exposure Limits and ceilings because the analyses were performed on data for normal operations where the Permissible Exposure Limits set by OSHA are the relevant regulations. Further analyses would not serve any purpose and would only add to the cost and burden on resources available.

Before undertaking the analyses, many potential deviations from a "standard/normal" operation were considered. Considering all of the conservative assumptions made in the approach and knowing that Reference final Concentrations, Permissible Exposure Limits, etc. values for regulation are already made conservative by incorporating large uncertainty factors, it was decided that the approach taken easily bounds the "worst case" of normal operating conditions without the necessity of excessive analyses on data in a PEIS; it is even doubtful whether site-specific EIS analyses would require a more in-depth approach.

Section E.3.1 of the Final PEIS deals with normal operations of the various alternative technologies within the boundary of specified sites where emissions associated with each site can be based upon reported levels of releases that have occurred for documented periods. Based on anticipated activities at future dates, emission levels are projected (e.g., to the year 2005). It is then assumed that technologies proposed will add to the total site emissions if added to the existing site activities. By modeling the concentrations projected for the alternative technology and the concentrations due to all other site activities, using appropriate dispersion factors for each site, it can be validated whether the exposures are actually likely to be maintained within the limits that are regulated. Since *emissions averaged over one year periods of time are used to derive concentrations at specified distances from source terms through modeling, one cannot apply Short Term Exposure Limits and ceiling values (concentrations that cannot be exceeded during any part of the work day) to the data. In fact, unless concentration values were so extraordinarily high that the Permissible Exposure Limits would be exceeded, the Short Term Exposure Limits and ceiling values should never be reached, but if they were reached the Permissible Exposure Limits by virtue of its being the regulatory value relevant to normal operations is the "ruling" regulatory value to protect the worker. The text where the Short Term Exposure Limit, Recommended Exposure Limits, and Threshold Limit Values are mentioned has been expanded in the Final PEIS to explain why they were included in the tables while the Permissible Exposure Limits, being the legal value, was the only one used in calculations.*

In the Final PEIS text has been modified to explain why these values have been given in table E.3.3-1. It should also be noted that table E.3.2-1 has information on physical, chemical, and toxicity properties that were not necessarily utilized in a direct sense. However, information such as this as well as other limit values should help inform the reader as to concentration and dose levels that would cause an immediate problem, or a long-term one, and how the estimated concentrations compare to these values.

11.01.06 In reference to volume II, page E-71, section E.3.2, chemical toxicity profiles, the commentor asks in the last sentence, what does, "for those chemicals for which adverse health effects were developed in this PEIS," mean.

Response: *This sentence has been modified in the Final PEIS for clarity as follows: "Table E.3.2-1 presents the information described above for the hazardous chemicals analyzed in this PEIS."*

11.01.07 The commentor refers to the following statement in volume II, page E-72, paragraph 1: OSHA Permissible Exposure Limits are also for preventing cancer effects, not just noncancer adverse effects. According to the commentor, this paragraph indicates that all three (OSHA, National Institutes of Occupational Safety and Health (NIOSH), and American Council of Governmental Industrial Hygienists (ACGIH)) were used to develop HQs and HIs. Therefore, the commentor questions why NIOSH was not included in the risk assessment section tables. Also, the commentor asks why does the equation for the HQs use Permissible Exposure Limits and not the others.

Response: *While the OSHA Permissible Exposure Limits might also be effective in preventing cancer effects, they are designed for 8 hour occupational exposures and do not factor into any calculations that can be used for predicting the risk of cancer from exposures, in fact, identified human carcinogens are not assigned Permissible Exposure Limits. It would, therefore, be misleading to represent them as such. In fact, the OSHA-regulated carcinogens do not carry Permissible Exposure Limits values, but these compounds are to be controlled through the required use of engineering controls, work practices, and personal protective equipment, including respirators. The specific details of these requirements are in 29 CFR 1910.1003-1910.1016. The paragraph clearly states that OSHA's Permissible Exposure Limits regulate the hazardous chemicals, whereas the others only provide guidance. The document should not have cited a regulatory role for NIOSH, and this correction in the paragraph was made in section E.3.3 of the Final PEIS. It is, therefore, correct to use the legal value for Permissible Exposure Limits provided by OSHA.*

11.01.08 Numerous specific comments were received on table E.3.1 in volume II, page E-73. Some of the concerns raised by the commentor included: how were the myriad of chemical entities in the table selected to be included in the risk assessment; compound names should be standardized (IUPAC or ACS) and the use of trade names (e.g., the DuPont trade names for Freon Brand Chlorofluorocarbons) should be avoided; the CAS Registry No. heading does not require a footnote; flash point would be a more useful heading than flammability, and the ranges currently used therein; criteria for "Carcinogenicity" ranking need additional defining in the text; and where in the document are the published reference sources mentioned in the table footnotes.

Response: *All the comments received on the table in section E.3-1 have been reviewed and appropriate changes made to table E.3.2-1 in the Final PEIS.*

The chemicals listed in table E.3.2-1 were identified as emissions at the specific DOE candidate sites or by other referral sources as toxic chemical releases or as chemicals associated with specific proposed technologies. They were selected based on quantities (generally 100 lb. or more) and their relative toxicity based on a variety of reference sources, e.g., EPA's Integrated Risk Information System and OSHA exposure limits.

A standardized nomenclature is preferred, but the sources of information frequently used traded or common names. The chemical name, e.g., Chlorodifluoromethane (Freon 22) and the CAS Registry number were included to add certainty to the identification of the specific chemical.

The CAS Registry No. heading has been removed.

The heading "flammability" was considered appropriate for table E.3.2-1 because the issue is whether or not the chemical is flammable and to what degree it is considered flammable or combustible. For some readers the "Flash Point" may be more useful while for others the OSHA flammability classification is more useful. The flash point can be found in the reference document cited.

Table E.3.2-1 has been revised to replace "none" with the International Agency for Research on Cancer classification as noted by footnote (r). "Not applicable" means that there is no cancer classification. Based on the resources available the chemical was not identified as carcinogenic. "Information not available" (e) is based on the availability of resource information on carcinogenicity, and it means that this information could not be found using standard references. The footnote references are located in volume I, chapter 6.

11.01.09 The commentor refers to volume II, pages E-73 to E-90, tables E.3-1 and E.3-2 and asks when the intent of the health risk section is to evaluate risk to the public and workers, why is the EPA's cancer classification the only one listed in the chemical toxicity profiles and table of exposure limits. The commentor notes that OSHA, NIOSH, and ACGIH classify carcinogens. In particular, the commentor states that ACGIH has a very detailed cancer classification system.

Response: *It is acknowledged that there are other classification systems that provide guidance on cancer classification and many were reviewed for this PEIS; however, it is EPA's system that is used in regulation of carcinogens. As noted in the PEIS, the International Agency for Research on Cancer also classifies carcinogens, but again it does not have regulatory status in the United States for carcinogens. Furthermore, the EPA unit risk and the slope factor for each carcinogen are the ones that are to be used in calculation of cancer risk.*

11.01.10 Numerous specific comments were received on table E.3-2 in volume II, page E-82. Some of the concerns raised by the commentor included: why are the 1992 Threshold Limit Values used instead of 1994; what does an entry of "NA" in the cancer class mean; and what is the method of calculating the Reference final Dose and Reference final Concentration from the ACGIH Threshold Limit Values, the OSHA Permissible Exposure Limits, the NIOSH Recommended Exposure Limits, the

Registry of Toxic Effects of Chemical Substances (RTECS), time-weighted average (TWA)/Permissible Exposure Limits, and the RTECS LD_{50}.

Response: *All the comments received on the table in section E.3.3 have been reviewed and appropriate changes made to table E.3.3-1 in the Final PEIS.*

A cutoff point in time for regulated numbers was chosen to avoid unnecessary rewriting of tables and redoing calculations for the PEIS; however, the Threshold Limit Values are only guidance and not used for calculations due to this status. The Threshold Limit Values and Permissible Exposure Limits (actually used in calculations) available at the time of the Draft PEIS were those available. Only after completing the Draft PEIS did the new numbers become available. Action taken by the U.S. Supreme Court overruled the Permissible Exposure Limits so that they reverted to the 1970 standards until new ones are developed by OSHA; these are now in progress and may take up to 5 years, since they must be reconciled with the guidance from other agencies. Obviously, the 1994 published Permissible Exposure Limits are less conservative based on additional information gained during the 24 year time gap.

The entry "NA" was intended to mean that the compound is either not been classified or that it is a noncarcinogen. This has been changed in table E.3.3-1 of the Final PEIS and replaced with the published classification, e.g., the official EPA or in the absence of EPA classification where decision is pending, used IARC classification.

The method of calculating the Reference final Dose and Reference final Concentration from the ACGIH Threshold Limit Value, the OSHA Permissible Exposure Limit, and the NIOSH Recommended Exposure Limit is RfD (mg/kg/d) = 0.007 TWA (mg/m^3) and was taken from the source citation in footnote reference b of table E.3.3-1 in the Final PEIS. The NIOSH Recommended Exposure Limits were not used in the calculation.

The RTECS TWA/Permissible Exposure Limit values are actually LD_{50}s which have been changed in the table where appropriate. Also, the LD_{50} is used only if there is no other way of approximating an Reference final Concentration or Reference final Dose for which there are no official values. In this case the following was used to estimate a Reference final Dose, according to the source in footnote reference b of table E.3.3-1 in the Final PEIS: RfD = LD_{50} x (4 x 10^{-5}). The RTECS citation has been added as an EPA document citation where appropriate.

11.01.11 In reference to volume II, page E-85, table E.3-2, the commentor notes that the formaldehyde NIOSH Recommended Exposure Limit is not 0.16 ppm as listed, but rather 0.016 ppm. Furthermore, the commentor indicates that the OSHA Permissible Exposure Limit is 0.75 ppm and not 1 ppm. The commentor suggests that a thorough check should be made for other errors. The commentor notes that the result of such errors is to produce incorrect HQs and HIs for workers. Also, formaldehyde does not appear in the risk assessment tables, so the commentor wonders why is it included in the exposure limit table. The commentor further states that it seems logical to include only information on the chemicals of concern.

Response: *The error in the NIOSH Recommended Exposure Limit has been so noted and corrected from 0.16 ppm to 0.016 ppm and the OSHA Permissible Exposure Limit was also noted and changed to 0.75 ppm. In table E.3.4-22 (Pantex No Action) under aldehydes, formaldehyde appears as the representative used because it would be the worst case chemical which had been reported at this site. However, this chemical has been removed from the Pantex risk assessment based on new information that it is no longer present as a potential chemical emission.*

11.01.12 In reference to volume II, beginning of page E-91, tables E.3.4-1 to E.3.4-7, the commentor states that either the risk assessment calculation used the least stringent exposure limits of the two listed or did not consider the Threshold Limit Values which are listed in the risk assessment tables as indicated by footnote c. The commentor notes that the Threshold Limit Values happen to be more stringent for the two chemicals, checked on page E-93, methanol and ethanol. This results in a smaller hazard quotient and a smaller hazard index, which implies less risk than if all the agency standards were considered. OSHA is the only law. However, it is recognized that the other agencies' standards (NIOSH and ACGIH) are more current with available toxicology and epidemiology. The commentor questions why only Permissible Exposure Limits would be considered and not the most conservative (e.g., ammonia) as listed in exposure limit tables PEL: 27 TLV: 17 REL: 18.

Response: *The risk assessment calculation did not use Threshold Limit Values because they are guidance only, whereas the Permissible Exposure Limits are the regulated numbers from OSHA and constitute the law. Consideration was given to using the most stringent number regardless of whether it was guidance, e.g., ACGIH, NIOSH, or OSHA, but since the OSHA is the enforceable regulation, it was decided to present the other guidance numbers and use only OSHA Permissible Exposure Limits, thus making the calculations uniform and from an official regulatory source.*

11.01.13 In reference to volume II, pages E-91 to E-130 (tables E.3.4.1 to E.3.4.36), the commentor notes that the contaminants of potential concern vary from site to site. The commentor asks how they were chosen for each site.

Response: *The containments of potential concern vary from site to site only under No Action due to differing current activities at each site. Those identified for each technology are consistent from site to site.*

11.01.14 The commentor refers to volume II, page E-92, table E.3.4-2 and states that the Threshold Limit Value listed for methanol of 200 mg/m^3 is incorrect. The commentor believes that it should be 262 mg/m^3. The commentor indicates that only a spot check was conducted so the rest of the numbers should be checked for errors. According to the commentor, it appears as though the larger the Permissible Exposure Limit, the larger the rounding. For example, the commentor notes that acetone was rounded up to 1800 from 1780 and nitric acid from 5.2 to 5. The commentor expresses the opinion that one would like to think that a fair amount of scientific rigor goes into establishing exposure limits. Therefore, the commentor wonders what is the purpose of rounding and especially rounding up.

Response: *The Threshold Limit Value corrections were noted and entered on the table. In 29 CFR 1910, the TWA is listed as 1800 mg/m^3; this value was utilized as the Permissible Exposure Limit; likewise, in the same document nitric acid is listed at 5 mg/m^3. If a rounded up number was used in our calculations, it would only be so because of the reference source that was used. However, the difference is only 1 percent which would hardly make a difference, if any, in the calculation and would still be protective since Permissible Exposure Limits and Threshold Limit Values are highly conservative, being reduced by large conservative factors. All numbers and references in table E.3.4-2 were rechecked against the original references on a page by page basis and corrected in the final table. The table references were corrected when it did not match the precise table reference.*

11.01.15 The commentor refers to volume II, tables E.3.4-29 and E.3.4-35 and indicates that these tables mention tetrachloroethylene as a contaminant of potential concern. However, the commentor notes that it is not listed in either table E.3-1 or table E.3-2. The commentor requests an explanation as to why it is not reviewed in those tables if it is, in fact, a contaminant of potential concern.

Response: *The chemical mentioned above, tetrachloroethylene, was inadvertently deleted from both tables. It has been reinstated in both tables in section E.3 of the Final PEIS.*

11.01.16 The commentor refers to volume II, page E-133, paragraph 2 and offers the correction: Odds Ratio not Odd Ratio.

Response: *Odds ratio is correct, and this change has been incorporated in section E.4.1.2 of the Final PEIS.*

11.01.17 The commentor refers to volume II, page E-133, section E.4.2, INEL, and notes that two Idaho Department of Health and Welfare and one National Cancer Institute epidemiologic cancer studies are referred to in the text (that is, 1991a and 1991b). The commentor wonders where these references are located.

Response: *The National Cancer Institute and the Idaho Department of Health and Welfare references are located in chapter 6.*

11.01.18 The commentor refers to the following statement in volume II, page E-133, section E.4.2, workers: "No occupational epidemiological studies have been conducted to date, although NIOSH is planning one in 1994." Considering the date of publication of the PEIS as February 1995, the commentor suggests that this statement needs to be corrected or updated.

Response: *The text has been changed in section E.4.2 of the Final PEIS to: "Although no occupational epidemiology studies have been conducted to date, according to NIOSH one is currently underway, but no results are expected before 1997."*

11.01.19 For clarity to the public, the commentor suggests that the Final PEIS explain why the annual average doses to a site worker differ for each of the five proposed locations.

Response: *The Final PEIS has been revised to include this explanation. Basically, the differences result from the fact that the doses presented are the averages among all site workers, including those involved in activities other than tritium supply and recycling. This explanation has been added to the introduction in appendix E which covers the following concepts: the sites vary considerably in size, geography, meteorology, and topography, as well as the source terms present at each of the sites. They are presently performing different functions and the amount of activity is also different. Therefore, toxic releases will be different, the dispersion of these releases will be different, and consequently the level of exposure at any given distance from the source terms will vary.*

11.01.20 The commentor, referencing volume II, appendix E, states that it is not clear that the Plutonium Pit Disassembly Conversion/Mixed-Oxide Fuel Fabrication Facility impacts are appropriately included in the proposed alternatives. The potential impacts from this facility should be evaluated as direct impacts associated with proposed alternatives, according to the commentor. The commentor believes that the occupational doses from normal plutonium handling and glovebox operations, as well as postulated accident scenarios to both onsite and offsite personnel, could be significant depending on the processes involved within this facility. The commentor further states that these actions will all contribute to cumulative impacts both onsite and offsite.

Response: *Cumulative impacts from the Plutonium Pit Disassembly Conversion/Mixed-Oxide Fuel Fabrication Facility impacts are included in site-specific radiological human health sections for the multipurpose reactor.*

11.01.21 In reference to health risks data listed in volume II, page E-8, column 2, paragraph 5; page E-9, column 1, paragraph 1; page E-21, column 1, paragraph 3; etc., the commentor wonders whether the document identified is HNUS 1993b or HNUS 1995a.

Response: *The reference is HNUS 1995a. The citation in the text has been changed to reflect this.*

11.01.22 In reference to pages I-53, I-55, I-59, I-63, and I-67, the commentor states that the cancer risk from hazardous chemicals to the maximally exposed member of the public at SRS differs from that shown in table E.3.4-36. The commentor asserts that this should be reconciled.

Response: *These values have been changed to be consistent with the text tables as well as the appendix. Other changes have been made for other sites in appendix I due to changes in site data made after the Draft PEIS.*

11.01.23 In reference to page E-124, the commentor states that this table shows six chemical hazards for the MHTGR at SRS, whereas five hazards were listed for MHTGR at all the other sites. The commentor questions why ammonia and trichlorotrifluoroethane (Freon 113) would be hazards at SRS and not at other sites. The commentor also asks why should methane emissions not be listed at SRS. If changes are made, states the commentor, summary table E.3.4-36 on page E-130 should be corrected accordingly.

Response: *Ammonia and trichlorotrifluoroethane were inadvertently added to the MHTGR for SRS. The affected tables have been corrected and updated.*

11.01.24 In reference to page 3-71, the dose and risk for the APT (helium-3) at ORR should be re-evaluated, according to several commentors. The commentors state that according to table E.2.6.1-2 APT (helium-3) contributes a factor of 20 less than APT spallation-induced lithium conversion target, not a factor of 2 less. The commentors also note that this comment applies to page 3-76. Commentors referring to page F-21 state that it is not reasonable that the population dose and cancer fatalities at ORR are only 20 percent higher than at INEL for the APT spallation-induced lithium conversion target, when they were nearly an order of magnitude higher for all the other concepts. The commentors suggest that this be reconciled with page 3-83, which indicates more than an order of magnitude difference between the two sites.

Response: *The values given in table 3.6–1 and appendix E are consistent in the Final PEIS. It should be noted that the values in table 3.6–1 include total site operations, not the technology alone. Appendix F has been revised to include a spectrum of accidents for each of the candidate tritium supply technologies. The applicable page number or table number in the reference document for source terms, release fractions, core inventories, accident frequencies, etc. has been cited. The data in section 3 have been revised and updated to reflect the changes.*

11.01.25 In reference to page 3-71, the commentor states the doses at SRS given here are approximately 0.5 mrem higher for all concepts than values in section E.2.8.2. The corresponding risks are also higher, according to the commentor. The commentor suggests that this be reconciled.

Response: *The values given in table 3.6–1 and appendix E are consistent in the Final PEIS. However, the reader should refer to section E.2.8 for an explanation of how the total doses for each tritium technology are calculated.*

11.01.26 In reference to page 3-72, the commentor states that the population doses at ORR given here are approximately 10 person-rem higher for all concepts than the values in section E.2.6.2. The commentor asserts that the risks are 0.4 fatalities higher, which is a factor of 2 more than would be expected from 10 person-rem. The commentor suggests that this be reconciled.

Response: *The values given in table 3.6–1 and appendix E are now consistent. It should be noted that the values in table 3.6–1 include total site operations from both air and liquid pathways.*

11.01.27 In reference to page 3-73, the commentor states that the population doses at SRS given here are approximately 40 person-rem higher for all concepts than values in section E.2.8.2. The commentor adds that the risks are also correspondingly higher. This should be reconciled, according to the commentor.

Response: *The values given in table 3.6–1 and appendix E are now consistent. It is believed that the commentor meant to reference page 3-72 instead of 3-73. It should be noted that the values in table 3.6–1 include total site operations from both air and liquid pathways.*

11.01.28 In reference to page 3-77, the commentor states that the value of person-rem for APT (helium-3) at INEL should be rounded to 0.6 instead of 1, to maintain consistency with the fatal cancer value.

Response: *All numbers have been rounded to be consistent with the fatal cancer values.*

11.01.29 In reference to page 3-77, the commentor states that the population doses at ORR given here are approximately 10 person-rem higher for all concepts than values in section E.2.6.2. The risks are 0.4 fatalities higher, according to the commentor, which is a factor of 2 more than would be expected from 10 person-rem. The commentor suggests that this be reconciled.

Response: *The values given in table 3.6–1 and appendix E are now consistent. It should be noted that the values in table 3.6–1 include total site operations from both air and liquid pathways.*

11.01.30 In reference to page 3-79, the commentor states that based on information in table E.3.4-7, the worker reduction for HWR at INEL should be 0.2 percent, not 0.02 percent, and the public reductions for the MHTGR, ALWR, and APT, should be 0.3, 0.09, and 0.3, respectively, not two orders of magnitude higher. The commentor suggests that this be reconciled. Also, referring to page 3-79, based on information in table E.3.4-28, the public reductions for the HWR, MHTGR, ALWR, and APT should be 0.1, 0.1, 0.09, and 0.1, respectively, not two orders of magnitude higher. This should be reconciled.

Response: *The error was due to not converting a decimal to a percentage. These corrections and others associated with the calculations have been made.*

11.01.31 In reference to page E-13, the commentor states that the text for the HWR gives risk of fatal cancer from 1 year of operation, whereas for all the other concepts the text gives risk of fatal cancer from 40 years of operation (except for Large ALWR, for which no discussion paragraph is provided). The commentor suggests that the same figures of merit be quoted for all concepts, to avoid confusion or deception.

Response: *The text and the fatal cancer risk values have been modified to reflect 40 years of operation.*

11.01.32 In reference to page E-20, the commentor notes that the annual tritium release given for tritium target extraction facilities in table E.2.3.5-1 is equal to the design criterion for the New Production Reactor Tritium Recovery Facility. This is not reasonable, according to the commentor. Since the current goal of producing 3/8 as much tritium would result in handling less than such a facility was designed for in the New Production Reactor Program, the commentor would expect a commensurate reduction in tritium release.

Response: *The technology designs for the Tritium Supply and Recycling Program differ from the technology designs in the New Production Reactor Program as the tritium supply and recycling facility is designed specifically to produce only tritium. In addition, the tritium releases estimated for the New Production Reactor Program were conservative and bounding. A site-specific analysis would incorporate the as low as reasonably achievable concept to minimize releases.*

11.01.33 In reference to pages E-27 and E-28, the commentor states that the same values are entered in both tables (for maximally exposed individual and for population) for the Full APT with spallation-induced lithium conversion. The commentor asserts that this must be a mistake.

Response: *This typographical error has been corrected in tables E.2.4.1-2 and E.2.4.1-3 of the Final PEIS.*

11.01.34 In reference to page E-30, the commentor states that the paragraph summarizing health effects should quote values for NTS, not INEL.

Response: *The appropriate changes have been made in section E.2.5.2 of the Final PEIS.*

11.01.35 In reference to page E-37 and E-48, the commentor states that in table E.2.6.1-2, the committed effective dose equivalent (and next two entries to the right) for the Full APT cases are probably switched since they cannot be derived by adding the values to the left. The commentor suggests that alternatives be presented in the same order in both tables. (ALWR cases are switched with other reactor cases, Full APT cases are switched.) The commentor notes that on pages E-37 and E-38, the alternatives should be presented in the same order in both tables (Full APT cases are switched) and the title of table E.2.5.1-3 should be "...at Nevada Test Site".

Response: *The appropriate changes have been made to the document.*

11.01.36 In reference to page E-123, the commentor states that the table shows five chemical hazards for HWR at SRS, whereas seven hazards were listed for HWR at all the other sites. The commentor asks why nitric acid (a dominant hazard at other sites) and trichlorotrifluoroethane (Freon 113) are not also hazards at SRS. If they are added, states the commentor, summary table E.3.4-36 on page E-130 should be fixed accordingly.

Response: *Nitric acid and trichlorotrifluoroethane were inadvertently omitted from the HWR for SRS. The affected tables have been corrected and updated.*

11.02 Human Health - Facility Accidents

11.02.01 One commentor wonders what are the risks and consequences for the accident scenarios presented for the proposed technologies. Another commentor expresses concern about the increased likelihood of cancer fatalities to the population within a 50 mile radius of a tritium recycling or extraction facility during an accidental release.

Response: *Appendix F of the PEIS presents the methodologies and assumptions used for the facility accident scenarios. Potential human health impacts are discussed in the PEIS and the ROD will consider these in any decisions for selecting a tritium supply technology or site.*

11.02.02 The commentor refers to the following statement in volume I, page 4-454, column 2, paragraph 1: "...compared to doses resulting from direct exposure to such a criticality event, these doses are inconsequential and well below DOE standards for extreme accidents given in DOE Order 6430.1A." The commentor questions the estimated dose resulting from direct exposure to such a criticality event. Also, the commentor suggests that a more specific reference to DOE standards for extreme accidents be provided.

Response: *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements, prepared by the DOE Office of NEPA Oversight in 1993 provides guidance in the evaluation of extreme accidents. Facility design and operational information required for a PEIS is not detailed enough to identify the location of the criticality source in relationship to normal work stations and available shielding. The available information is not adequate to estimate involved worker doses due to a criticality event.*

11.02.03 The commentor states that the release fraction values listed in appendix F, tables F.2.1.1-1, F.2.1.3.1-1, F.2.1.3.2-1, F.2.1.3.3-1, and F.2.1.3.4-1 from postulated accidents could not be verified. The commentor asserts that reference documents provided in a DOE reading room did not provide adequate documentation to support release fraction value usage.

Response: *These sections in appendix F have been revised to include a spectrum of accidents. The applicable page numbers or table numbers in the reference document for source terms, release fractions, core inventories, etc. have been cited.*

11.02.04 Commentors believe that appendix F, facility accidents, of the Draft PEIS needs to be revised substantially for the Final PEIS to assure parity between the reactor and APT assumed accident scenarios. The high consequence accident analyses reported in the Draft PEIS compare latent cancer deaths from very low probability, beyond design-basis severe accidents for the reactor alternatives, in which major safety related systems including the robust containment are assumed to fail, to design-basis accidents for the APT, in which key safety systems are assumed to operate to mitigate the accident. The commentors note that for even the bounding low-to-moderate consequence accident, it is unclear as to whether the reactor containment and isolation systems are also assumed to fail making the probabilities much lower than these assumed in the Draft PEIS. The commentors state that in the Draft PEIS presentation of the APT low-to-moderate consequence accidents, all protective systems are assumed to operate. The commentor suggests that the assumed equipment failures and the specific reference documentation for the reactor accident analyses (deterministic safety analysis reports, probabilistic risk analyses, and other topical reports submitted to NRC for bounding assessments) should be identified. The commentors further suggest that the source term total inventory of releasable nuclides and the release fraction should be quantified for each accident and alternative technology. The commentors assert that nonconservative assumptions that the APT requires no containment, the APT's non-seismic design, the lack of environmental qualification for equipment, and the lack of fire protection are just a few examples of design features that will be challenged by NRC and result in a more expensive design for the APT.

Response: *A reanalysis of the reactor accident scenarios was conducted, indicating accident consequences are substantially lower and more in line with expected licensing documents. For the ALWR, the postulated design-basis accident was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. A more reasonable value was used to obtain the results presented in appendix F and the associated human health sections. Additionally, the accident analysis for the APT has been revised to be more consistent with assumptions for the reactor alternatives.*

11.02.05 The commentor offers several content and editorial changes to table 3.6-1. In reference to pages 3-80 to 3-83, the commentor asserts that the data entered on these pages is actually for tritium supply alone not for collocated tritium supply and recycling, as the headings allege. The commentor also suggests that the cancer risks from the accidents considered for the tritium target extraction facility in table F.2.2.5-1 and for the tritium recycle facility in table F.2.4-1 should be included on pages 3-80 and 3-81. The commentor believes this is especially significant for the APT concepts, since for the reactor concepts presented, the tritium supply dominates the cancer risk. According to the commentors, it would be more appropriate to present the sums of the cancer risks to the individual and the population along with the doses and fatalities associated with the risk dominant event/facility.

In reference to page 3-82, the commentor states that, based on information in table F.2.1.4.2-3, the cancer risks at INEL for the APT concepts do not seem to have been adjusted for the accident frequency. The commentor additionally states that for all sites excepts SRS, the cancer risks and cancer fatalities for the APT concepts differ from those in tables F.2.1.4.2-3 and F.2.1.4.2-3 for no apparent reason. Also, for NTS, ORR, and Pantex, the individual doses for the APT concepts differ from those in tables F.2.1.4.2-3 and F.2.1.4.3-2 for no apparent reason, according to the commentor. The commentor suggests that this be reconciled. The commentor further states that, according to tables F.2.2.3-2 and F.2.2.3-4, the population doses at ORR for the large and Small ALWRs should be $4.9x10^5$ and $2.2x10^4$, respectively. This should be corrected on page 3-81, according to the commentor.

Response: *Chapter 3 has been reformatted to address the relationship between the APT and MHTGR technologies and the target extraction facility. Appendix F has been revised to include a spectrum of accidents for each of the candidate tritium supply technologies. The complementary cumulative distribution function figures have also been reformatted to provide risk-based summary comparisons. The ALWR accident analyses have been revised to evaluate a spectrum of design-basis and beyond design accident source terms that have been submitted to the NRC as part of safety analysis reports. The data in section 3 have been revised and updated to reflect these changes. The tables in appendix F have also been revised. In the accident consequence tables, the "Average Individual Risk of Cancer" heading has been changed to "Cancer Fatality." That column in the table does not reflect cancer risk because accident frequency was not considered.*

11.02.06 The commentor states that the Final PEIS should include more information on emergency preparedness for each site, especially if a reactor technology is chosen as the preferred alternative.

Response: *The PEIS includes an expanded discussion on emergency preparedness at each of the candidate sites in sections 4.2.2.9, 4.3.2.9, 4.4.2.9, 4.5.2.9, and 4.6.2.9. Additional information has been provided that explains some of the changes to emergency preparedness planning and local agency agreements that would be required for candidate sites that would, if chosen, be receiving reactor technology for the first time. The PEIS also references the Emergency Preparedness Plan for each site. The referenced plans are available in DOE reading rooms.*

11.02.07 In reference to page I-77, the commentor states that it seems inflammatory to include statements such as "If this accident occurred, this exposure would result in a total of ---- cancer fatalities.

Response: *The statement is used to indicate a constitutional probability of cancer induced fatalities, given that the accident occurs. It does not imply this event as a likely occurrence.*

11.02.08 In reference to page F-31, the commentor states that the population dose at Pantex should be 25,000 and not 0.00025.

Response: *The typographical error has been noted. The exponent has been changed from -4 to 4.*

11.02.09 In reference to page 3-83, the commentor states that, according to table F.2.1.4.2-3, the population dose for APT (helium-3) at NTS should be 1.8×10^{-3} and not 1.8×10^{3}.

Response: *The exponent has been changed from 3 to -3.*

11.02.10 In reference to page 3-84, the data in table F.2.1.5-1 show that the tritium target extraction facility poses more cancer risk for high consequence accidents than either the MHTGR or the APT concepts, and the data in table F.2.2.5-1 show that the tritium target extraction facility poses more cancer risk for moderate consequence accidents than the APT concepts. Therefore, states the commentor, it is erroneous to state that "the radiological impacts from the recycling and extraction facilities are negligible compared to those from the supply technologies." The commentor states that the tritium supply alone section needs to be revised by incorporating the data currently on pages 3-80 through 3-83.

Response: *The table 3.6-1 has been revised in the Final PEIS to reflect that accident consequences for tritium extraction and recycling associated with the APT and MHTGR tritium supply technology alternatives are more severe than the accident consequences associated with the APT and MHTGR tritium supply "alone" technology alternatives.*

11.02.11 In reference to page F-6, the commentor states, the reference for MHTGR source terms should be a document applicable to the MHTGR, which DOE 1992r is not. The commentor states that table F.2.1.2-1 indicates that DOE 1995e is the source.

Response: *Table F.2.1.2-1 is correct, DOE 1995e is the source.*

11.02.12 Commentors observe some discrepancies in chapter 6 references. In reference to page F-8, one commentor states that the references for ALWR source terms should probably be DOE documents, instead of DOESNL documents, which are not included in the chapter 6 references. A commentor referencing page F-12, notes that reference DOE 1993n:2 is cited as the source of table F.2.1.3.2-1 data, but is not included in the chapter 6 references.

Response: *The correct references for the ALWR source terms is the Data Report for Advanced Light Water Reactor Tritium Supply Plant, DOE 1995f. Chapter 6 has been revised to include all references cited in volumes I and II.*

11.02.13 In reference to page F-31, the commentor states that section F.2.2.5, fourth sentence, ("Air leakage...") is garbled and appears incomplete as written.

Response: *The sentence has been changed in Section F.2.1.6 of the Final PEIS to read: "The explosion was initiated by air leakage from furnace leaks, tank leaks, connection leaks, pump leaks, valve leaks, or during process maintenance. The air leakage formed a flammable mixture that subsequently ignited."*

11.02.14 In reference to page F-31, the commentor suggests that, in section F.2.2.4.3, the term "worst single failure" be explicitly defined. The commentor also suggests that the "minimal" release be quantified.

Response: *The reference document stated "The accident assumes that all plant-protection safety systems function as designed. The worst single failure in an active system responding to the initiat-*

ing event is assumed to occur." No other information relevant to the single failure was presented. Normally in large break loss of coolant accident analyses, the worst single failure in an active system responding to the initiating event would be the loss of one leg of an active cooling system. The reference document stated "The source term for this event will consist of a small fraction of the circulating inventory of tritium released from the D20 coolant that is expelled into the confinement. The source term to the environment will be a small fraction of this and is expected to be determined by the confinement leakage rate." Quantification of these small release fractions would be developed and analyzed in subsequent NEPA reviews as appropriate.

11.02.15 In reference to page F-26, the commentor states that, in more than 10.87 years of actual PWR experience as of January, 1992, no large pipe breaks have been observed. The commentor states that the vessels and piping in both the MHTGR and the ALWRs will be similar. Thus, the frequencies of the events in sections F.2.2.2 and F.2.2.3 can be estimated based on the X(2) variate at the 50 percent cumulative probability level to be less than 2.1×10^4 per year, instead of 10^2 and 10^3, respectively. (See page 19.3-10 of the CESSAR for Design Certification of the System 80+.) This affects text on page F-26 and footnotes to tables F.2.2.2-2, F.2.2.2 -3, and F.2.2.3-2 through F.2.2.3.2-7, according to the commentor.

Response: *The size of the 1/8 size MHTGR module primary piping is anticipated to be significantly smaller than the primary piping associated with the 3/8 size ALWR. ALWR safety analysis reports submitted to the NRC typically show that the probability of a large break loss of coolant accident is an order of magnitude lower than a small break loss of coolant accident. The PEIS assumes that the same relationship was valid for the 1/8 size MHTGR module pipe breaks (i.e. small break loss of coolant accident) and the 3/8 size ALWR pipe breaks (that is, large break loss of coolant accident). The PEIS estimates that the frequency of ALWR large pipe breaks are in the range of* 1×10^{-3} *to* 1×10^{-5} *per year and the frequency of MHTGR pipe breaks is in the* 1×10^{-2} *to* 1×10^{-4} *per year range. The estimated ranges are not inconsistent.*

11.02.16 In reference to page F-24, the commentor states that, according to page 3-80, the individual dose at NTS is 8.4×10^{-3}, not 8.4. This should be reconciled according to the commentor.

Response: *The typographical error in table F.2.2.1-2 has been corrected and 8.4 has been changed to* 8.4×10^{-3}.

11.02.17 Commentors believe that values for radiation exposures and resulting fatalities for low/moderate accident consequences of HWR and ALWR are not accurate. The commentors note that the values of the accident consequences for the APT and MHTGR are unusually low. In addition, the commentors note that the 10^{-6} accident probability for the APT results in consequence orders less than the reactor technologies while the MHTGR consequences seem inconsistent with past analyses. The commentors also note that the document uses a value of 10^{-3} for accident probability for the HWR and ALWR when 10^{-6} would have been a more accurate value. In the commentors opinion, this makes reactor technologies look more dangerous than they are. According to the commentors, the document should integrate the risks of all potential accidents identified instead of the two individual events analyzed to present a range of consequences. The commentors believe that the risk values in the human health section are the more important figures and these values are extremely small irrespective of the technologies. Commentors further suggest the document put human health numbers in perspective by comparing the numbers to other activities which carry a cancer risk, such as smoking or living in a brick house.

The commentors state that risks for the tritium supply dominate the moderate consequence cancer risk for all reactor concepts. According to the commentor, the sums of the cancer risks and fatalities associated with the risk dominant event/facility should be presented. The commentors assert that the ALWR low/moderate consequence accident assumptions are inconsistent with NRC standards. The commentors also caution that DOE must be careful to state what accident probabilities were used from NRC reports, such as accident probability value from a worst case scenario Safety Analysis Report, because these would lead to misleading values of consequences.

Response: *The accident consequences were estimated using source terms from the best available public documentation and the GENII computer code. The referenced documentation did not provide accident frequencies, so a frequency range was estimated. For conservatism, the lower end of the range was used for point estimates of risk. Volume I compared the cancer risk due to accidents to the risk of cancer due to other causes.*

The ALWR accident source term used in the analysis was designated by the reactor vendor as a design-basis accident in a submittal to the NRC. The postulated design-basis accident was more severe than normal design-basis accidents because the analysis assumed the complete loss of safety systems that mitigate accident consequences. The documentation submitted to the NRC did not define the accident frequencies for design-basis accidents.

The ALWR accident analyses have been revised to evaluate a spectrum of design-basis and beyond design accident source terms that had been submitted to the NRC as part of safety analysis reports. The design-basis accident analysis postulates the normal complement of safety systems for accident consequence mitigation.

12 GENERAL/MISCELLANEOUS ENVIRONMENTAL

12.01 The commentor states that DOE should analyze the consequences of its actions beyond the year 2050. The PEIS should take into account the consequences of the proposed action after 2050, according to the commentor.

Response: *For the purposes of selecting a site and technology for the supply of tritium as well as designing and operating this facility, the analytical period ending with 2050 is appropriate. This amount of time allows for operation through a reasonable operating life based on a 40 year design, as well as providing sufficient time for the closing and D&D of such a facility. To expand the analytical timeframe beyond this date would introduce sufficient technical uncertainties to render projections based on this analysis too subjective for programmatic planning purposes.*

12.02 One commentor asserts that the new tritium facility will cost taxpayers billions of dollars, produce more spent fuel for which there is no repository, and use too much of vital water supplies. Another commentor questions how waste generation and water consumption will be weighted in the final decision. These two issues, according to the commentor, should count heavily in the decision making process. The commentor also states that the PEIS should include a comparative analysis study on the benefits and risks involved with these two issues and that DOE should outline how they will be weighted. Other commentors express concern over the possible negative impacts the tritium supply and recycling facility might have on the environment.

Response: *Environmental impacts associated with spent nuclear fuel, waste management, and water consumption are being considered in the decision process as well as the cost and technical feasibility of the alternatives.*

12.03 The commentor states that each of the proposed sites has a unique set of environmental challenges to mitigate if a tritium supply facility is constructed and operated on it. At all sites there are potential impacts on the habitat of flora and fauna. If SRS is chosen DOE will need to minimize impacts on the natural flow of surface and ground water. Both the NTS and Pantex plant have the potential for aquifer drawdown if the accelerator technology is selected and have the potential to impact the habitat of threatened and endangered species. If reactor technology is selected, ORR has the greatest potential to impact the offsite population should a severe accident occur. NTS is also located in a tectonically active region and would require the largest amount of infrastructure upgrades. INEL does not appear to have any significant discriminating environmental attributes associated with it.

Response: *The existing environmental conditions and past operations at each of the tritium supply candidate sites contribute to the environmental impacts and required mitigations for construction and operation of any of the proposed tritium supply technologies. The PEIS has identified the affected environment and potential impacts resulting from construction and operation of each of the technologies at each site. Potential mitigation has been identified based on the current conceptual design impact assessment. The impacts to SRS surface and groundwater resources are described in section 4.6.3.4 of the PEIS. Because the green-field design of the tritium supply technologies did not consider the candidate site site-specific characteristics, the design features normally used to mitigate many of the potential impacts were not identified. If selected, the technology design would proceed and site-specific NEPA documentation would analyze the potential impacts in much more detail.*

The potential impact to groundwater resources at NTS and Pantex from the APT technology has been reanalyzed in the Final PEIS based on information provided during the Draft PEIS public hearing and review process. The NTS aquifer recharge rate and potential impacts have been changed to reflect additional studies conducted on the aquifer. Water requirements for the APT technology have also been lowered based on more design implementation. Even including the potential water use of the proposed solar enterprise, informational activities at NTS, the projected water use would not exceed the estimated lower aquifer recharge rate. If selected as the tritium supply technology at NTS, further design development would be expected to reduce the conceptual design water use substantially. The aquifer issue and potential impacts at Pantex have been essentially eliminated. The availability of a substantial quantity of tertiary treated reclaimed wastewater for use as tritium supply technology cooling has replaced the use of Ogallala aquifer water for the tritium supply project at Pantex. The potential impacts to threatened and endangered species at Pantex and NTS was discussed in sections 4.5.3.6 and 4.3.3.6, respectively. As discussed in the PEIS, critical habitat for threatened and endangered species as defined in the Endangered Species Act *(50 CFR 17.11; 50 CFR 17.12) exist on Pantex and NTS. The potential impacts to the bald eagle at Pantex and the desert tortoise at NTS are identified and potential mitigation measures proposed. If selected as a tritium supply site, more detailed site-specific analysis would be included in tiered NEPA documentation. The commentors observations on the ORR severe accident setting, the NTS tectonic setting and INEL attributes are correct. All of these issues and potential impacts, if any, are identified in the PEIS. Mitigation has been proposed for impacts based on the conceptual design impact assessment. If any of these sites is selected as the tritium supply site, more detailed analysis and technology design would be included to minimize potential impacts.*

12.04 The commentor suggests that, when evaluating current designs, the PEIS should consider terrorist attacks, that is, aircraft attacks or trucks with weapons.

Response: *Security concerns are of paramount importance to DOE. Although there is not a great deal of description as to the importance security plays in the DOE's activities in the PEIS, security concerns are a major consideration for the design and operation of all of DOE's Defense Programs facilities. This PEIS is a programmatic level document and is focused on selecting the appropriate technology and site for the tritium supply and recycling facility. In the initial selection of candidate* *sites, security consideration played a strong role and, accordingly, only those DOE facilities which could offer a certain degree of security were considered. Once a site and technology selection is made, DOE will undergo a detailed site-specific design process which will include a lengthy analysis of all security requirements.*

12.05 Several commentors note problems with the text, organization, and analysis in the PEIS. One commentor suggests that a clear statement about the tritium production goal be provided in either the executive summary or chapter 1. The commentor states that, currently, the explanation is not found until the reader reaches chapter 3, where the terms "steady state requirement" and "baseline requirement" are finally explained as fractions of the original New Production Reactor Program goal quantity. Another commentor states that the PEIS does a poor job of distinguishing among the alternatives. The commentor asserts that this is due to an analysis that relies on uncertain modeling and potentially unrealistic assumptions about the quality of operation. One commentor requested that a table listing the key discriminators for each technology independent of the sites be included. Another commentor suggests adding the acronyms HEU and MGY to page iv of volume II, while another states that in figure 1.4-1, the ORR geographical location should be referred to as 'at Oak Ridge, TN', not 'near Oak Ridge, TN'.

Response: *As with any large and complex document minor text problems and editing slip-throughs can be expected. Every effort has been made in preparing the Final PEIS to discover and correct these errors. The organization of the PEIS was felt to be the best approach and format for presenting the many tritium supply technologies, potential sites, and the variety of other options (e.g., collocation of recycling facilities, less than baseline operation). The organization also allows readers to concentrate on a particular site of concern and compare with other sites.*

The analysis presented in the Draft PEIS was based on best available existing data and project information developed specifically for the PEIS. In many instances however, because of the new designs and technologies being considered for analysis, the level of detail was not of sufficient quality to evaluate potential impacts without making conservative assumptions. Some of these assumptions, especially concerning conceptual design and accident analysis of tritium supply technologies, were questioned during the public review of the Draft PEIS. Based on the comments received, appropriate changes have been made in the Final PEIS.

The acronym HEU is listed in the "acronyms and abbreviations" section of volume II (page xxv). The unit of measure MGY is listed on page xxvii under "chemicals and units of measure". Figure 1.4-1 has been changed to "at Oak Ridge, TN". The tritium production goal and the terms describing the different production scenarios have been added to the Final PEIS summary under the heading "Tritium Supply and Recycling Proposal."

12.06 The commentor states that the tritium production/recycling siting decision should focus on equity issues, human health and socioeconomic risks, and unavoidable environmental impacts.

Response: *The siting decisions will consider the issues which are analyzed in the PEIS and raised by the commentor. However, the decision on siting the preferred tritium supply technology will also consider many other factors and issues such as cost, technical uncertainty, and scheduling.*

12.07 The commentor suggests that, in the Final PEIS, DOE should include a description of the old tritium facility, its current and planned disposition, the wastes generated, and a comparison between the old and new tritium facilities. The commentor asserts that this may help DOE learn from past mistakes and educate the public as to what can be expected from the new facility.

Response: *DOE has had more than a dozen facilities over the years that have provided tritium and other nuclear materials for the fabrication of nuclear weapons. All of these facilities are of the first generation reactor design and were designed and constructed in a timeframe prior to existing environmental and safety requirements. The operation of these facilities and the wastes they generated bear no resemblance to the facilities presently being considered. DOE has a separate action underway to study contamination resulting from past operations and will develop various technical alternatives for the remediation of these facilities.*

12.08 Several commentors express the opinion that the PEIS does not account for impacts associated with the D&D of alternative technologies. Commentors note that the reason given in the PEIS is that the level of detail is not developed enough (page 3-4), therefore, this evaluation will be conducted as part of future site-specific tiered NEPA documents. While tiered environmental review may be appropriate for D&D activity, one commentor believes this PEIS should estimate the amount and type of waste that could be generated by such activity. Maximum quantities of each type of waste should be identified. In the commentor's opinion, such an accounting is necessary in order to present a realistic picture of the total contribution this proposed action will make to the waste DOE must manage. One commentor states that DOE waste management planning must ensure that appropriate facilities are available to handle projected waste streams from all of its activities. Otherwise, the proposed action presented in this PEIS could contribute cumulatively to an impact on DOE's waste treatment and disposal capability. Another commentor recommends that the Final PEIS include more D&D information concerning the proposed technologies and highlight any impact differences among the technologies.

Response: *The specific environmental impacts of D&D cannot be determined at this time because of the preconceptual designs of proposed facilities. However, a relative comparison of the D&D activities and potential impacts among the tritium supply technologies is presented in section 4.14 of the PEIS. The costs associated with D&D are included in the Technical Reference Report available in DOE reading rooms.*

12.09 The commentor states that, on March 15, 1994, Dr. Harold Smith relayed to the House Appropriations Subcommittee on Energy and Water Development that tritium requirements are based on START I stockpiles, and not START II stockpiles as DOE claims today.

Response: *For purposes of the PEIS, tritium requirements are based on a range of stockpile requirements. For the base case, a stockpile consistent with START II requirements has been considered. DOE also performed analysis on tritium requirements based on a much lower stockpile requirement, as well as a higher stockpile requirement, consistent with Start I requirements. Analysis of three different stockpile requirements will enable the decision maker to utilize and benefit from additional factors which may develop prior to the actual decision.*

12.10 The commentor suggests that the PEIS include an analysis on safety issues, focusing on past performance of the potential sites. Past safety records should count heavily in the decision making process, according to the commentor.

Response: *The focus of the PEIS is on how the tritium supply and recycling facilities would be operated in accordance with all applicable DOE orders, not on how past facilities were operated. A discussion of site accident history is provided for each site in the affected environment sections.*

13 TRITIUM SUPPLY AND RECYCLING PROPOSAL AND ALTERNATIVES

13.00.01 Several commentors express the opinion that the No Action alternative is the option most consistent with international negotiations to achieve arms reductions and nonproliferation goals. One commentor also suggests that it is the preferred option relative to the health issues related to production, handling, and safe disposal of tritium. Another commentor notes that DOE could continue to reuse existing tritium from dismantled weapons until well beyond 2011 with no adverse effect on U.S. nuclear deterrent capability. In light of the START II Protocol, according to this commentor, tritium will not be needed as the number of nuclear warheads is reduced. In a similar vein, one commentor states that, since there are between 16 to 21 years before tritium becomes seriously low, it is more economical to further explore the options that have already been dismissed.

Response: *At the present time, DOE has no capability for the production of tritium. Furthermore, tritium is a short-lived radionuclide which is an integral component of every weapon in the Nations's nuclear weapons stockpile. Although the tritium in weapons which are being retired from the stockpile as a result of recent arms negotiations can be recovered and utilized in the existing weapons, this supply, alone, is not sufficient to replace the tritium which is decaying in the existing weapons. Based on a stockpile consistent with the requirements of START II levels, it is expected that an additional supply of tritium will be required by 2011. Accordingly, DOE is proposing to construct a new tritium supply facility. The PEIS analyzes the potential environmental impacts associated with various site and technology alternatives for the production of tritium. The No Action alternative is utilized in the PEIS as a baseline case, from which the environmental impacts of various alternatives can be developed and compared. Under the No Action scenario, DOE would not have sufficient quantities of tritium to fulfill its requirements under the* Atomic Energy Act *to support the enduring stockpile as directed by the President and approved and funded by Congress.*

As to the health and safety and disposal issues of the No Action alternative relative to the other alternatives, there are no significant health and safety issues associated with any of the alternatives being considered in the PEIS. All alternatives fall within reasonable and generally acceptable levels of risk. Furthermore, DOE does not dispose of any quantity of tritium and has no future need for the disposal of tritium, consequently, this document does not look at any tritium disposal alternatives.

13.00.02 Commentors express concern that uncertainties exist with the APT and MHTGR technology designs and with the associated cost estimates. One commentor asserts that there is not enough operating experience for the APT and MHTGR technologies; therefore, analyses of their environmental impacts or cost estimates cannot be fully accurate. Another commentor suggests that DOE build a small accelerator to test before building a full-sized one with questionable results and wasting money. Still, another commentor argues that the APT and MHTGR be eliminated from contention because they are not sufficiently proven and have an unreasonable risk of achieving success. The commentors contend that either the HWR or ALWR technology is a better choice. Another commentor references the following statement in the PEIS, on page ES-8: "only the HWR has tritium production operating experience." The commentor states that although DOE intends to avoid repeating past mistakes, three out of the four possibilities presented are unproven, which could cause problems. Another commentor feels that the Large ALWRs which have completed NRC review have a solid basis for evaluation in the PEIS. Although the threat of intervenor delays in the licensing of a new nuclear plant is often cited as a scheduler uncertainty, the commentor feels we should not lose sight of the fact that even the accelerator has been delayed by intervenors (at Los Alamos). In the Los Alamos case, the commentor notes that the research accelerator was much smaller than that proposed for APT.

In addition, commentors express concern over the reliability and maturity of the technologies. According to one commentor, the more immature the technology, the greater the risk of substantial cost overruns, schedule delays, and overall unreliability which may threaten the technology's ability to supply tritium when needed. Some commentors suggest that reliability is the most important criterion when choosing a technology and the PEIS should include information on reliability and safety for the technologies. In fact, one commentor states that safety reports for each technology should be made available to the public. Another commentor expresses concern about how cost versus efficiency/reliability is going to be compared for all four technologies.

Response: *Although there is no real operational experience for the specific APT or MHTGR facilities being considered in the PEIS, most aspects of these technologies have been researched and fully demonstrated for more than 30 years. The specific designs being considered will draw on this experience and will operate as required, within acceptable levels of technical risk. For the MHTGR alternative, the Peach Bottom 1 Atomic Power Station demonstrated gas reactor technology as early as 1967. While the proposed configuration for the APT has never actually been constructed or operated, all of the various significant components have been used in various accelerators operated by DOE in the past. The Technical Reference Report available in the DOE reading rooms provides estimates of the technical feasibility of the various technologies, as well as cost and schedule estimates. These estimates include the effects of the various issues such as design maturity.*

13.00.03 The commentor notes that the Final PEIS should include a full evaluation of the gas-turbine modular helium reactor as one of the technology alternatives in addition to the steam cycle MHTGR, rather than the current limited treatment. The commentor believes that the ROD evaluations of cost, schedule, and production assurance should include the gas turbine modular helium reactor as one of the candidate technologies. In reference to pages A-31 and A-97, another commentor states that it is not clear why the relationship between the 600 MW gas turbine-modular helium reactor and the 350 MW MHTGR is any different from the relationship between the Small ALWR and the Large ALWR. Both ALWRs are evaluated in this PEIS. The commentor believes that if information on the ALWR from the Surplus Fissile Materials Program is to be used, information from that program on the 600 MW gas-cooled reactor should also be used. Both gas-cooled reactors should also be evaluated in this PEIS. One commentor notes that it is stated that the gas turbine-modular helium reactor "represents a different technology." In fact, the commentor believes that the reactor technology of the two designs is the same while the differences lie in the power conversion system technology. The commentor suggests that the comparison of the gas turbine-modular helium reactor with a boiling water reactor is inappropriate. The gas turbine-modular helium reactor would not be plagued with the operating problems that have been experienced by the boiling water reactor and other light water reactors, according to the commentor.

Response: *As stated in section A.3.1, the direct cycle gas turbine design is basically a design modification of the basic gas reactor design. Inclusion of it as an alternative would offer nothing new in terms of environmental discrimination between technologies. The Technical Reference Report available in the DOE reading rooms provides estimates of the technical feasibility of the various technologies, as well as cost and schedule estimates. The cost estimates have accounted for the cost differences between the 600 MW and 350 MW reactors referenced by the commentor, and there is comparatively little technical difference between the technologies. If the MHTGR technology is chosen then further studies may show that consideration of this new design is warranted.*

13.00.04 The commentor remarks that it is stated that, "The MHTGR and light water reactor....lack tritium production experience and the development of tritium target technology. The APT technology....also has no tritium production experience and only recent development of tritium targets." This statement is incorrect, according to the commentor. DOE should refer to Tritium Target Development Project Executive Summary Topical Report, PNL-8142, September 1992 for light water reactor target development information. For gas-cooled target development status DOE should refer to two reports, Fuel and Target Technical Development Status Report, CEGA-002818, December 1993 and Tritium Recovery Facility Technical Development Status Report, CEGA-002693, February 1993.

Response: *The statement is correct as stated since it refers to operational production experience and the completion of target development. It does not refer to research and development experience as is cited in the referenced reports.*

13.00.05 Several commentors express support of the "triple play" reactor, citing the following advantages: it is the most practical, proven, and economical option; it is able to generate revenue by selling electricity (and providing that electricity to communities that need it); and it may be able to dispose of plutonium, providing mission flexibility. In addition, some commentors indicate support for the ALWR triple play reactor. Some commentors also indicate that there is much support for locating the reactor at SRS because it would address the plutonium problem, produce tritium, provide inexpensive power for the area, and encourage economic development. In fact, one commentor points out that some private initiatives in South Carolina are interested in this option and may provide financing.

In addition, some commentors believe that the benefits of electricity production were not adequately presented in the PEIS and suggest that DOE should address environmental impacts and cost/benefits for a tritium production reactor and for a reactor that both produces tritium and burns plutonium. One commentor believes that a single ROD process should be adopted for both the Tritium Supply and the Fissile Materials Disposition programs to ensure that the multipurpose options are properly taken into account. In the commentor's opinion, this single ROD process would permit valid comparisons of cost, schedule, production assurance and environmental impact of multipurpose plants versus the combinations of other technologies required to satisfy both the Tritium Supply and Fissile Materials Disposition missions.

Some commentors also feel the treatment of the multipurpose options in the PEIS is not a full and fair evaluation, so it is not consistent with the requirements of NEPA. The commentors also note that the environmental impacts of the multipurpose options are compared only with those of the tritium production options and a full and fair assessment would compare the impacts of the multipurpose options with those of the plutonium disposition and tritium production options combined. One commentor refers to page A-102 and notes that evaluations of multipurpose core designs by General Atomics indicate that the plutonium disposition rate per reactor module is increased by 50 percent when the reactor is operated in a multipurpose mode versus plutonium disposition only. For the ALWR, the commentor believes the plutonium disposition rate per reactor is decreased due to derating and the effects of periodic retargeting. According to the commentor, six 350 MWt MHTGR modules or four 600 MWt gas turbine-modular helium reactor modules could disposition about 60 MT of plutonium over their 40-year reactor life. The commentor suggests that speculation on this matter on page A-100 should be replaced with this information. Another commentor referring to pages 4-447 and 4-467, believes that for the ALWRs for plutonium disposition, at least two small ALWRs would have to be used, to carry out the same amount of plutonium disposition as the large ALWR. For a large ALWR, the commentor feels that it is not necessary to require a full core refueling, with a major reduction in fuel disposal.

Response: *DOE does not expect that the ROD on tritium production would restrict or prejudice decisions of any plutonium options. In fact, DOE's preferred alternative would allow for subsequent integration with future plutonium disposition decisions, if desired. As stated in the description of the*

NEPA process in section 1.2, any decision made in the ROD would be followed by a site-specific EIS which would address the technologies and locations on the chosen site. The PEIS for Tritium Supply and Recycling evaluates alternative technologies and sites for long-term, assured tritium supply and recycling. Another DOE program office, the Office of Fissile Materials Disposition, is preparing a PEIS addressing the issue of how to dispose of plutonium that is excess to the nuclear weapons complex.

Of the tritium supply technologies evaluated in the PEIS for Tritium Supply and Recycling, only the ALWR, MHTGR, and commercial reactor alternative are being considered for plutonium disposition. Therefore, the environmental impacts of plutonium-burning are analyzed and presented in the PEIS for Tritium Supply and Recycling in section 4.8 and in the environmental impact sections for each site. Estimates of the amount of plutonium that could be consumed by these technologies are included in section A.3.2. It is reasonably foreseeable that electricity generated by an ALWR, MHTGR or commercial reactor incident to the production of tritium would be sold, as allowed by Section 44 of the Atomic Energy Act. Thus, the PEIS includes an analysis of these potential environmental impacts. Because an ALWR, MHTGR or commercial reactor could also be used to "burn" plutonium, these environmental impacts are also addressed in the PEIS.

13.00.06 The commentor notes that the Draft PEIS states that "the analysis in this PEIS is based on the requirements of the *Nuclear Weapons Stockpile Plan* which covers an 11-year period, specifies the types and quantities of weapons required, and sets limits on the size and nature of the stockpile changes that can be made without additional approval of the President." The commentor feels that this document standing alone should not be the basis for the proposed action, for the following reasons: the period covered by the *Nuclear Weapons Stockpile Plan* does not extend through the construction phase and does not even begin to address the operational phase (2010 to 2050) of DOE's proposed tritium supply and recycling capability, and, therefore, it cannot form the basis for assessing stockpile tritium requirements and supply/recycling alternatives in the PEIS; an EIS for a tritium supply and recycle capability for the years 2010 to 2050 must take into account reasonable, indeed likely, alternatives not presently accounted for in the *Nuclear Weapons Stockpile Plan* for 1994 (or 1995, assuming the classified appendix in the Final PEIS will contain updated stockpile plan information). By definition, the range of "reasonable alternatives" for tritium supply in the first half of the 21st century cannot be narrowed to sole consideration of the tritium "requirement" in an already approved government plan for the period 1995 to 2005. According to the commentor, not only does such a premature narrowing of options make a mockery of NEPA's requirement for analysis of reasonable alternatives, but the commentor contends that the *Nuclear Weapons Stockpile Plans* themselves historically have been unreliable predictors of actual nuclear weapon requirements and force levels. They have, in fact, regularly overestimated future nuclear materials requirements.

Response: *As discussed in chapter 2, the need for new tritium supply is based on the 1994* Nuclear Weapons Stockpile Plan, *which projects a need for tritium to approximately 2011 based on a START II level stockpile size of approximately 3,500 accountable weapons. The 1994* Nuclear Weapons Stockpile Plan *represents the latest official guidance for tritium requirements. A* Nuclear Weapons Stockpile Plan *for 1995 was not issued. The PEIS also includes analyses of providing tritium at an earlier date should that become necessary. For a stockpile size smaller than START II, the need for new tritium could be extended beyond approximately 2011. If the need date for new tritium were significantly later than 2011, DOE would not have a proposal for new tritium supply, and would not be preparing a PEIS for Tritium Supply and Recycling. The potential impacts of future arms control agreements are accounted for in the development of the* Nuclear Weapons Stockpile Plan, *which is not the purpose of this PEIS. This PEIS has the sole purpose of evaluating the reasonable alternatives for providing the tritium necessary to support the enduring stockpile as defined by the President in the* Nuclear Weapons Stockpile Plan. *A new section has been added to the PEIS (section 4.11)* *that discusses the differences in environmental impacts should tritium be required sooner than currently envisioned.*

13.00.07 Commentors express support for having and maintaining capability for nuclear materials production, including tritium. The commentors suggest that DOE select a technology that would produce the highest quality tritium as well as minimize waste generation. To further enhance national security, one commentor suggests that the U.S. should have two sources of tritium production for a strategic advantage (for example, an APT at NTS and a facility at SRS). Another commentor feels that to rely on recycled tritium mixed with deuterium in unsuitable concentrations could jeopardize our deterrence capability. One commentor states that if it is decided that tritium production and recycling is necessary to achieve a goal that the public is in agreement with, then the least harmful design and method should be selected. Finally, another commentor expresses support for reactor production of tritium citing the facts that other nations will pursue nuclear power despite our reluctance, the dependence of the United States on oil imports for electric production, and nuclear power's favorable comparison to other energy sources.

Response: *The technologies can all produce the high quality tritium needed while minimizing waste. The APT has the least waste of the potential technologies. The purpose of this PEIS is to analyze the reasonable alternatives for tritium supply and sites to support the enduring stockpile as defined by the President in the* Nuclear Weapons Stockpile Plan. *The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium.*

13.00.08 In reference to the Stockpile Stewardship and Management Program booklet on page 4: the commentor quotes, "All of the candidate weapons for the START II stockpile require tritium replenishment." The commentor believes that DOE should not make the assumption that we will maintain a stockpile of weapons requiring tritium when no tritium facility exists.

Response: *All of the candidate weapons for the START II stockpile already exist today and they all require tritium replenishment. The fact that there is currently no tritium supply is the reason that this PEIS is being prepared.*

13.00.09 Commentors question why DOE needs 15 years to bring a new tritium production facility online if construction estimates ranging from 5 years for the APT to 9 years for the MHTGR are accurate. For example, one commentor notes, the APT could begin construction in 2006 and be complete in 4 to 5 years. If DOE waits 4 to 5 years beyond 2006 to begin construction, the commentor believes that tritium production may not even be required until well beyond 2010 because of further arms reductions.

Response: *Depending on the technology selected, it could take as long as 15 years to bring a tritium supply facility online to account for facility design and further technical research and development of targets. Considerable design work is required to bring these technologies and facilities to the construction phase. The 5 to 9 year construction duration to which the commentor refers does not fully represent all of the activities that are necessary to bring a new tritium supply facility online. Regarding the alternative selected, varying degrees of additional research, development, and design will be required, and a site-specific tiered NEPA document will be prepared. These activities will occur prior to construction. After construction, start-up and test activities will be required prior to actual tritium production. In total, the analysis indicates that it could take as many as 15 years to bring a new tritium supply facility into operation. Because new tritium is needed by approximately*

2011, DOE is proceeding with a tritium supply decision now. More detailed analysis of the construction schedules can be found in the Technical Reference Report available in DOE reading rooms.

13.00.10 In reference to section 3.4.1.4, cooling systems, the commentor states that the PEIS indicates mechanical draft dry cooling towers would be used for the reactors at all dry sites, and wet cooling would be used for APT technology at any site. The commentor would like to see two additional cooling system technologies considered for use for any of the technologies at the Pantex "dry" site. Another commentor suggests that DOE consider a combination of wet/dry cooling technology at any type of facility selected for NTS.

Response: *As discussed in section 3.4.1.4, dry cooling towers would be used for reactors at all dry sites, namely Pantex, NTS and INEL. Dry sites and wet cooling would not be appropriate based on the lack of abundant water. The specific cooling design would be site-specific and considered at that time.*

13.00.11 One commentor suggests an alternate site for the Tritium Supply and Recycling facility, located approximately 12 miles from Rogersville, Tennessee, in Hawkins County. The site, according to the commentor, was the former headquarters for the International Printing Pressmen's Union and is remote, accessible, and low in population. Another commentor suggests that DOE consider siting the Tritium Supply and Recycling facility outside of the existing Complex sites.

Response: *Adding a non-DOE site would be contrary to the goal of downsizing and consolidation. DOE established a Site Evaluation Panel and this panel developed specific selection criteria for determining the suitability of facilities to be considered. Such factors as safety, security, availability of required resources, availability of waste management facilities, the availability of an existing technically qualified workforce, and other factors were determined to be necessary. The addition of a new site would not be consistent with the overall goal of DOE to consolidate and downsize the Complex.*

13.00.12 The commentor states that despite spending $1 billion on technical studies, DOE's Office of the Assistant Secretary for Defense Programs does not believe reactor technology is the best option for tritium production. The commentor expresses the belief that jobs are the real basis for considering HWR, MHTGR, and ALWR.

Response: *The PEIS addresses the environmental impacts of all reasonable alternatives identified for the tritium production mission, and includes analysis of socioeconomic issues such as job creation and loss. These environmental factors along with costs, technical feasibility, and scheduling will be presented to the decision maker. The decision maker will consider all of these factors and issue a technology and site selection in the ROD. No alternatives were deemed to be reasonable or unreasonable based on job creation.*

13.00.13 In reference to volume I, page 4-444, fuel receiving, storage, and handling, the commentor states that the indirect impacts of coal mining and shipping should be considered along with the impact of operations at the plant site.

Response: *A description of the mining and transport of coal and the general impacts associated with this part of the energy cycle has been added to the discussion on fuel receiving, storage, and handling in section 4.8.2.1.*

13.00.14 Commentors state that the PEIS should include a discussion of other uses for tritium and for the chosen technologies. One commentor suggests that information be provided on what the tritium facility would be able to produce/dispose of when or if tritium is no longer needed. The selected technology must be flexible enough to be used for other needs without compromising the ability to produce tritium, according to the commentors. One example given is the ability to produce a wide range of isotopes. Another commentor notes that there is a commercial market in the United States for tritium and DOE should consider using the tritium facility for commercial (non-defense) purposes in addition to its primary mission of producing tritium for weapons enhancement. One commentor suggests that with no tritium supply requirements, the chosen technology could be used to make electricity, medical isotopes, etc., cost effectively. The commentor believes that under no circumstances should the taxpayers be asked to fund another study and another technology if the tritium supply requirements change.

Response: *As explained in chapter 2 of the PEIS, DOE is required by law to maintain the nuclear weapons stockpile as directed by the President in the* Nuclear Weapons Stockpile Plan. *The tritium supply facilities presented in this document are sized to support this stockpile. Additional uses, such as those suggested above, should not be included in initial planning but could be accomplished on a space available, non-interference basis after DOE's statutory requirements were met.*

13.00.15 Commentors state that the PEIS needs to make it clear that the tritium facility analysis is based on new START II levels, reflecting the most recent agreement for weapons reductions. One commentor also notes that it should be made clear that the associated reserve that is needed to maintain the stockpile is also based on START II levels. A commentor suggests that the PEIS should also clarify that the tritium reserve stockpile includes tritium for active weapons (in the stockpile) only, not any that are currently inactive or dismantled. Finally, one commentor notes that total reductions in the nuclear stockpile are to be completed by 2003 and this fact should be taken into account when planning for the tritium facility.

Response: *As stated in chapter 2 of the PEIS, the tritium requirements in this document are based on the 1994* Nuclear Weapons Stockpile Plan *approved by the President on March 7, 1994. These levels are based on START II levels. This plan does take into account the changing world situation to include ongoing arms control negotiations. More specific details than that found in the PEIS are included in the classified appendix.*

13.00.16 The commentors state that DOE should consider purchasing tritium from foreign countries at different times; this would both benefit the United States and bring in revenue to some of the poor countries. For example, suggests one commentor, DOE should tell Russia to sell all the tritium they can or else we will build a reactor to produce it. By the time the United States has depleted that source, a new and better technology might be available or the existing stockpile might be further reduced.

Response: *The option of purchasing tritium from foreign sources was evaluated but dismissed from further consideration for the reasons stated in section 3.1.3.*

13.00.17 Commentors suggest additional technologies and approaches for DOE to consider in its facility analysis. According to the commentors, other reactor types for consideration as alternative technologies should include the molten salt reactor, the commercial boiler reactor with lithium, the low temperature light water reactor, and the gas turbine-modular helium reactor. Advantages of the low temperature light water reactor, one commentor cites, include expensive heavy water would not be required for coolant and moderator, and the waste tritium buildup in the coolant would be drastically reduced over that in the HWR. In addition, the commentor states that no heavy water processing facility would be required to detritiate the expensive heavy water as would be required for the HWR.

Commentors also believe that DOE should consider putting the K-Reactor at SRS back online because it could keep up with the tritium needs if started immediately, which would add time for new technology development or for decisions about further stockpile reductions, as well as save money. According to one commentor, if one or more smaller reactors were also upgraded then DOE would have a backup in the event the larger reactor had to be shut down. The commentor also states that DOE should have continued to use the reactor that last produced the gas, rather than build a new facility. Another commentor suggests that DOE consider technology alternatives that reuse spent fuel, making spent fuel a resource as other countries are doing. A commentor asserts that DOE should use a phased approach to all alternative technologies. Another commentor believes that DOE should also consider a fusion facility in the PEIS.

Response: *The option of using DOE existing reactors or accelerators was evaluated but dismissed from further consideration for the reasons stated in section 3.1.3. DOE has experience with the operation of many reactor types, and considers that those included in this PEIS represent a reasonable range of technologies. DOE has not only considered putting the K-Reactor back online but had an extensive and costly effort underway in the early 90s to restart the K-Reactor. Unfortunately, the age of this facility and the magnitude of the environmental and safety upgrades required for this task proved too great and in 1994, the K-Reactor was placed in a "cold stand-by" status with no provision for restart.*

13.00.18 One commentor indicates that on page 4-462, the PEIS states that spent light water reactor mixed-oxide fuel assemblies would have greater decay heat than spent uranium fuel assemblies. It is then assumed that the same is true for the gas-cooled reactor, according to the commentor. The commentor charges that this assumption is not correct. The commentor states that the decay heat of plutonium spent fuel in the gas-cooled reactor is less than that of the uranium spent fuel from the tritium production-only design. Accordingly, notes the commentor, storage density in the spent fuel storage area is not adversely affected. The commentor also notes that references to wet storage of the gas-cooled reactor spent fuel should be deleted since MHTGR spent fuel is stored in dry facilities at all times. It should also be recognized, states the commentor, that, in general, the gas-cooled reactor spent fuel volumetric decay heat generation rate is several orders of magnitude less than that for light water reactor spent fuel which has a much higher power density. Therefore, the commentor states that even though the volume of spent fuel generated by two gas turbine-modular helium reactors is as much as a factor of 20 larger than that of a Small ALWR, this does not adversely affect onsite spent fuel. These parameters are governed by thermal heat load rather than by volume of the spent fuel, according to the commentor. The commentor asserts that the heat loads allow only about four canisters per acre for light water reactor spent fuel whereas about 77 canisters per acre are allowed for gas turbine-modular helium reactor spent fuel. Thus, the commentor concludes that the geologic repository area required for disposal of spent fuel from three MHTGR modules or two gas turbine-modular helium reactor modules is about half that required for disposal of spent fuel from one Small ALWR.

Another commentor notes that on page A-100 the cyclic tritium production campaigns would affect the light water reactor fuel cycle such that the level of destruction of plutonium in the multipurpose application would be reduced. Thus, the discharged fuel would not meet the spent fuel standard. The commentor also notes in the discussion of the MHTGR and gas turbine-modular helium reactor on page A-101 that the level of plutonium destruction achieved for the multipurpose plant is in excess of the spent fuel standard. Another commentor states that discussion of the System 80+ design describes the need to derate the plant in various modes of operation as if it were a virtue by referring to how it maintains "flexibility" in its power output. The commentor feels that this is, in fact, a limitation of the ALWR as a multipurpose plant - one from which the MHTGR does not suffer. In addition, the commentor feels that the amount of tritium produced in an ALWR when concurrently using MOX fuel should be addressed, as well as the potential safety issues that are associated with that fuel configuration that require derating the plant.

Response: *No technical criteria for disposal of spent fuel have been firmly established for the Yucca Mountain repository. A key technical criteria that is expected to bear significantly on the ultimate amount of volume that a given technology's spent fuel will take up is the repository loading strategy based on areal thermal loading limits. Thus, whether the spent fuel from an MHTGR would take up a greater volume of repository space than the spent fuel from an ALWR or HWR would depend on whether a "hot", "intermediate", or "cold" areal thermal limit were established for the repository areal thermal loading limit.*

13.00.19 In reference to volume I, page 3-6, use of existing department of energy reactors or accelerators, one commentor states that it is not reasonable to reject the use of DOE's existing reactors because none of the operating facilities is large enough to produce the amount of tritium required to support the projected stockpile requirements, they are currently committed to existing programs, and are reaching the end of their design life. First, states the commentor, while none of the reactors alone may be able to meet the projected tritium demand, together it may be feasible. In fact, the commentor believes it would seem particularly strategic from a defense standpoint to have several small producers, at widely scattered locations, rather than a single, large producer. Second, states the commentor, since these reactors are reaching the end of their design life, one can assume that their commitment to existing programs is also coming to an end. The commentor states that for that reason, modifying and upgrading these reactors for a new mission as tritium producers sounds like a reasonable alternative. Not only would DOE be reusing existing facilities rather than adding them to a growing D&D stockpile, but it would be possible to delay the development and expense of an entirely new facility, according to the commentor. Such an option may be desirable given the uncertainties regarding how much tritium will be needed. Also, given the changing international scene with respect to nonproliferation, this alternative may be attractive because it does not send the message that the United States is building new nuclear defense capabilities, according to the commentor.

Another commentor asks what fraction of the goal quantity discussed on page S-9, paragraph 4, could all four of the existing DOE reactors together produce. The commentor additionally asks: how long their commitments to existing programs are; and, if the fast flux test facility were modified, what its life expectancy would be. Another commentor also references the fast flux test facility and suggests that the Draft PEIS is in error when it states that no source of a new tritium supply is available.

Response: *The option of using DOE existing reactors or accelerators was evaluated but dismissed from further consideration for the reasons stated in section 3.1.3. DOE has experience with the operation of many reactor types, and considers that those included in this PEIS represent a reasonable range of technologies.*

13.00.20 Commentors suggest that DOE consider in the PEIS a no-weapons or fewer-weapons alternative and the consequences this would have on tritium needs. In addition, some commentors believe that tritium is not necessary for the functioning of nuclear weapons and suggest that DOE analyze weapons that do not use tritium. The commentors believe that tritium could be phased out and weapons made from other materials such as the plutonium stockpile.

Response: *The alternative of redesigning weapons to require less or no tritium was considered but eliminated from detailed study. This is explained in section 3.1.3 of the PEIS. Also, as discussed in chapter 2, the need for new tritium supply is based on the 1994* Nuclear Weapons Stockpile Plan, *which projects a need for tritium by approximately 2011 based on a START II level stockpile size of approximately 3,500 accountable weapons. A smaller than START II stockpile size would extend the need date for new tritium beyond approximately 2011. If the need date for new tritium were significantly later than 2011, DOE would not have a proposal for a new tritium supply, and would not be preparing a PEIS for Tritium Supply and Recycling.*

13.00.21 The commentor notes that several of the reactor alternatives for which accident analyses are presented in appendix F of the PEIS are under review by NRC for design certification under 10 CFR Part 52. The commentor adds that this fact gives NRC both "special expertise" in the safety aspects of the technology presented in the PEIS and jurisdiction over outside analyses that could impact the course of current deliberations on certification. The commentor suggests that NRC be asked to review the adequacy of the material presented characterizing the environmental impacts (PEIS volume II, appendices A, E, and F) of reactors currently being reviewed for licensing actions to assure consistency. The commentor notes that NRC also has "special expertise" in the safety review of gas-cooled reactors. NRC review of the accident analysis methodology used by DOE is also appropriate because of the NRC's "special expertise" in reviewing vendor methodologies and because NRC's independence can assist DOE in satisfying the above-cited regulatory requirement for ensuring "professional integrity." The commentor adds that NRC's expertise and recent experience in looking at different types of advanced reactors can also aid DOE in identifying and assessing the legitimacy of "safety issues" for the APT. Another commentor feels that the licensing of the APT by NRC should be assumed as the basis for the PEIS and discussions held with NRC to establish a licensing design-basis for the APT.

Response: *NRC has been provided with copies of this document for review as suggested. Meetings were held with NRC to discuss the potential uses of commercial reactors, licensing implications, potential external oversight and nuclear safety related issues.*

13.00.22 According to one commentor, the discussion of decreasing tritium production efficiency of the MHTGR in the multipurpose mode neglects the fact that the tritium production efficiency of the gas-cooled reactor is far better than that of other candidate reactor technologies. The commentor notes that in the PEIS, the MHTGR has the lowest overall environmental impacts of any of the production reactor options under consideration. The commentor is of the opinion that the MHTGR is the most efficient tritium production reactor under consideration. The commentor notes that in the multipurpose application, the total installed thermal capacity required to produce tritium at 3/8 goal while dispositioning plutonium is 3,000 to 4,800 MWt, which is comparable to the installed capacity required for the ALWR options. If one compares the multipurpose reactor options with the combined impacts of the tritium production and plutonium disposition plants, it is clear that the total installed capacity required for the multipurpose plant is lower for the MHTGR and is about equal for the ALWR, states the commentor.

The commentor notes that the environmental impacts presented on page 4-460 for the multipurpose gas-cooled reactor should be compared with those for other multipurpose reactor technologies and with those for the combined individual tritium production and plutonium disposition missions. Instead, the commentor feels that the presentation provided in the PEIS limits its focus to the relative number of modules required for tritium production only versus multipurpose while providing no perspective as to whether these environmental impacts are large or small compared to other options. One commentor states that DOE must plan in the design of its tritium production reactor the capability to burn cores fueled by both uranium and plutonium. Another commentor states that plutonium should not be considered a resource, as it is in the PEIS, since its disposal is in question. Another commentor inquires whether plutonium burning cycles have been explored as alternatives (as in France and Japan).

Response: *The decision on the tritium supply technology will not be identified until the ROD has been published after this PEIS, although section 3.7 identifies the preferred alternative. Three of the technologies analyzed for tritium production in the PEIS have the capability to burn plutonium (ALWR, MHTGR and commercial reactors). The potential use of these technologies for plutonium disposition has been analyzed in the PEIS. The PEIS does not judge large or small impacts. Nonetheless, the number of modules does have impacts and the analysis focused on those impacts.*

13.00.23 The commentor feels that DOE should reconsider having the current schematic drawings in the PEIS reflect New Production Reactor designs.

Response: *The most current available data are being used for the tritium supply and recycling facilities. The specific design-basis for each technology is listed in section A.2.*

13.00.24 The commentor notes that page 4-447 of the PEIS states, "In fact, the gas-cooled reactor technology developer believes that it may not be feasible to use the 350 MWt MHTGR design as a multipurpose reactor." According to the commentor, this statement is absolutely false and must be deleted. The commentor states that the gas-cooled reactor developer has never said that the 350 MWt plant could not be used in a multipurpose application. The gas-cooled reactor developer has not evaluated the 350 MWt plant for multipurpose use, but believes that the machine could perform in this capacity. However, the commentor notes that the gas-cooled reactor developer believes that the 600 MWt gas turbine-modular helium reactor is the most cost-effective multipurpose gas-cooled reactor design and has the best environmental impact characteristics of potential multipurpose options.

Response: *The statement in question has been deleted in the Final PEIS.*

13.00.25 One commentor opposes allowing the tritium production facility to be privately owned. However, if that is the decision, the commentor proposes that DOE consider building a second tritium facility to serve as a backup and ensure national defense in the event the privately operated facility could not be maintained. Either a light water reactor, which could generate power, or an accelerator, which could perform basic research, should be chosen as a secondary government-owned tritium production source, according to the commentor.

Response: *DOE considered private ownership and operation of a tritium supply facility as a potential alternative in the PEIS. This would be considered by the decision maker in the same manner as the other alternatives taking into account cost, technical, and environmental issues. The cost associated with private ownership is considered in the Technical Reference Report. As indicated in section 3.1.1 of the PEIS, the envisioned impacts would be the same regardless of ownership. The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to serve as the primary source of tritium. The other alternative, if feasible, would be developed as a back-up tritium source.*

13.00.26 The commentor states that the baseline tritium requirements are presented in a misleading manner. The discussion in chapter 3 of tritium supply and recycling alternatives is inadequate and potentially misleading to those without a detailed prior knowledge of what is being discussed. The commentor believes that it is bizarre and misleading to define the "baseline requirement" as being composed of a "steady-state" requirement (for an unknown number of weapons) to make up for the tritium lost through natural decay and a "surge requirement" to replenish within 5 years the loss of a tritium reserve stockpile to some unspecified "emergency" or "contingency." According to the commentor, this definition stands logic on its head. The "baseline" requirement should be defined as that quantity of tritium needed to offset tritium decay in a given stockpile, and any "surge requirements" should be considered as excursions above this "baseline" requirement.

In addition, the commentor notes that the current explanation of the "surge requirement" begs the question of how and why this reserve would be depleted, and why it was established in the first place. The commentor feels that without a comprehensive justification of why an actual "reserve" - rather than a reliable contingency production option - makes sense for an inherently decaying asset such as tritium, and of the specific contingencies under which such a reserve might be used in weapons - there can be no basis for the so-called "50 percent of baseline" requirement to replenish this reserve within 5 years. This whole analysis is "built on intellectual quicksand," and requires a major rework, according to the commentor.

Response: *The baseline requirement is clearly defined in section 3.1 as the sum of the steady-state requirement necessary to offset decay in the projected START II level of weapons stockpile and the surge requirement necessary to replenish the strategic reserve of tritium. These requirements come from the Nuclear Weapons Stockpile Memorandum as described in section 1.4.1. As described in chapter 2, the strategic reserve is based on the tritium needed to support the stockpile for 5 years in the event of lack of production. The fact that this amount is 50 percent of the baseline for this stockpile level is coincidental. The PEIS evaluates the environmental impacts of producing the steady-state requirement and the steady-state plus strategic reserve requirement. How and why the strategic reserve might be depleted is beyond the scope of the PEIS.*

13.00.27 The commentor believes that the PEIS should address and evaluate the environmental impact associated with energy requirements of each technology and the respective energy output of each technology. The selected technology should be flexible in terms of its ability to produce a wide range of radioisotopes, according to the commentor. The commentor also supports the proven technology of nuclear fission as opposed to an accelerator that may or may not produce incidental tritium.

Response: *Energy output and the needs of each technology at the candidate sites are evaluated in the PEIS. Sections 4.2.2.2, 4.2.3.2; 4.3.2.2, 4.3.3.2; 4.4.2.2, 4.4.3.2; 4.5.2.2, 4.5.3.2; and 4.6.2.2, 4.6.3.2 address those issues for INEL, NTS, ORR, Pantex, and SRS respectively.*

13.00.28 The commentor believes that the current draft mis-states, or over-states, the proliferation significance of the United States control rod production of tritium in civil reactors. The commentor feels that two points are relevant here. First, from a proliferation perspective, the commentor states that only those countries that already have nuclear weapons, and are seeking to advance to deuterium-tritium boosted and two-stage thermonuclear weapons, would be in a position to point to the DOE's action and possibly seek to take advantage of it to justify a similar program. For the last two decades, the commentor suggests that these countries have been India, Pakistan and Israel - i.e., countries outside of the Non-Proliferation Treaty with significant nuclear weapons capabilities. But Israel and Pakistan have no "civil" nuclear program to speak of, and India already uses its "civil" reactor to produce unsafeguarded plutonium for weapons. Second, the commentor notes that should they so desire, any non-weapons state party to the Non-Proliferation Treaty could legally produce tritium in safeguarded civil reactors, or in unsafeguarded accelerators, as long as no fissionable materials were present.

The commentor notes that today for example, there is no legal or other barrier to Japanese or German production of tritium in safeguarded civil reactors for their fusion energy research programs, should they choose to do so. Since Japan is already producing and separating tons of weapon-usable plutonium in its safeguarded civil nuclear facilities - including weapon-grade plutonium from breeder reactor blankets - the production of tritium in safeguarded civil nuclear facilities alters the proliferation picture very little, if at all. At most, one could logically argue that any tritium production, extraction, purification, or utilization in non-weapon states should occur under safeguards. Unless one is willing to bar the production of plutonium in "civil" facilities, it makes no sense to arbitrarily apply a higher nonproliferation standard to production of tritium - a less strategically significant material - in "civil" reactors, particularly when the penalty for doing so could well amount to several billion dollars in additional spending on nuclear weapons - a fact that is, itself, not devoid of political significance for nonproliferation.

Response: *A more detailed and comprehensive analysis of the use of an existing light water reactor has been added to the PEIS. Among other issues, the report addresses potential nonproliferation issues, and is available in DOE reading rooms. The purchase of irradiation services from commercial reactors has been added as an alternative to the PEIS. Indeed, the preferred alternative in section 3.7 includes better investigation of the use of commercial reactors.*

13.00.29 The commentor states that the triple play reactor, while sounding interesting, causes extra complications because of plutonium fuel fabrication and multiple objectives. If commercial power implementation of advanced light water reactors seemed imminent, this conclusion could be reversed.

Response: *The PEIS assesses the environmental impacts of the multipurpose reactor, but does not make technical judgements.*

13.00.30 The commentor states that the draft DOE report to Congress on multipurpose light water reactors, dated January 31, 1995, makes it clear that the degree of plutonium destruction and rate of material processing achieved by the multipurpose light water reactor are lower than those of the mixed-oxide plutonium burning version of the light water reactor, unless the tritium targets are designed and tested to higher levels of exposure than have been achieved to date, or the lithium content of the target rods is reduced to limit the internal pressure in the target rods to that tested to date. In the latter case, the commentor notes that the rate of tritium production per target rod is reduced, and the installed thermal capacity required to reach 3/8 goal quantity increased. This information should be included in the PEIS, according to the commentor.

Response: *Consistent with the National Academy of Sciences' recommendation, the Office of Fissile Materials Disposition has determined that there is no advantage to burning plutonium beyond the spent fuel standard. The Office of Fissile Materials Disposition does not intend to evaluate options for the destruction of plutonium beyond the spent fuel standard. Thus, this PEIS only addresses alternatives which achieve the spent fuel standard. The Office of Fissile Materials Disposition is preparing a PEIS which will address the issue of how to dispose of plutonium that is excess to nuclear weapons.*

13.00.31 One commentor states that, regardless of large DOE outlays over the past 10 years ($650 million for MHTGR and $425 million for ALWR), no company is willing to move ahead with either technology without sizable government subsidy. A privately financed multipurpose reactor should be considered, according to another commentor, since it would require minimum government funding, with charges against the United States only when tritium was produced. The commentor adds that APT construction, however, would require $2.5 to $3 billion from the United States treasury at a time of budget austerity.

Response: *The PEIS discusses the environmental impacts of constructing and operating alternatives for tritium supply, whether DOE-owned or privately financed. Costs analyses are included in the Technical Reference Reports available in DOE reading rooms.*

13.00.32 The commentor states that the MHTGR should not be considered due to the amount of spent fuel it generates, the APT is too unreliable to be considered, and the HWR produces too much low-level waste.

Response: *The reliability of each of the technologies is evaluated in a separate Technical Reference Report which is available in DOE reading rooms. The impact of spent fuel and radioactive waste is given in the PEIS and is addressed in the Technical Reference Report with costs and technical reports. The impacts will be included in the decision making process.*

13.00.33 The commentors state that some comments in the PEIS are biased towards certain technologies and sites. DOE must examine all options with equal scrutiny, asserts one commentor. Another commentor states that the treatment of the alternative concepts is obviously imbalanced, as revealed by the selection of a "low-to-moderate" consequence radiological accident for the MHTGR that includes multiple failures, whereas single failures were considered for the other reactor concepts, and an administrative violation is presented for the accelerators. A more balanced treatment of all concepts should be presented, states the commentor, where single equipment failures are considered for all concepts.

Response: *The assumptions and analysis used to predict the impacts due to design and beyond design (severe) accidents of the tritium supply technologies has been reconsidered and re-analyzed as appropriate based on public review comments on the Draft PEIS. The new results reported in appendix F and in sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9 are based on revised assumptions, new methodology for accident spectrum analyzed, and new data, and present a more balanced treatment of all potential technologies.*

13.00.34 One commentor indicates concern about how the technical evaluations will be conducted in terms of selecting the particular technology for the tritium supply production facilities, and particular concern about how new technology will be evaluated versus proven technology, and if weighting factors will be applied. Another commentor refers to page 3-10, section 3.2.3, and notes that if the ROD will be based on the possibility of electricity production and/or plutonium burning, then this document should explain the relative importance of these items and the weighing factors that will be used to reach the final decision.

Response: *Many of the technical, cost, and schedule issues which will be evaluated by the decision maker are included in the Technical Reference Report available in DOE reading rooms. Such issues will be explained in the ROD.*

13.00.35 In reference to volume II, page A-99, one commentor states that National Academy of Sciences' comments about combining the plutonium disposition and tritium production missions were taken out of context and not adequately explained. The commentor notes that the Draft PEIS refers to statements in the National Academy of Sciences' report which questions the desirability of combining the disposition of excess weapons plutonium with tritium production in the same reactor facility. However, according to the commentor, the National Academy of Sciences' report qualified its views by noting that "tritium production was not part of the committee's charge, and it has not examined alternatives for this purpose in detail." The commentor states that it also assumed that "tritium production capacity will be easier to provide than plutonium disposition capacity." Yet, the commentor asserts that DOE is known to be leaning toward a tritium production technology that will cost taxpayers $20 billion over its lifetime. The commentor states that this would appear to negate the National Academy of Sciences' committee assumption that tritium production will be easier than plutonium disposition. Another commentor states that the National Academy of Sciences' comment relative to cost savings stemmed from a concern about quickly initiating the plutonium mission. According to the commentor, the assumption of significant savings from combining the missions is proving to be incorrect.

In fact, another commentor suggests that National Academy of Sciences' conclusions on the linkage between tritium production and plutonium disposition should be deleted. The commentor states that the National Academy of Sciences reached its conclusions without regard to the limitations that are faced today in setting the Federal budget. In addition, the commentor further notes that the National Academy of Sciences also made statements regarding the relative costs of multipurpose versus single purpose options without conducting detailed financial analyses to support those statements. The commentor claims that detailed evaluations have shown the National Academy of Sciences' conclusions regarding economics to be incorrect, both with regard to the merits of multipurpose options and with regard to the merits of exceeding the spent fuel standard for plutonium dispositions.

Response: *The National Academy of Sciences' report reference was provided for reader information and was not intended to subvert the National Academy of Sciences' conclusion and findings. The statement does not affect the impacts presented in the PEIS.*

13.00.36 The commentor states that the PEIS should include analysis of reasonable alternatives which may conflict or differ from current Federal policies.

Response: *A range of reasonable alternatives has been evaluated in the PEIS. In addition, the purchase of irradiation services from a commercial reactor is now being considered as a reasonable alternative in the Final PEIS. A range of reasonable alternatives was considered. Those not considered are explained in section 3.1.3 of the PEIS.*

13.00.37 One commentor favors any of the reactor options over the accelerator at SRS because of its unproven technology; belief that the risk that an accelerator may not work after it is built outweighs other considerations and could drastically affect the Nation's nuclear deterrence. The commentor also believes the environmental track record of the Nation's reactors has been stellar and understands that a primary reason for pursuing the APT over a reactor technology is its perceived environmental advantage. In addition, the commentor also states that the United States should refuse to continue taking seriously the minority of extremists who value environmental purity above this Nation's peace and security. Another commentor states that the reactor technology is proven while the APT is not. In addition, one commentor believes that there is no reason to continue research and development on the APT when reactors are proven to be reliable. Another commentor cites the advantage of the knowledgeable labor force associated with reactor technologies. One commentor suggests that the APT be studied on the side and a reactor should be used for tritium production.

Response: *All technologies have been evaluated equally in the PEIS. All relevant factors will be considered in the decision making process. The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to serve as the primary source of tritium. The other alternative, if feasible, would be developed as a back-up tritium source. SRS has been selected as the preferred site, if an accelerator is ultimately selected as the primary production option.*

13.00.38 Commentors believe that each of the reactor technologies is sound, can be made environmentally safe, and would bring a strong power supply to the area. In addition, commentors believe that the APT will be environmentally safe. The commentors also feel that DOE should look at the environmental effects resulting from the reactors' radioactive cooling mechanism.

Response: *DOE agrees with the commentors statement that all proposed tritium supply technologies can be designed, constructed, and operated in an environmentally safe manner. DOE is committed to see that the selected technology would meet all applicable safety and environmental regulations and to obtain all necessary permits for construction and operation. Before a selected technology is constructed, further NEPA review is required which will identify the site-specific impacts of the project in much more detail.*

The effects of thermal release into the atmosphere from a large power plant have not been accurately defined or studied. The NRC, in the Three Mile Island Nuclear Power Plant EIS (NUREG-0112), concluded that major weather modifications were not expected from thermal releases from the plant's cooling tower. The NRC, also in the Sequoia Nuclear Power Plant EIS (Docket 50-327), predicted that a dry cooling tower (without evaporation) would have potential environmental advantages over the evaporative (wet) cooling tower because a dry cooling tower has no evaporation of water, no vapor plumes, no drift, and therefore no fogging and icing that normally may occur with a wet tower. However, more heat energy would be ejected to the atmosphere from a dry cooling tower. The impact of waste heat on the atmosphere would be a function of the heat flux density of the particular tower and the area over which the heat is discharged. An analysis of the effects of thermal releases into the atmosphere from the proposed tritium supply technologies was not performed because of the technologies' non site-specific designs and unknown cooling system design. In addition, no literature related to this topic was found in the National Technical Information Service and other open publications. The 1974 NRC document (NUREG-0112) did mention that Pacific Northwest Laboratory was conducting a general study at that time addressing possible weather modifications resulting from the operation of power plants. No information on the study or possible conclusions was found in the follow-up search.

13.00.39 In reference to tritium recycling, the commentors state that tritium recycling at any facility other than SRS will require construction of new facilities. At SRS the current facilities would require upgrading but would impact no additional acreage. The commentors therefore conclude that pollution prevention and cost considerations would, presumably, be substantially reduced by the use of this facility for recycling.

Response: *The reduced environmental impacts of utilizing the existing recycling facility at SRS versus building new recycling facilities at the other sites is taken into account in the PEIS and will be considered in the final decision. The preferred alternative identified in section 3.7 indicates that the "recycling" will remain at SRS.*

13.00.40 The commentors cite page 2-2 and request an explanation for the decline in tritium requirements until approximately 2011, as shown in figure 2.1-1. In addition, one commentor notes that the amount in the reserve, as a percent of the total supply, seems to be increasing over time and suggests the reasons for this be explained.

Response: *The decline in the tritium requirements is a result of the declining nuclear weapons stockpile. The reserve amount is based on the refill requirements of the weapons in the stockpile and not on a percentage of the total supply. The commentor is correct, however, the graph shown is schematic and not drawn to scale. The reserve is in direct proportion to the number of weapons in the stockpile.*

13.00.41 The commentor states that all reactor technologies, except the APT, will generate spent nuclear fuel, which is not accounted for in DOE's current inventory projections. In addition, DOE is in the process of deciding where and how its current and projected inventory will be stored. The commentor states that this tritium PEIS must: acknowledge that the proposed action will increase DOE's inventory of spent nuclear fuel above the amounts estimated in the Spent Nuclear Fuel and INEL Environmental Restoration and Waste Management Program PEIS; explain that the spent nuclear fuel from tritium production may not be stored at the reactor site; and take into account impacts associated with transporting the spent nuclear fuel to the designated storage site.

Response: *Spent nuclear fuel would be stored at the reactor site for the life of the project until a repository is available. The ROD for the Spent Nuclear Fuel and INEL Environmental Restoration and Waste Management Program PEIS only determined what the interim storage location for existing spent nuclear fuel would be until a repository was available for ultimate disposition. DOE does not believe it is equitable or reasonable to move tritium supply program spent nuclear fuel on an interim basis.*

13.00.42 The commentor believes that DOE should consider using the coolant (water) from the tritium supply and recycling facility in the steam generation plant at Pantex. This could potentially save fuel, according to the commentor.

Response: *This analysis would be appropriately covered in a site-specific tiered NEPA EIS if Pantex were chosen as the tritium supply and recycling site.*

13.00.43 In reference to page 1-3, section 1.4.2, the commentor requests that the PEIS discuss why the Mound Plant would not be suitable for the tritium recycling work. Mound was the best tritium site in all of the DOE, according to the commentor, and the capacity of the weapons production and recycling facilities is very close to that needed now.

Response: *Termination of the Defense Programs weapons production missions at the Mound Plant was the result of decisions following the Nonnuclear Consolidation Environmental Assessment (DOE/EA-0792, June 1993). It was not considered as a site for the tritium supply mission, and, as such, would not be a candidate for tritium recycling since recycling would either be collocated with the new tritium supply facility or would remain at the current facilities at SRS.*

13.00.44 The commentor refers to the following statement in volume I of the PEIS, page 4-448, second column, first paragraph, next to last sentence: "For a multipurpose reactor, the fuel fabrication portion would also be required." According to the commentor, the statement is not correct. The commentor observes that it applies to any "reactor-based disposition technology, not just the multipurpose reactor."

Response: *This statement indicates that the multipurpose reactor has the same requirement as any reactor-based technology for a fuel fabrication facility. The difference between a multipurpose reactor and the other uranium-fueled reactors considered is that the fuel fabrication facility for a multipurpose reactor would be newly built and collocated with the reactor, whereas, the fuel fabrication facility for a light water reactor, which does not burn plutonium, could be an existing commercial facility.*

13.00.45 The commentor states that in volume I, page 4-466, first column, first paragraph, pressurized water reactors are implied as more adaptable than boiling water reactors for tritium production. This appears to the commentor to be a bias. In addition, this statement needs to be fully supported with more and complete information. Otherwise, it should be deleted. The commentor feels that boiling water reactor/advanced boiling water reactors, compared to ALWR, can compete in many different areas such as performance.

Response: *While both pressurized water reactors and boiling water reactors could theoretically be modified to produce tritium, pressurized water reactors use burnable poison rods which can be replaced by target rods matching in form, fit, and function, which facilitates their adaptation to the tritium production mission. In addition, the prototype tritium target rods were designed and qualified for pressurized water reactor operating environments. The boiling water reactor design uses a distributed burnable poison, Gadolinium, to shape the axial and radial neutron flux distributions. Consequently, there are no burnable poison rod locations in the boiling water reactor design. For these reasons, it was concluded in feasibility studies that pressurized water reactors are more readily adaptable than boiling water reactors to the requirements of tritium production by DOE tritium target rod irradiation.*

13.00.46 The commentor states that reactor selection should be based on a comparison of all relevant considerations not on just one criterion such as adaptability. According to the commentor such items as performance-meeting mission goals; impact on secondary goals; system/plant changes; operational changes; safety issues-accident behavior and ability to obtain a license; environmental impact; schedule; and cost should also be considered.

Response: *The tritium supply technology decision will be based on potential environmental impacts discussed in this PEIS and other information developed for the program on costs, technical risks, and schedule risks presented in separate reports, and policy considerations. Section 3.7 of the PEIS identifies DOE's preferred alternative, and was selected on numerous criteria, not adaptability alone. The analyses on cost, technical risk, and schedule risks are included in the Technical Reference Report available in DOE reading rooms.*

13.00.47 In reference to volume I, summary, page S-5, the commentor requests DOE to provide information on the source and amounts of plutonium that would be processed as reactor fuel and how criticality and transportation issues would affect such an operation.

Response: *Appentix section A.3.2 discusses how much plutonium can be processed. Section 4.8.3.1 discusses the intersite transportation of plutonium for the multipurpose reactor.*

13.00.48 In reference to volume II, summary, page S-8, the commentor requests that DOE provide in "alternatives considered but eliminated from detailed study" an analysis of using reactors of United States naval vessels to produce the required tritium. The commentor asks how much tritium could be produced without modifying refueling schedules and/or increasing spent fuel production.

Response: *Over the years, the Naval Reactor Program has developed a sophisticated nuclear propulsion system specifically designed for the demanding requirements of the submarine environment. This system involves a number of geographically dispersed support facilities specifically designed to support this unique system. The entire system, however, is very small in comparison to the type of facility necessary to supply the tritium required for the Nation's nuclear weapons. Specifics as to the size, capabilities, and other technical information associated with the Naval Reactor Program is extremely sensitive and cannot be released for public review. At the same time, it would be unwise to place additional missions on a system specifically designed for such an important national security mission as that of the Naval Propulsion Program.*

13.00.49 The commentor feels that the effect of tritium's decay on United States nuclear deterrent capability is exaggerated. The commentor notes that page 2-2 of the Draft PEIS states that once the "strategic tritium reserve" is used up - in "approximately 2016" according to figure 2.2-1 - the "nuclear deterrent capability would degrade because the weapons in the stockpile would not be capable of functioning as designed. Eventually, the nuclear deterrent would be lost." The commentor feels that this statement is open to serious misinterpretation. It wrongly appears to equate the number of deuterium-tritium boosted weapons in the United States stockpile with the existence of a United States "nuclear deterrent capability," which would clearly persist even without boosted weapons in the stockpile. Without additional tritium production, the performance of some (not all) weapons would begin to degrade in subsequent years and they would have to be removed from the operational stockpile - which weapons are removed would be a matter of choice - and a sizable number (e.g., 500 to 1,000) of high priority deuterium-tritium boosted weapons could be retained in the stockpile for several more decades using tritium recycled from retired weapons.

The commentor believes that during this period, which would last for several decades, the United States could, if required, produce conservatively designed, unboosted gun-type and implosion-type pure fission weapons that would assure the persistence of a "nuclear deterrent capability" with or without testing for an indefinite period. Even two-stage thermonuclear weapons could be manufactured using unboosted primary stages, and a smaller number of the resulting heavier warheads could still be carried by bombers and ballistic missiles, originally designed to carry 8 to 24 of the more efficient boosted weapons. The commentor is not aware of any technical experts who would dispute the technical feasibility of this course of action.

Response: *The statement in the PEIS that, "Once the strategic tritium reserve was depleted, the nuclear deterrent capability would degrade because the weapons in the stockpile would not be capable of functioning as designed," is true. First, all weapons in the stockpile require the proper amount of tritium in order to function as designed. Second, the nuclear deterrent is based upon maintaining the stockpile as directed by the President in the Nuclear Weapons Stockpile Memorandum and the* Nuclear Weapons Stockpile Plan. *Thus, without the proper amount of tritium, all weapons in the stockpile would not be capable of functioning as designed, the Nuclear Weapons Stockpile Memorandum and* Nuclear Weapons Stockpile Plan *requirements would not be met, and the nuclear deterrent would degrade. As further stated in the PEIS, eventually the nuclear deterrent would be lost. The commentor's suggestion that unilateral stockpile reductions could still maintain an adequate nuclear deterrent is beyond the scope of the PEIS analysis. However, DOE considers such a course unreasonable because it would not satisfy the DOE's requirements under the* Atomic Energy Act, *and would not satisfy the purpose of the proposed action. The alternative of redesigning weapons to require less or no tritium was evaluated but dismissed from further consideration for the reasons stated in section 3.1.3.*

13.00.50 In reference to volume I, chapter 4, section 4.10.1, page 4-469, 2nd column, 1st paragraph, the commentor requests an explanation for the reason for the increase in spent nuclear fuel production. The commentor also asks can reactors that produce 245 percent spent nuclear fuel be reconfigured or engineered to produce tritium which maintains normal (100 percent) spent nuclear fuel production.

Response: *Section 4.10.3.2 explains the reason for the increase in spent nuclear fuel production: more frequent refueling operations and the segmenting of fuel assemblies could result in an increase in spent nuclear fuel volume. The goal is to produce tritium, not reduce spent nuclear fuel. Producing tritium results in increased generation of spent nuclear fuel due to more frequent refueling. In order to produce required amounts with current designs, the refueling indicated is required. Further analyses would be conducted in site-specific tiered NEPA documents to determine the measures which can be used to reduce spent nuclear fuel, maximizing tritium production, and minimizing costs.*

13.00.51 The commentor asks why, based on the information in the environmental impacts section on page S-11, the calculated electric power consumption for the APT at the various sites is lowest at SRS.

Response: *The power requirement for the APT is the same at all sites. The discussion in question does not state what the power requirements of the various technologies are but how much the current power requirement of the site would be exceeded.*

13.00.52 The commentor refers to volume I, page 3-2, column 2, paragraph 1, and remarks that the document "Tritium Supply and Recycling Plants Technical Reference Report" is not identified in the same manner as other references. The commentor asks if the document is reference FDI 1995a.

Response: *The commentor is correct, the document is reference FDI 1995a and it is now available in DOE reading rooms.*

13.00.53 One commentor referring to volume I, page 3-12, column 1, paragraph 3, asks why the Hanford Site was dropped as a candidate site for future Complex missions. The commentor notes that page 1-10 explains that Hanford was eliminated because nuclear weapons functions at that site have been terminated, while page 3-12 states that Hanford is now dedicated to environmental and waste management activities. When and why was this decided, the commentor asks, and who made the decision. Another commentor asks if NEPA compliance was ever completed for this policy action and then cites that INEL currently has an environmental and waste management mission. The commentor adds that it is not part of the Complex (page 1-4). If this PEIS will provide NEPA compliance to locate defense-related activities at INEL, then the commentor believes it should also evaluate the suitability of Hanford. The commentor states that it is not appropriate to eliminate a reasonable alternative from an EIS simply because it does not fit with current agency policy. The commentor believes consideration of all reasonable alternatives is particularly important at the programmatic level.

Response: *Section 3.3.1 discusses why Hanford was eliminated. The Hanford site is dedicated to environmental restoration and all other missions have been removed. INEL has some restoration activities like all other sites; however, the INEL site has missions other than environmental management. This decision was announced by the Secretary of Energy in the* Federal Register *at 58 FR 39528 on July 23, 1993.*

13.00.54 The commentor states that all isotopes of hydrogen, including tritium, are very diffusive. The diffusivity of hydrogen increases dramatically as the temperature increases. At room temperature, tritium diffuses far into the stainless steel wall of a tank or pressure vessel. Therefore, it is very difficult to envision how a target could be clad with a material that would contain the tritium within the target. Any tritium that diffuses through the target cladding and into the coolant, goes from being product to being radioactive waste. The commentor concludes that the PEIS should address this subject before it concludes that power generation by a tritium production reactor is feasible.

Response: *The commentor is correct in that all isotopes of hydrogen are very diffusive and that this varies directly with temperature. However, there are methods to reduce the losses of tritium in the target rods such as coating the interior of the rod with a "getter" material which adsorbs and retains the tritium. DOE has extensive experience in this technology for the HWR temperatures and is currently involved in a research program to develop suitable target rods that would retain tritium at the higher temperatures that would be present in the ALWR technology. In any event, some tritium would still escape under normal operations and these releases are addressed in the PEIS.*

13.00.55 Commentors express opposition to the construction of a multipurpose or "triple play" reactor, capable of producing tritium, burning plutonium, and generating revenues through the sale of electric power. According to the commentor, such a reactor would be counterproductive in at least two ways: it would violate United States policy that commercial reactors not be utilized for military purposes including tritium production, and using plutonium as fuel is more dangerous and expensive than using uranium for fuel. Another commentor feels that the HWR technology is better than the proposed "triple play" reactor. Other commentors believe that the "triple play" is risky because the focus would not be on tritium production and the additional complexity of combining tritium production with plutonium disposition activities would lead to operational tradeoffs. Such tradeoffs could decrease the efficiency of the reactor in performing its functions. One commentor also notes that electricity currently does not need to be generated in greater capacity because of increases in conservation and alternative energy sources. Finally, another commentor suggests the report Multi-Fallacy reactors be considered in the PEIS.

Response: The Atomic Energy Act *of 1954 (as amended) provides for the generation and sale of electrical power incident to the operation of a production facility. It is reasonably foreseeable that electricity generated by an ALWR, MHTGR or commercial reactor incident to the production of tritium would be sold, as allowed by Section 44 of the* Atomic Energy Act. *Thus, the PEIS includes an analysis of these potential environmental impacts. Because an ALWR or MHTGR could also be used to "burn" plutonium, these environmental impacts are also addressed in the PEIS. Regarding the policy of the United States to maintain separate military and commercial nuclear missions, such issues will be further evaluated if the preferred alternative identified in section 3.7 is selected in the ROD.*

13.00.56 The commentor feels that the DOE should seriously consider the private consortium proposal as a viable alternative in the PEIS.

Response: *Section 3.1.1 of the PEIS acknowledges that a private consortium could provide a new tritium facility, but that the associated environmental impacts are independent of this. DOE has prepared a Technical Reference Report which contains cost and technical analyses that consider that proposal. The Technical Reference Report is available in DOE reading rooms.*

13.00.57 The commentor feels that the phased approach for APT should be deleted and all of the technology options based on a single capacity requirement. Alternatively, the commentor remarks that the phased approach for tritium production should be explained in the executive summary, and it should be applied for all technologies that are capable of achieving it, including the MHTGR, the gas turbine-modular helium reactor and, presumably, the Small ALWR.

Response: *The phased approach for the APT is contained on page ES-16 of the executive summary. The phased approach for all of the other technologies was also evaluated, but dismissed for the ALWR and the HWR since these reactors couldn't be built smaller and then expanded. For the MHTGR, it was determined that although two modules would suffice for the steady state requirement, three would be needed for the full baseline requirement and it could not be built and brought online in the requisite 5 year timeframe.*

13.00.58 In reference to page 3-1, the commentor states that it seems inconsistent for the PEIS to confuse its evaluation by considering 3/16 of 1988 goal (nominal) and then say that 3/8 of the 1988 goal is the basis for the PEIS. According to the commentor, this nominal goal seems to only benefit the APT.

Response: *As explicitly explained in section 3.1, the baseline requirement is composed of two parts, the steady state which is equivalent to 3/16 goal and the surge, which when added to the steady-state* *results in the 3/8 goal. The analysis of the APT in the PEIS covers the environmental impacts of the construction of the full APT since all of the "civil" construction would be done at one time. This is a potential advantage for the APT over the other new technologies. The operational impacts of running all of the tritium supply facilities at 3/8 goal are given in the PEIS since this bounds the problem environmentally. However, the APT is the only technology that allows for a phased approach to meet the 3/16 goal more rapidly than would be required to meet the 3/8 goal. Other benefits from operation at less than 3/8 goal will be covered in cost, technology, and schedule analyses being done by others.*

13.00.59 Several commentors suggest that the PEIS does not provide a fair and consistent treatment of candidate technologies, specifically the 600 MWt gas turbine-modular helium reactor technology. In reference to the PEIS statement on page 4-448 that impacts of the 600 MWt gas turbine-modular helium reactor are not addressed because the available design information is not comparable to that of the 350 MWt MHTGR design, one commentor notes that there is even less design information available for the HWR evaluated in the PEIS. The HWR is stated to be a preconceptual design on which almost no work has been done, yet this information is presented in the PEIS. According to the commentors, the gas-cooled reactor developer provided ample information on the 600 MWt gas turbine-modular helium reactor for use in this PEIS, and DOE has chosen to use none of it. The 600 MWt gas turbine-modular helium reactor has environmental impact characteristics that are considerably more favorable than those of the 350 MWt design and the commentors feel these should be given full and fair presentation in the PEIS. Commentors suggest that the PEIS for plutonium disposition consider the impacts of the multipurpose and plutonium disposition plant configurations shown in table 1 (see document # - TSR-M-112), which include plutonium disposition plants that accommodate processing of the plutonium inventory over the design life of the reactors, as well as an accelerated disposition schedule.

In reference to page A-101, another commentor notes that the PEIS indicates that the gas turbine-modular helium reactor presents a substantial increase in the technical, schedule, and cost risks of bringing the concept to maturity. In fact, the commentor notes that the gas turbine-modular helium reactor technology is the same as the MHTGR reactor technology, and has been substantially successfully demonstrated in German and United States reactors. Given adequate funding, a fully tested turbomachine could be delivered to the site in less than 7 years, according to the commentor. This would allow the design, testing and construction of the complete gas turbine-modular helium reactor to be accomplished in 10 years. The commentor further states that the PEISs for both programs, if kept separate, should include multipurpose plants (e.g., gas turbine-modular helium reactor and ALWR) as explicit technology alternatives including full environmental impact characterizations. This will ensure that if a ROD is made adopting a multipurpose alternative, the PEIS will support this decision.

Response: *The 350 MW (thermal) MHTGR is the gas reactor technology evaluated in the PEIS, and is based on the significant work done by the New Production Reactor Program. Significant monies were spent developing the data for this alternative, this technology was thoroughly reviewed as part of the New Production Reactor effort, and, in DOE's judgement, represents the best available information for a gas reactor. In August 1994, DOE received a July 1994 report from CEGA Corporation regarding the 600 MW (thermal) gas turbine-modular helium reactor. The CEGA Corporation Report describes the gas turbine-modular helium reactor concept and provides information that can be used to compare the gas turbine-modular helium reactor against the MHTGR. Appendix section A.3.1.1 of the PEIS discusses this.*

The most significant difference between the MHTGR and the gas turbine-modular helium reactor is in the area of costs/revenues. This is due to the fact that the gas turbine-modular helium reactor is *a much more efficient electricity producer than the MHTGR (plant efficiency increases from 38 percent for the MHTGR to 47 percent for the gas turbine-modular helium reactor). The cost reports included in the Technical Reference Report available in DOE reading rooms present these differences.*

There are not significant environmental differences between the 2-module gas turbine-modular helium reactor and the 3-module MHTGR and even CEGA Corporation, in its report, acknowledges that the environmental impacts are only "slightly less" for the gas turbine-modular helium reactor compared to the MHTGR. In reality, the gas turbine-modular helium reactor would have slightly more environmental impact in some resource areas and slightly less environmental impact in other resource areas than the MHTGR. Thus, it really depends on one's perspective to conclude, overall, that the gas turbine-modular helium reactor has slightly less environmental impact than the MHTGR. To one whose overriding concerns are the amount of spent fuel generated, or the radiation doses from normal operations or accidents, the gas turbine-modular helium reactor has slightly more impact than the MHTGR. To one whose overriding concerns are the amount of water used or the number of workers required to operate the facility, the gas turbine-modular helium reactor has slightly less impact than the MHTGR. The most accurate thing that can be said about the gas turbine-modular helium reactor versus the MHTGR is this: from a PEIS environmental impact perspective, the issue of MHTGR versus gas turbine-modular helium reactor is not a significant issue.

In summary, the PEIS presents a discussion of the environmental impact differences between the MHTGR (which is evaluated in detail in the PEIS) and the gas turbine-modular helium reactor (see appencix section A.3.1.1). The MHTGR was evaluated in detail in the PEIS because it represents the best available information for a gas-cooled reactor at the time when the PEIS was being prepared. The data received from CEGA for the gas turbine-modular helium reactor do not provide any significant new environmental data for the gas turbine-modular helium reactor. Moreover, as acknowledged by CEGA Corporation, the environmental impact differences between the gas turbine-modular helium reactor and MHTGR are only "slight" in any event.

13.00.60 The commentor suggests that the current approach taken in the PEIS for evaluating multipurpose options is distorted for the gas-cooled reactor in that it focuses solely on the relative number of reactor modules required for a multipurpose plant versus those required for a tritium production plant without providing any perspective on the meaning of these numbers. According to the commentor, the steam cycle MHTGR is capable of producing tritium at 3/8 goal quantity with a total installed thermal capacity of only 1050 MWt. Other reactor options, the commentor adds, require installed capacities of 1,800 MWt (if, in fact, only one Small ALWR can produce tritium at 3/8 goal quantity) to about 3,400 MWt to achieve the same level of tritium production. The commentor contends that the multipurpose gas-cooled reactor options discussed in the Draft PEIS are limited to those that are fueled with pure weapons-grade plutonium oxide and have no fertile fuel material. For these options, lithium targets are, due to reactor physics considerations, placed only in the core reflectors, resulting in decreased tritium production per reactor module relative to the highly enriched uranium-fueled tritium production MHR. The intent of these options has been to produce tritium while achieving a degree of plutonium destruction that exceeds the spent fuel standard, according to the commentor. The commentor believes that another option can be considered in which the degree of plutonium destruction achieved is only equal to that achieved by the ALWR. With this option, the commentor notes that natural uranium replaces the erbium poison, allowing lithium targets to be placed in the active plutonium-fueled core regions and significantly increasing tritium production per reactor module. This option is being quantified by the gas-cooled reactor developer at this time.

The commentor states that in the multipurpose application, the flexibility of the MHTGR results in several options for producing tritium at 3/8 goal while dispositioning plutonium. Each individual module, with no changes in the plant design, can be dedicated separately to disposition plutonium, to produce tritium, or to achieve a combination of these two purposes. The commentor notes that the PEIS describes an option where the total installed thermal capacity is 2,100 MWt, which is small compared to the installed capacity required for the Large ALWR options. Therefore, it is only because the MHTGR and gas turbine-modular helium reactor are exceptionally efficient as tritium producers that the impact of changing to a multipurpose reactor appears to be so significant. However, if one compares the multipurpose MHTGR and gas turbine-modular helium reactor with the multipurpose ALWR, it is clear that the environmental impacts of the multipurpose MHTGR are generally lower, and the environmental impacts of the gas turbine-modular helium reactor are significantly lower, according to the commentor. If one compares the multipurpose reactor options with the combined impacts of separate tritium production and plutonium disposition plants, the commentor states that it is clear that the total installed capacity required for the multipurpose plant is lower for the MHTGR and is about equal for the ALWR. The commentor believes that all of these points need to be explicitly stated and clarified in the PEIS

Response: *Section 4.8.3 of the PEIS evaluates multipurpose reactors. The basis of this evaluation is the environmental impact of their construction and operation. The measure suggested in the comment is to evaluate the impact based on the installed thermal capacity. The environmental impact analysis presented in the PEIS is directly proportional to the installed and operated thermal capacity.*

The options evaluated for the multipurpose MHTGR reactor in the PEIS were those for which data were reasonably available at the time. The modification of the design to optimize both tritium production and plutonium production was not attempted in this document. Future design refinements, such as replacing the erbium poison with natural uranium in the core as suggested in the comment, would be done in the future refinement of this concept and would be considered in site-specific tiered NEPA documents, as appropriate.

The use of individual modules in the tritium-only producing mode using uranium fuel was in fact considered in this document. The rationale in arriving at six 350 MWt reactor modules was based on the steady state (3/16 goal) tritium requirement. The assumption was made that if the full baseline (3/8 goal) quantity were required then one or more of the reactor modules could be run in the tritium-only production mode using uranium fuel. If this were not the case, then twice as many reactor modules (12) would have been required to produce the baseline quantity of tritium.

The facility accident scenarios for the MHTGR include only one of the modules which, as the commentor noted, is considerably smaller than the other reactors. Thus, the impacts from MHTGR accident analysis are considerably less pervasive than those from the other technologies, which is evident in the facility accident analysis as presented in appendix F.

13.00.61 In reference to page 4-13, the commentor believes that the paragraph on uncertainties is misleading on maturity of design. The inference is that the sources being different presents an uncertainty and the issue of the maturity of the APT design is ignored.

Response: *The discussion in section 4.1.9 included the sources of the information used in the risk analysis. It indicates that information on the technologies for the HWR and MHTGR was largely based on documentation from the New Production Reactor Program, that the ALWR information was prepared by vendors, and that the APT information was prepared by DOE laboratories and* *private contractors. Issues regarding the respective maturity of the designs are included in the Technical Reference Report available in DOE reading rooms.*

13.00.62 In reference to pages I-40 and I-41, the commentor states that these are typographical errors under No Action - INEL should be NTS and ORR and Pantex should be SRS.

Response: *The text has been revised to reflect the correct site in each column in appendix I of the Final PEIS.*

13.00.63 In reference to page S-1, top of second column, the commentor asks if "surveillance" should be included as one of the functions of the Complex.

Response: *Surveillance is included within the maintenance activities of the site.*

13.00.64 In reference to page S-1, top of second column, the commentor notes that there exist other sources of recyclable tritium, such as research, development, and testing scrap and tritium caught in effluent capture systems.

Response: *The statement in question was not meant to identify all possible sources of recyclable tritium but to define what tritium recycling meant in this document.*

13.00.65 Another commentor indicates that in the technologies section on page S-5, information should be included on the amount of electricity that could be produced and the amount of plutonium that could be burned for each supply technology.

Response: *Since both the MHTGR and the ALWR were developed originally to produce electricity and, as such, have steam turbines as an integral part of their designs, the PEIS evaluates the environmental effects of both of these technologies with electrical generating turbines included. However, the actual sale of steam or generation of electricity by DOE would be covered in the site-specific tiered NEPA documents if either of these technologies were chosen and if DOE developed a proposal to sell steam or electricity. The generic impacts of the sale of steam or electricity, including construction of electric transmission lines, are analyzed in section 4.8.1. Nominal generating capacities are 1,100 to 1,300 MWe for the Large ALWR, 600 MWe for the Small ALWR, and 400 MWe for the three-module MHTGR. The actual estimates of electrical production are covered in the cost estimate included in the Technical Reference Report available in DOE reading rooms.*

The PEIS evaluates alternative technologies and sites for long-term, assured tritium supply and recycling. Another DOE program office, the Office of Fissile Materials Disposition, is preparing a PEIS addressing the issue of how to dispose of plutonium that is excess to the nuclear weapons complex. Information on the amount of plutonium that could be burned for each supply technology would be included in the PEIS being prepared by the Office of Fissile Materials Disposition. Of the four tritium supply technologies evaluated in the PEIS, only the ALWR, MHTGR and commercial reactors are being considered for plutonium disposition. Therefore, the environmental impacts of a plutonium-burning ALWR and MHTGR are analyzed and presented in the PEIS. Estimates of the amount of plutonium that could be consumed by the ALWR and MHTGR technologies are included in appendix section A.3.2.

13.00.66 The commentor states that the current PEIS analysis would have us believe that, on the one hand, DOE's purchase/completion of an existing light water reactor, such as WNP Unit 1 (65 percent complete), TVA's Bellefonte Unit 1 (88 percent) or Unit 2 (57 percent), or Watts Bar Unit 1 (99 percent) or Unit 2 (61 percent), is not worthy of detailed analysis due to lofty consideration of nonproliferation policy, but, on the other hand, that building the prototype of the next generation standardized civil reactor expressly for military production at a DOE weapons program site, and subsidizing such production with the commercial sale of electricity, is somehow entirely consistent with this alleged "policy." The commentor suggests that the current PEIS analysis thus appears grounded on an untenable double standard. In the commentor's opinion the apparent motive is to tilt the PEIS analysis in the direction of supporting the maximum expenditure of public funds at current DOE sites and gaining the maximum public subsidy for the next generation of commercial nuclear power development.

The commentor charges that the evaluation of ALWR supply options is uneven, biased, and fraught with contradictions. Construction of an ALWR under DOE ownership is assessed in detail for its potential impact on five individual DOE sites, yet the commentor feels that an analysis of DOE's potential purchase of an existing operational or partially completed light water reactor is given a once-over-lightly "generic analysis" under the heading "Commercial Light Water Reactor Contingency." Why is an option that could save taxpayers billions of dollars relegated to second-class "generic" treatment, while a similar light water reactor option costing billions more receives detailed site-by-site analysis. Moreover, this generic approach effectively equates the impacts of control rod production of tritium in eight utility-owned, commercial light water reactors under contract to DOE with DOE's purchase or long-term lease of a single existing or partially-completed light water reactor for production of tritium in fuel-target assemblies. The environmental, technical, institutional, and political impacts of these proposals are sufficiently different to warrant separate analyses as distinct tritium supply alternatives.

Response: *As discussed in section 4.10, DOE considers the purchase of an existing or incomplete reactor a reasonable alternative to meet the stockpile tritium requirement mission. In the Final PEIS, the analysis of this option has been expanded to resolve the apparent inconsistency noted by the commentor. A more detailed and comprehensive analysis of the purchase of an existing light water reactor has been added to the PEIS. Based upon public comments and a reevaluation of irradiation services, DOE decided to include the irradiation services as a reasonable alternative in the Final PEIS. DOE also invited public comments on this specific issue, including comments on the potential environmental impacts described in section 4.10 of the Draft PEIS, in a special 21 day comment period. Results of that additional comment period are included in this Comment Response Document. Furthermore, as identified in section 3.7, the preferred alternative involves the further investigation of commercial reactors to determine whether the policy and regulatory issues for this alternative can be resolved.*

13.01 Heavy Water Reactor Technology

13.01.01 The commentors express support for selecting the HWR technology as the tritium source for several reasons. One commentor suggests that the other technologies, ALWR and MHTGR, can create unexpected problems that could cause long shutdowns and large operating expenses because they are newer, less-tested technologies. According to the commentor, the HWR requires less-complex safety systems and it also has a cooling system that is "similar to that used in commercial light water reactor nuclear power technology." The commentor believes that radioactive releases from HWRs would be fewer than those of other technologies. Because of its greater reliability than the other technologies, the commentor also notes that it will have fewer environmental impacts. Another commentor prefers that the HWR be located at SRS because its low operating temperature eases safety concerns and SRS's experience with reactors of similar type and scale should facilitate success.

Response: *The advantages of the HWR technology have been noted in the PEIS or the associated studies on cost, technical feasibility, and schedule. The Technical Reference Report compares those criteria for the technologies and is available in DOE reading rooms.*

13.01.02 The commentor expresses concern that the HWR alternative is an extremely expensive endeavor. As a result, the commentor states that DOE must be reasonably certain that the technology will work.

Response: *The Technical Reference Report is available in DOE reading rooms and considers the technical and cost uncertainties of each technology.*

13.01.03 The commentor questions whether the use of a HWR to generate electricity and dispose of plutonium can be explored as an alternative.

Response: *The design which was evaluated does not produce electricity and does not meet the screening criteria for the multipurpose reactor.*

13.01.04 The commentor proposes a new alternative technology - a new HWR with a patent pending from DOE. The commentor contends that the unit is as safe or safer than the MHTGR since it eliminates design-basis accidents. In addition, the commentor states that it can be built for about one-third to one-half the cost of other production reactors under consideration in 1992 and considerably less than an accelerator. In the commentor's opinion, the HWR doesn't need as large an external power source as the APT, and the reactor is low cost, efficient, and proven. The commentor further notes that it is compatible with other proven and available SRS operations.

Response: *The HWR was developed as a result of the New Production Reactor Program, and it was later downsized and modified to meet the new tritium supply goal. Site-specific analysis would consider these types of improvements.*

13.02 Modular High Temperature Gas-Cooled Reactor Technology

13.02.01 Several commentors feel that the MHTGR has a bad track record in both the United States and Europe; therefore, unless a thorough study and evaluation of the technical uncertainties associated with the MHTGR alternative is done prior to selecting this option, its use for the critical function of tritium production involves an unwarranted risk. The commentor cites the poor performance of General Atomics' demonstration plant in Ft. Vrain Colorado and Great Britain's change of mind in using the GASCO reactors as examples of such risk. The commentors also believe that there is limited technical expertise for the production of MHTGR fuel and this will most likely drive up the cost of producing this type of fuel.

Response: *DOE has prepared a Technical Reference Report comparing cost, technical feasibilities, and schedules for the technologies. This Technical Reference Report is available in DOE reading rooms.*

13.02.02 The commentor references pages B-28 through B-32 and states that according to tables A.2.1.1-2 and A.2.1.2-2, the HWR consumes significantly more fossil fuel annually than the MHTGR. So, the commentor questions how can the MHTGR emit the most criteria pollutants.

Response: *The HWR and MHTGR reactors have different processes, facilities, and requirements which result in different air emissions. Criteria pollutants are not directly attributable to fossil fuel use, many other factors are involved.*

13.02.03 The commentor states that a chemical that should be added to table A.2.1.2-3, page A-50 is graphite. According to information provided to DOE in the CEGA-94-0011 letter, enclosure 2, table 4-5, 122 tons of graphite are required per year.

Response: *Graphite has been added to table A.2.1.2-3 in section A.2.1.2 of the Final PEIS.*

13.02.04 One commentor felt that the statement that it would require more than 5 years to add capacity for the MHTGR to produce additional tritium is not correct. The commentor believes that the MHTGR could bring additional modules online in this time period if proper provisions for plant expansion were made during construction of the initial modules.

Response: *The determination that it would take more than 5 years was a programmatic engineering judgement made by DOE after evaluating all relevant criteria.*

13.02.05 In reference to page 3-33, one commentor notes that the safety-related electrical loads for the MHTGR are small enough that they are supplied by safety-related battery power. While a backup power facility is provided to mitigate unavailability, the commentor states that it is not a safety feature. The below-grade containment structure is made of steel-lined reinforced concrete. Gravity-drop of the control rods is in the front-line safety-related scram system. Independent shutdown capability is provided by gravity-drop of the reserve shutdown control material, which is in the form of boronated graphite pellets, not safety rods; both of these systems were successfully demonstrated at Fort St. Vrain.

Response: *The design of the MHTGR was based on modified New Production Reactor design and developed within that program by DOE. This represents the reasonable design for analysis in the PEIS.*

13.02.06 One commentor, referring to page 3-34, feels that this layout is not consistent with the layout developed for the MHTGR during DOE's New Production Reactor Program. The commentor notes that the most recent and applicable layout is provided in the *NP-MHTGR Project Closeout Report*, CEGA-002764, 1993.

Response: *The layout is only intended to be an artist's rendering and is based on layouts from the New Production Reactor documentation. The notation (typical) is intended to show this fact and does not bear on environmental impacts.*

13.02.07 One commentor feels that the basis for the following assertion should be given, or that the assertion should be deleted on page 4-447: "Substantial uncertainty exists for the use of a gas-cooled reactor for plutonium disposition." The commentor also states that use of plutonium coated particle fuel has been demonstrated in six separate tests, which were conducted more than 20 years ago in the Dragon and Peach Bottom HTGRs. Thus, the commentor believes that plutonium disposition is not a new mission for the gas cooled reactor.

Response: *The statement in question is consistent with the conclusion reached by DOE's Office of Fissile Materials plutonium disposition working group, which concluded that the MHTGR was not a reasonable alternative for plutonium disposition. Nonetheless, the technology was still evaluated in the PEIS.*

13.02.08 The commentor states that the discussion of pit disassembly and conversion assumes that the facility for this activity would be collocated with the reactor. In fact, the commentor notes that safeguard considerations may dictate that this activity be conducted at the pit storage facility at the Pantex site, and that plutonium be shipped to the fuel fabrication facility in the form of plutonium oxide. The discussion also refers constantly to the fabrication of "mixed-oxide" fuel. In the case of the gas-cooled reactor, mixed-oxide fuel is not used, the fuel is weapons grade plutonium oxide only. No fertile material is used. The commentor believes that these matters should be acknowledged and discussed in the PEIS.

Response: *For the PEIS, the pit disassembly and conversion was assumed to be located with the tritium supply for the purposes of analyzing a multipurpose reactor. Consistent with this, the PEIS addresses the impacts of transportation of pits. More detailed analysis of pit disassembly and conversion facility, including site locations that may be different than those evaluated for tritium supply, can be found in the PEIS being developed for the Fissile Materials Disposition Program.*

13.02.09 The commentor references the following statement on page 4-461: "The assumption can be made and supported that with more reactors the potential for accidents to occur may increase, as well as the radiological impacts to the public and site workforce." The commentor feels that it should be noted that even if doubled, the impacts of the gas-cooled reactor are small compared to those of other technologies. However, the commentor notes there is no basis for assuming that the radiological impacts of accidents would be larger as a result of having more reactor modules. MHTGR modules are designed to operate independently of each other with no common safety-related systems. Accident consequences are determined by events at a single module and are unaffected by the presence of other modules, according to the commentor.

Response: *The commentor is correct. The frequency of an accident is based on the number of modules even though the consequences of an accident do not increase due to the number of modules.*

13.02.10 On page A-43, the commentor points out that the spent fuel storage facility is not "underwater," rather storage is provided in dry wells, the exterior of which is water cooled.

Response: *The description of the Interim Spent Fuel Storage Facility in appendix section A.2.1.2 of the Final PEIS has been changed to read as follows: "This facility consists of three water-cooled fuel storage basins paired with individual reactors. Fuel elements containing spent fuel would be stored in dry canisters for up to 3 years in the storage basins. After a 3-year cooling period, the spent fuel elements would be encapsulated and then transferred to dry storage vaults capable of storage for the life of the plant."*

13.02.11 The commentor notes that the reactor is a "moderate" pressure device but on pages ES-9 and S-5 it is stated to be a "high" pressure device. The commentor feels that page A-42 should be changed to be consistent with the other two pages. Also, the commentor notes that the reserve shutdown material of the MHTGR is boronated graphite pellets, not boron carbide spheres. The commentor states that the electrically driven circulator is located above the steam generator, not above the core. A single cross vessel, not multiple ducts, directs the helium to the (single) steam generator.

Response: *The description of the MHTGR in the executive summary and summary has been revised to indicate that the technology is a high temperature, "moderate" pressure reactor. Appendix section A.2.1.2 has been revised to incorporate the commentor's proposed changes.*

13.03 Advanced Light Water Reactor Technology

13.03.01 Commentors state that the ALWR technology is preferred because it offers multiple benefits: a proven, safe method for producing tritium; burns excess plutonium from defense and commercial activities, thereby reducing amount of waste plutonium to dispose of/store minimizing the likelihood that it could end up in the hands of terrorist groups; and generates electricity ("triple play"). One commentor states that the ALWR alternative offers the best engineering option to produce power for operating the tritium facilities, as well as other site facilities, because it can operate using plutonium fuel elements without having reductions in tritium or power production. Another commentor suggests that only the Large ALWR is capable of satisfying both the tritium production and plutonium disposition missions with relatively little added environmental impact. This could provide extra energy and jobs, according to the commentors. In addition, the commentors point out that it also meets DOE's goals of not only stockpile replenishment but of: encouraging technology transfer and economic development in vicinity of DOE sites; partnering with private sector to "test" streamlined commercial licensing process; and reducing likelihood of nuclear weapons proliferation.

Response: *The PEIS evaluates the ALWR technology for the production of tritium. However, the PEIS also assesses the impacts of the options available with the ALWR to produce electricity and burn plutonium in addition to producing tritium. DOE does not expect that the ROD on tritium production would restrict or prejudice decisions of any plutonium options. In fact, DOE's preferred alternative would allow for subsequent integration with future plutonium disposition decisions, if desired. As stated in the description of the NEPA process in section 1.2, any decision made in the ROD would be followed by a site-specific tiered NEPA document that would address the technologies and locations on the chosen site.*

13.03.02 The commentor notes that the PEIS incorrectly assumes that a single, Small ALWR could simultaneously carry out both missions of tritium production and plutonium disposition. A single, Small ALWR would require well over 60 years to consume the 50 megatons of excess plutonium. Therefore, the commentor feels that the PEIS should be corrected to assume at least two Small ALWRs for the combined missions. The commentor also notes that for completeness, it should be noted that ABB - Combustion Engineering's proposal to DOE for a privatized multipurpose System 80+ reactor, assumed two units would be constructed - so that the plutonium disposition mission could be completed in 15 years of operation. For comparability, a 15-year plutonium mission would require that the number of gas cooled reactors and Small ALWRs also be doubled again, from the previous paragraphs.

Response: *The analysis presented for the tritium supply mission did not consider the need to burn plutonium to meet any specific time requirement. Rather, the PEIS evaluated multipurpose application of the reactors and attempted to distinguish the differences in technologies by providing information on how much plutonium could be dispositioned while still meeting the primary mission of tritium production.*

13.03.03 The commentor believes that the limited database available for use in the evaluation of tritium production in ALWRs that was created as an adjunct to the plutonium disposition evaluations is not an in-depth evaluation of these reactor types for the mission. Instead, the commentor notes the evaluations were done as "Go-No-Go." The commentor also states that certainly the one, or at best two, conceptual designs for tritium production were not intended to optimize performance and cannot be used for quantitative comparisons. If the light water reactor option is endorsed in the PEIS, then further detailed evaluations should be made to establish a specific technology or design, according to the commentor.

Response: *The best available design information was used for the analysis in the PEIS. The analysis was appropriate for the programmatic decision necessary to select the tritium supply technology. A more detailed analysis of the selected technology will be done in future site-specific tiered NEPA documents.*

13.03.04 The commentor suggests that in the PEIS, volume 2, page A-52, first column, fourth paragraph, the 1,100 MWe value for ALWRs should be 1,300 MWe.

Response: *The commentor is correct. The text has been changed in appendix section A.2.1.3 of the Final PEIS to indicate that both large reactors are 1,300 MWe.*

13.03.05 Commentors believe that the PEIS should explicitly state how many Small ALWRs are needed to produce tritium at the 3/8 goal level, and should do so in a manner consistent with other DOE documents. In addition, the commentors believe a discussion should be provided of the effects of tritium production in light water reactors, both large and small, on fuel enrichment, operational constraints, and other safety and technical characteristics of the reactor. One commentor further notes that the discussion should include the effects of changes in the characteristics, caused by tritium production, on environmental impacts and the technology base/licensing (certification) basis of the light water reactors. In reference to page A-60, another commentor questions how a Small ALWR can produce the same quantity of tritium with half the lithium required by a Large ALWR assuming all ALWR concepts use the same targets. The commentor states that this PEIS never explicitly discusses how many Small ALWRs would be needed, but leaves the impression that one would suffice. This leads the commentor to ask whether one Small ALWR can really produce baseline quantities of tritium. If not, the commentor suggests that all tables throughout the document should be modified to be appropriate for the required number of Small ALWRs.

Response: *DOE agrees that the Small ALWR requires approximately the same quantity of lithium as the Large ALWR to produce tritium at the 3/8 goal level. The appendix table A.2.1.3-3 has been changed to reflect this fact in the Final PEIS. The number of Small ALWRs required to produce tritium at the 3/8 goal level is one. This number is stated throughout the Final PEIS, i.e., "a Small ALWR (600 MWe)" in the volume I summary and in section 3.4.2.3.*

13.03.06 The commentor states that the information given in tables 4.8.3.1-4, page 4-451 appears to be based on assumptions appropriate for a light water reactor mixed-oxide assembly facility. For example, the building footprint is shown to be 115,000 ft^2, but in reference GA 1994b cited in the PEIS, it is shown that the footprint of this facility is only about 75,000 ft^2. The commentor suggests that appropriate information for the gas-cooled reactor fuel fabrication facility should be given.

Response: *The MHTGR technology conceptual design for tritium supply includes a fuel fabrication facility and therefore is analyzed in the PEIS. The ALWR technology for tritium supply would use reactor fuel from existing commercial sources, therefore there is no onsite fuel fabrication facility. For the multipurpose reactor option discussed in section 4.8.3 of the PEIS, a Pit Disassembly/Conversion/Mixed-Oxide Fuel Fabrication Facility was described which would be necessary to support the multipurpose ALWR. The multipurpose MHTGR analyzed in this section, since it was based on the tritium supply machine, would already have the fuel fabrication part of the same facility as part of the design. Some modification of this facility would be required to accommodate the fabrication of plutonium fuel but these modifications would be expected to be minor. A discussion of the "front end" pit disassembly and conversion facility has been added to section 4.8.3 for the MHTGR. However, as noted in the PEIS, the impacts of this added facility would be minor in comparison to the construction and operation of three more reactor modules.*

13.03.07 One commentor refers to page A-52 and suggests that more detail should be provided regarding the need to increase enrichment of the light water reactor tritium production core and to derate the plant. The commentor states that the effects of these changes on safety parameters and licensing basis should be discussed. Another commentor references page 3-36 and states that the assumption of one

600 MWe ALWR, with no downrating in power output while producing 3/8 goal quantities of tritium, does not seem credible.

Response: *The discussion on appendix page A-52 indicates that modifications to the design for tritium production would be minimal. Thus, the effects of any such modifications on impacts and other analyses presented in the PEIS are expected to be minimal. The discussion in appendix section A.2.1.3 of the PEIS addresses the potential downrating in power output. A 600 MWe ALWR could produce the 3/8 goal quantity of tritium without fuel enrichment greater than 5 percent, and without impacting safety parameters. However, complete core changeout would be required annually rather than on the typical 18-month cycle for a commercial reactor.*

13.03.08 The commentor notes that it is argued in the PEIS, page 3-36, that "a power conversions facility (steam turbine) is an integral part of the design for the ALWR because of the high temperature of the exit coolant and will be included in this analysis." The commentor also points out that appendix A states that the "ALWR and the MHTGR technologies offer the added benefit of being capable of producing [sic] steam for electricity production that could prove to be desirable in offsetting operational and capital costs" (PEIS page A-99), and that "the [ALWR] reactor would be an improved version of existing commercial electric power generating reactors and would be operated at or near rated power...Modifications to the design for tritium production would be minimal..." [PEIS page A-52 (emphasis added)]. Indeed, the commentor suggests that one of the candidate ALWR designs, ABB-Combustion Engineering's System 80+, is essentially the same design as the System 80 units already in operation at the "civil" Palo Verde Nuclear Generating Station in Arizona, and as the "civil" KHIC/C-E reactors built under license in South Korea and recently offered to North Korea as an allegedly "proliferation resistant" inducement to end its plutonium separation program.

Response: *Nonproliferation concerns such as these expressed by the commentor will be considered in the decision-making process. The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to serve as the primary source of tritium. The other alternative, if feasible, would be developed as a back-up tritium source. SRS has been selected as the preferred site, if an accelerator is ultimately selected as the primary production option.*

13.03.09 In reference to page F-26, the commentor suggests that if data could not be found in System 80+ NRC docket, data should have been requested from ABB-Combustion Engineering.

Response: *Information on System 80+ has been requested and the best available information on this reactor has been incorporated into the PEIS.*

13.03.10 The commentor states that the process described in section F.1 ignores the fact that two Large ALWRs have received final safety analysis reports and are proceeding through certification. Another commentor believes that System 80+ has a final safety analysis report and NRC-approved values should be used in F8. The commentor states that the System 80+ designer should have been consulted before the PEIS was published.

Response: *Technical Data Reports have been prepared which take into account the fact that two Large ALWRs have received final safety analysis reports and are proceeding through certification. DOE acknowledges that the Large ALWR reports are complete and this has been factored into the cost, technical feasibility, and schedule analyses. These analyses are included in the Technical Reference Report available in DOE reading rooms.*

13.03.11 The commentor believes that the 1 to 2 years to check out the reactor, as mentioned on page 3-36 of the PEIS, isn't necessary for System 80+.

Response: *The 1 to 2 years for check out is an estimated time included for all the technologies. This check-out period includes the Operational Readiness Review required for all DOE facilities.*

13.03.12 The commentor notes that the electrical load (house load) for a Large ALWR is produced by the reactor. A 1,300 MWe produced by the reactor is "net" after this house load is accommodated.

Response: *The house load for the reactors is required for the reactor to produce tritium, and this is listed for each technology. In all cases, this would need to be supplied to the facility. The nominal 1,300 MWe was not used in such a way that this would be affected.*

13.04 Accelerator Production of Tritium Technology

13.04.01 Commentors express support for the APT for a variety of reasons: low generation of waste (compared to other technologies); lack of spent fuel production; no generation of high-level radioactive waste; safer for the environment; uses the least amount of water of the technologies considered; disturbs the least amount of land and, because it does not store energy, has fewer and less severe accidents. Some commentors also cite the fact that it would cost less to operate, can be turned off (unlike a reactor), and requires a relatively short time to construct. One commentor states that it is the best technology in the interest of national security because it is able to produce tritium quickly and continuously. Some commentors also note the low impact to human health from this technology. Another commentor believes that the APT generates the lowest risk of cancer and cancer fatalities. In addition to expressing support, one commentor suggests that the APT be located at INEL. Another commentor expresses support for the APT to be located at NTS because of seismic stability and remote location.

Response: *All of these advantages of the APT have been noted in the PEIS or the associated studies on cost, technical feasibility, and schedule in the Technical Reference Report available in DOE reading rooms, and will be taken into account by the decision maker in coming to the ROD. The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium. The preferred alternative also identifies SRS as the preferred site if an accelerator is selected as the primary production option.*

13.04.02 One commentor states that DOE does not consider the use of fissile material in the APT design as a source of neutrons for the eventual bombardment of target material. If DOE does consider a fissile neutron source, the commentor notes that the electricity requirements would be much less but this option would also produce radioactive wastes. The commentor suggests that by avoiding an investigation of the trade-off between the power needs and the resulting environmental impacts, DOE appears to have assumed a political position in avoiding a uranium, fissionable neutron source. Nevertheless, the commentor feels that DOE should have a more complete assessment including an APT design with a uranium neutron source weighed against potential environmental impacts.

Another commentor suggests that the PEIS needs to address the comparative overall environmental impacts of alternative target/blanket materials for the APT. The PEIS should address the comparative levels of waste generation, radioactive and thermal effluent, and greenhouse gas emissions from electrical generating stations supplying power to an APT using targets fabricated respectively from on-fissioning heavy metals (tungsten and lead), fissionable material (depleted uranium), and fissile material (such as uranium-235). For the same level of tritium production, the required beam power drops significantly for fissionable and especially fissile targets. After accounting for other potential power loads that may be required for alternative targets, the total waste generation and environmental loads from the APT and its supporting power station may be significantly less for a fissile target than for a non-fissioning heavy-metal target.

Response: *The APT design is envisioned as an alternative for producing tritium without the use of fissile material. The PEIS analyzes the range of reasonable alternatives including alternatives that use fissile materials, i.e., reactors and alternatives that do not, i.e., accelerators. An accelerator that would use uranium as a target material would generate radioactive waste (comparable to spent fuel) and exacerbate the potential for severe accidents and subsequent decontamination and decommissioning considerations. DOE decided to evaluate an alternative that would not have these characteristics and, thus, the accelerator is based on the use of non-fissile materials. In any event, the impacts of producing electricity to support a non-fissile material targeted APT are included in the PEIS.*

13.04.03 Several commentors feel that the APT should not be considered as an option until more research and development has been done to demonstrate its reliability and safety. One commentor is concerned that the APT will suffer like the supercollider, due to its uncertainties. Another commentor is concerned that national security may be jeopardized if construction of the APT is delayed due to its unreliability. Another commentor feels that the APT should not be considered since it has not been proven to work on a commercial level. One commentor notes that there has never been an accelerator that has run on a continuous basis, that has ever produced the amount of tritium required by the existing stockpile, or has ever used a high energy beam such as that being considered. Another commentor also expresses concern that the proposed APT will need to use high power, while the technology has only been researched at low power. The commentor believes that the target will not be feasible.

In another commentor's opinion, the 15-year schedule seems optimistic based on the lack of technical maturity of the concept for this application. One commentor suggests that if the APT is considered, a weighting factor needs to be assigned to it due to the technology being unproven. One commentor referencing section 3-7 states that the decision not to consider non-evaporative cooling towers based on technical uncertainty seems to demonstrate significant technical uncertainties for the APT. Another commentor also points out a statement on page 3-40: "the number and arrangements of building and support areas are illustrative only and can change significantly as design progresses." Such statements, the commentor suggests, emphasize that the design may not be mature enough to be included in the PEIS.

Response: *Although it is true that the APT as configured to produce tritium has yet to be demonstrated, most of the component technologies required for this complex facility are sufficiently mature to yield sufficient levels of confidence in its ability to generate the required quantities of tritium. Analysis of technical uncertainties of this alternative are presented in the Technical Reference Report available in DOE reading rooms.*

13.04.04 The commentor states that discussion of power supply options to support the operation of an APT in section 4.8.2 of the PEIS is unduly limited to an analysis of coal and natural gas plants. The discussion should be expanded to include the options of obtaining the necessary electric power for the initial phase (100 milliamperes) APT and full size (200 milliamperes) APT by investing equivalent sums in conservation and efficiency improvements and/or renewable energy sources for the regional grid that would supply the APT.

Response: *The PEIS evaluates the impacts of a dedicated power plant to support the APT at each site. Alternatively, the regional power pool could provide the necessary power to support the APT. Therefore the PEIS identifies the percentage of regional capacity margins for each of the alternatives. Section 4.8.2 of the PEIS provides a discussion of the general impacts of a 500 to 600 MWe power plant.*

13.04.05 Several commentors give suggestions on the operation of the APT, if it is chosen. According to the commentors, DOE should consider using solar power as a potential power source; should consider using hydroelectric generators to support the capacity margins in the power pool; should locate the power source onsite with the APT to support its electricity requirements; and should operate at night and other off-peak hours to reduce the APT's operating costs.

Response: *Analysis of dedicated power plants at each of the sites to supply the electrical requirements of the APT have been added to the PEIS. The evaluation of utilizing power from a solar powered demonstration project at NTS has also been added. Any further evaluation of methods to reduce electricity costs will be done in the site-specific tiered NEPA documentation as appropriate.*

13.04.06 The commentor asks as of what date the APT will utilize 4 to 13 percent of the regional power pool margin, as described on pages I-10 and I-11. In addition, the commentor asks is there any consideration given to other growth in the region that would reduce (or increase) that margin over the 40-year life of the tritium supply facility. Another commentor suggests that the cost of disposing of plutonium needs to be included in the cost of the APT.

Response: *All analysis is accomplished as of the No Action date, which in this case is 2010. The estimate of the margin is based on National Electric Reliability Council data which take into account projected regional growth or decline in its projections. Because the decision on plutonium disposition has not yet been made, it would be speculative to attribute any plutonium disposition costs to the APT.*

13.04.07 Commentors suggest that the PEIS is biased toward the APT in several places throughout the document. One commentor remarked that the APT is touted to have a shorter construction schedule than a reactor, because it can be built in phases (i.e., the accelerator could operate at a reduced level at first). However, this is questionable given the preconceptual design status of the APT. Furthermore, the environmental impacts during construction are a function of the APT design and, until it is more well defined, impacts cannot be properly assessed.

On the other hand, the Large ALWRs are based on a strong experience base and through industry/DOE programs have been designed to even further improve constructability. The ALWR has been treated very conservatively in the Draft PEIS, despite its maturity, while the APT has been treated optimistically, despite its immaturity. One commentor believes that DOE has already decided to support the APT for political reasons and because the Administration is opposed to reactors. Another commentor, referencing page A-102, states that this reference to the paper-study status of the accelerator-based disposition of plutonium seems to apply generally to the APT and reflects authors' bias with statements on the great potential of this option.

Response: *The technical feasibility of each of the technologies is evaluated and compared in the Technical Reference Report available in DOE reading rooms. The environmental impacts of constructing the Phased APT are the same as the Full APT, since the same construction would take place in the beginning. Only additional equipment would be added to reach the Full APT stage.*

13.04.08 The commentor states that APT is more likely to receive public support because the public perceives reactors to have a "bad record" concerning safety/accidents.

Response: *The purpose of the PEIS is to analyze environmental impacts of the proposed tritium supply technologies. Public support for or against each technology does not bear on environmental impacts. Any of the tritium supply technologies could be constructed and operated safely.*

13.04.09 Several commentors raised specific uncertainties about the APT technology that require further environmental impact evaluation, including the effects of evaporative cooling on the environment and whether activation products from spallation will contaminate part of the APT tunnel. One commentor states that if the tunnel is contaminated then the PEIS should include an analysis on the uncertainties with respect to the amount of contamination to the tunnel, whether or not the contamination will interfere with maintenance of the tunnel, or whether tunnel components will need to be decommissioned, and, finally, make it clear if the contaminated tunnel is included in the waste sections of the PEIS.

Response: *The APT design evaporates water to dissipate waste heat produced by operation of the APT. This process results in water vapor being released into the atmosphere in the immediate vicinity of the APT. The amount of water vapor released into the environment is not large enough to cause climatic change in the surrounding region. Other effects of evaporative cooling on the environment, including use of land and water resources, are addressed in more detail in chapter 4 of the PEIS. The activation products of spallation are retained within the envelope of the target/blanket assembly and will not be released to the accelerator tunnel during normal operation of the APT. The design provides that these materials are removed from the machine in a special hot cell adjacent to the tunnel where provision is made for their safe handling and disposition as radioactive waste.*

13.04.10 The commentor notes that the numbers for APT facility construction and operation workers are the lowest for all the technologies. However, the commentor believes that the costs related to these workers may be on the low side.

Response: *The numbers for the APT facility construction have been adjusted upward and the analysis redone as appropriate. The Technical Reference Report includes cost evaluations and is available in DOE reading rooms.*

13.04.11 The commentor states that it is important to understand the maturity of the accelerator technology, and asks how much tritium has been made with this technology. If the amount is little or none, the commentor asks does DOE have backup plans if the APT is chosen. The commentor wants to prevent a situation in 2011 when the United States could have no tritium production capacity if the accelerator cannot generate the material required.

Response: *The technological risks which take into account the maturity of design are evaluated in the Technical Reference Report available in DOE reading rooms. DOE will provide rationale for its decision in the ROD. The preferred alternative identified in section 3.7 of the PEIS is a dual-track strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium. Within a three year period, DOE would select one of the alternatives to serve as the primary source of tritium. The other alternative, if feasible, would be developed as a back-up tritium source.*

13.04.12 The commentor states that the Final PEIS accident analysis should include accidents for the APT that the NRC would be likely to impose as part of a licensing review of both the deterministic and probabilistic safety case. For example, the commentor notes it is likely that the NRC would require assuming that the beams would not be stopped when a loss of target cooling occurs given the absence of inherent feedbacks short of target relocation due to melting or vaporization. According to the commentor, this would be analogous to the Anticipated Transient without Scram event imposed by NRC for licensing of commercial reactors, which do have inherent feedback mechanisms to mitigate such transients. Similarly, considering that the proposed APT lacks a strong containment building, the commentor believes the NRC would also likely require assessing the probability and consequences of a steam explosion occurring, if cooling flow can be restored after major melting of the target and blanket occurs, or if the melted target can drop into water such as in the case of passive building flooding described in section F.2.1.4.3, page F-20 of the PEIS.

Response: *The design of the APT is at a preconceptual level of detail. Appropriately, the safety assessments have been concerned with identifying hazards and quantifying their approximate magnitude. Comprehensive accident analyses, as would be presented in a preliminary safety analysis report, have not been done for the APT. These would normally be done during the design process for the facility. The potential for serious offsite radiological consequences is much smaller for APT than for any of the reactors being considered because of the much smaller inventory of radioactive material in the APT facility compared with the quantity of fission products in the core of any of the reactors, and because an APT generates no significant decay heat like that of reactors. The Final PEIS has added an accident scenario that involves a complete loss of confinement which is expected to bound any accidents with the APT.*

13.04.13 The commentor believes that the APT would be able to produce weapon-usable fissile material from source material if the latter were substituted for either helium-3 or lithium in the production targets. Since accelerators are not addressed in either the *Atomic Energy Act* of 1954, as amended, or the *Nuclear Non-Proliferation Act* of 1978, the commentor states that existing export controls given in NRC regulations at 10 CFR Part 110 and DOE regulations at 10 CFR Part 810 do not address controls on accelerator equipment that is used worldwide for research, development, and medical diagnosis and treatment. According to the commentor, DOE should describe how key technology developed to deploy the APT, which is much more powerful than existing accelerators, will be controlled to assure no threat of proliferation.

Response: *The APT design features required to produce these neutrons do not require new technologies. The technologies employed are well known in the international accelerator community. The APT is simply a larger and more powerful version than previous designs. Because of its size and its requirement for large amounts of electrical power for operation, its replication elsewhere could be easily detected.*

13.04.14 The commentor states that the APT option would suffer in an assessment of how much technology change would be required to scale-up for tritium production. If the APT were chosen, the commentor states that quick demonstrations of portions of the design would be required and the commentor is not sure how that would be done. The commentor also notes that APT would score high on opening future options for use of spallation sources and on being safe against accidents that would affect offsite populations. In addition, the commentor suggests that lithium could be involved in an efficient design for APT-generated tritium.

Response: *The technical risks involved in all of the technologies are evaluated in the Technical Reference Report available in DOE reading rooms. In addition, there is an ongoing APT program to resolve remaining technical uncertainties regarding this technology.*

13.04.15 The commentor suggests that in volume I, summary, pages S-7 and S-8 a comparison between currently operating accelerator technology and the projections for the APT in terms of amperage, downtime, waste, spent target production, and potential radiological impacts to the public be provided. In addition, the commentor refers to volume I, chapter 3, section 3.6, table 3.6-1 and suggests that other analyses on the efficiencies which compare acreage and power requirements for the APT be provided.

Response: *The kind of comparison suggested by the commentor is inappropriate for the summary section identified. In addition, the comparison between existing accelerators and the accelerator technology proposed for tritium supply would be very difficult to compare and noninformative. The principal reason is that existing accelerators are of the pulsed power type, of a lower power, and do not irradiate the type of targets evaluated in this PEIS. The design proposed for tritium production is a new continuous power machine that use targets designed specifically for the tritium mission. Typical accelerators are also usually operated for only short periods of time whereas the accelerator proposed in this PEIS would operate for extended periods of time. Any comparison of the type suggested by the commentor would therefore be like comparing one type of apple to a different type of apple (similar but not the same).*

13.04.16 The commentor states that the PEIS should include any information gained from the New Production Reactor analysis that has been helpful with the APT alternative. The relationship between the APT technology and the New Production Reactor study should be addressed, if any exists.

Response: *The APT was previously considered by the New Production Reactor Program but dismissed due to the quantity of tritium required and time required to complete the APT. The APT analyzed in the PEIS has been developed based on preconceptual designs.*

13.04.17 Commentors note that in addition to producing tritium, the APT design should be used for other purposes such as civilian/commercial research, transmutation, and short-lived medical isotope production. Possible design factors to enable secondary research uses are to make the APT modular, to leave enough space for expansion of the APT, and closed-loop cooling. Another commentor suggests that tritium be produced for commercial purposes in addition to the prime NTS mission of tritium production for the weapons program. One commentor believes that the PEIS needs to include any advantages of using the APT.

Response: *The PEIS identifies any environmental benefits and/or drawbacks associated with the technologies evaluated. The advantages (options) of some of the reactor technologies as they relate to other DOE programs as a side benefit to tritium production are discussed in the PEIS. Although there are potential research and development advantages to the accelerator technology, the use of such a machine during the production of tritium for such activities would probably not be feasible or appropriate. The mission of this program is to provide the tritium necessary for the enduring nuclear weapons stockpile. As has occurred in the past, once this requirement is met, there would be no reason that excess capacity could not be used to supply commercial users.*

13.04.18 The commentor counsels against the dedicated power plant option for APT technology. At the Pantex site, the commentor is confident, there would be no cost savings from construction and utilization of a dedicated plant. Nor does the commentor think a dedicated plant would be as reliable as Southwestern Public Service grid supplies.

Response: *The costs associated with building a dedicated power plant to support an APT versus the cost of providing power through the utility servicing the site are some of the factors included in the cost analysis prepared in support of the Tritium Supply and Recycling Program. The environmental impacts from such a facility were therefore included in the PEIS analysis to give the reader and the decision maker an indication of the potential environmental issues resulting from the option. For* *the PEIS, these impacts were identified at each site. The decision to construct and operate a dedicated power plant would be determined in project-specific tiered NEPA documents.*

13.04.19 The commentor refers to the second paragraph of section A.3.2.4 and notes that it states that excess commercial power could not be generated with the accelerator-based plutonium disposition systems based on the molten salt or particle bed target systems. This is correct, but the commentor feels it should also be noted that in August, 1994, General Atomics and Los Alamos presented a joint proposal to DOE requesting support to develop an accelerator-driven modular helium reactor that could achieve destruction of 99 percent of the initially charged plutonium-239 and generate enough electrical energy to drive the accelerator and sell excess capacity to the grid.

Response: *DOE acknowledges this proposal.*

13.04.20 The commentor suggests that volume I, chapter 3 of the PEIS provide complete data on the viability of the project, its life, and the operational requirements associated with APT production of tritium. In addition, the commentor also requests that the following information be provided: an analysis of the amount of spallation-induced by-products be provided along with the used target materials special storage and disposal methods of this mixed waste; a comparison of spent targets to spent fuel in terms of hazards and radiological characteristics; a discussion on the significant annihilation radiation associated with spent targets; the quantity and mass of spent targets that will be produced; an analysis of the cost for repair or replacement of targets that may melt from a continuous and/or uncontrolled proton beam; and information on special maintenance and training dealing with worker health and safety in and around the plant area in the event of a subsystem failure of the APT, as large amounts of low-level waste may be produced.

Response: *Section 3.4.2.4 provides the data necessary for APT constraints and operation to analyze for environmental impacts. Sections 4.2.3.10, 4.3.3.10, 4.4.2.10, 4.5.3.10, and 4.6.3.10 discuss waste issues. Cost analyses are provided in the Technical Reference Report available in DOE reading rooms. Health and Safety is addressed in normal operations in sections 4.2.3.9, 4.3.3.9, 4.4.3.9, 4.5.3.9, and 4.6.3.9 for the five candidate sites.*

13.04.21 In reference to pages A-54, A-63, and A-67, the commentor states that the storage concept for a 3-year transport of spent fuel is not consistent with DOE's Multi-Purpose Canister (5 years). The commentor notes that the spallation that occurs in the APT's beam stop, when it is accepting the full power beam for an unlimited time, could be significant. The spallation and activation products (including mercury 194) have significant half-lives, adds the commentor. The commentor suggests that the high power of the beam could result in orders of magnitude increase in waste products compared to existing accelerators. In the commentor's opinion, NRC should be requested to review the design and determine the classification of the waste. Additionally, the commentor states that the PEIS should quantify all wastes generated in the APT.

Response: *The comparison table in section 3.6 presents the waste data for each of the various technologies and compares it among sites. The data for the comparison requested by the commentor is available in the table. The data used that describe the fission by-products from reactors and the spallation-induced products from the APT are included in appendix E as tables listing radioactive releases for normal operations for each of the technologies and in appendix F as source terms for various accident scenarios.*

13.04.22 Commentators suggest that the PEIS consider the availability of helium-3. According to the commentators, DOE must assume that there will be a loss of helium-3 during the conversion to tritium since it is not 100 percent recoverable or recyclable. The commentors state that DOE must estimate the amount of helium-3 that will be available and the percentage that will be recycled; also, a safety factor for lost helium-3 in the case of a national emergency.

One commentor believes that the PEIS does not present very much information as to the source of helium-3 for the target for the APT. The commentor notes that appendix figure A.2.1.4-5 shows helium-3 from weapon recycle and from commercial sources. If the only source of helium-3 is the decay of tritium, there would appear to be only three possible sources of substantial quantities of helium-3: the United States weapons program, the former Soviet Union weapons program, and Canada, according to the commentor. The Canadians are unlikely to provide helium-3 for the United States weapons program. The commentor believes that the only substantial supply is the decay of tritium in weapons. Since each recycle of helium-3 from decayed tritium will inevitably involve the losses of some helium-3, the commentor asks if we can be assured that there is ample supply of helium-3 to support a helium-3 target APT for the necessary lifetime of the production facility.

Another concern of the commentor is that the PEIS does not address the neutronics of the reaction that produces tritium from helium-3. The commentor assumes it is of the form: 3He + 1n --> ?? --> 3H + 1H. However, the commentor states that it would seem that there is a nonzero cross section for the reaction: 3He + 1n --> ?? --> 4He. If there is a buildup of helium-4 in the target gas, the commentor notes that it would ultimately poison the reaction and reduce the efficiency of the tritium production. Also, the commentor asks how the helium-4 would be removed from the helium-3. Would this require the periodic disposal of all of the target gas, including the helium-3, which would seem to be in limited supply.

Response: *Since we have a much larger supply of tritium right now then the eventual steady-state requirement needed in 2011 as shown in figure 2.1-1, the helium-3 resulting from the decay of this excessive amount of tritium is being saved and will provide enough to supply the APT program.*

In 2011, a tritium supply technology, in addition to tritium recycling, will be online to ensure the required amount of tritium is produced.

The neutronics of the reaction that produces H-3 (tritium) from He-3 (helium) is as follows: 3He + 1n -----> 4 He -----> 3H + 1H.

The 4He, which is in a highly excited state, exists for only a fraction of a second before transforming into tritium and a proton. Therefore, 4He does not poison the reaction, does not reduce the efficiency of tritium production, and does not have to be removed from the closed-cycle gaseous target loop.

13.04.23 The commentor states that discussion of pulsed versus continuous wave accelerators on pages ES-21 through ES-22 makes it unclear which is being proposed for APT, and hence leaves an unclear impression of the degree of technology development required to support APT.

Response: *The discussion referenced by the commentor is referring to the existing research accelerators being of the pulsed, low power design. To be comparable to the type being proposed for tritium production (the APT), these research accelerators would have to be modified to provide a continuous wave operation and be increased substantially in power. None of the research accelerators is of the proposed APT design or operates in the same manner as the proposed APT.*

13.04.24 The commentor notes that the fuel requirements for the APT look low on page 3-42 and questions whether this amount is sufficient to test the emergency power supplies.

Response: *The fuel oil requirements listed are adequate for routine weekly 2-hour testing of the two 800 kW diesel generators.*

13.04.25 In reference to page A-63, the commentor believes that more information should be provided regarding why there are different target designs under consideration for APT and why a backup is needed. The commentor notes that it appears as though the level of technical maturity of the APT target design is not adequate to define a reference conceptual system. If a phased approach were not adopted, the commentor asks what would the reference target be.

Response: *Because of the preconceptual design of the APT, DOE decided to evaluate two different target designs for the Full APT in the PEIS. This was done so that the environmental impacts of the two targets could be evaluated prior to any target down-select. Based on the best available information, the helium-3 target appears to be the better of the two targets, and thus was the target evaluated for the Phased APT. If the APT is selected, a formal target down-select would be made as part of the follow-on, project specific research, development, and testing.*

13.04.26 In table A.2.1.4-3, page A-74, the commentor states that it makes no sense that the annual chemical requirements would change so drastically (lithium goes to zero?) just because the APT was constructed in phases instead of being fully constructed initially. The commentor believes that there must be an error.

Response: *The difference in the chemical requirements between the Full and Phased APT options is due to the fact that they use different target technologies in the analysis. The Full APT uses the spallation-induced lithium conversion target while the Phased APT uses the helium-3 target.*

13.04.27 The commentor refers to page 4-443 and suggests that a better explanation be provided of why building a dedicated plant at a DOE site to support operation of an APT operation is considered to be a cost saving.

Response: *This information is provided in the Technical Reference Report available in DOE reading rooms.*

13.04.28 The commentor states that while the PEIS does not consider costs, it implies that the APT design evaluation is based on assumptions that will lead DOE to an unrealistically low cost estimate for the APT - especially compared against more mature technology, for example, the Large ALWRs that have already been priced for overseas sales. Furthermore, the commentor notes that it should be obvious to all concerned that an electricity-producing ALWR will result in lower cost to the Federal Government than an electricity consuming accelerator. Another commentor believes that a cost-benefit ratio needs to be included with the APT.

Response: *This information is provided in the Technical Reference Report available in DOE reading rooms. The report details how the analysis was performed, assumptions, and other factors that were used to evaluate the different technologies.*

13.05 Idaho National Engineering Laboratory

13.05.01 Several commentors feel that INEL is the best site for new weapons programs due to its proven ability to manage wastes safely and its existing workforce, which is capable of handling the tritium project. Tritium production would also boost the economy of southeastern Idaho. One commentor states that INEL should be preferred for siting any reactor types except for HWR; however it does seem unwise to increase the number of weapons-related sites; the small predicted offsite effects at the most populous sites are tiny compared to devastation from a nuclear conflict.

Response: *The attributes of INEL as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. For INEL, waste management activities and facilities and the surrounding local economies are included in the environmental analysis of impacts. Although the quality and experience of the existing site work force and the offsite available work force are factors, they are not considered in the environmental analysis process presented in the PEIS. In the final analysis, many factors will be considered in reaching the decision on tritium supply and recycling. The preferred alternative identified in section 3.7 of the PEIS identifies SRS as the preferred location if an accelerator is selected as the primary production option.*

13.05.02 Commentors strongly oppose the existence of nuclear material in Idaho. One commentor states that we do not need any more "atomic nonsense" in the state of Idaho while another commentor expresses opposition to any waste being sent to idaho. Another commentor questions whether INEL can accommodate the waste management and disposal activities associated with the proposed action. Another commentor opposes the tritium supply facility because it endangers Idaho and is a pork barrel project supported by politicians.

Response: *The PEIS addresses the environmental impacts of the proposed action at INEL.*

13.05.03 In reference to page S-19, the commentor suggests that the 64,217 MGY blowdown for a Large ALWR is inconsistent with table 4.6.3.4-1.

Response: *The commentor is correct, and the appropriate changes have been made to the summary of the Final PEIS.*

13.05.04 The commentor believes that INEL should be responsible for researching and developing solutions to waste management problems, not storing nuclear waste.

Response: *The PEIS addresses the impacts of waste management and waste at INEL in sections 4.2.2.10 and 4.2.3.10.*

13.06 Nevada Test Site

13.06.01 Commentors believe DOE should select NTS as the site for the tritium facility for a variety of reasons: skilled labor force, proximity to and relationship with two national laboratories, remote location, existing infrastructure, an air strip to bring in tritium, arid climate, low population density, great depth to groundwater, sufficient water and power resources, security buffer zone, strong safety record, in-place contractors, good proximity to a university for collaborative research opportunities, and reputation as a worldwide leader in testing and research. The commentors also believe that the tritium operations at NTS have wide state/Congressional support, would restore jobs lost since testing stopped, would contribute to the positive growth of the community and economy, and there would be no need to transport wastes to a storage location. Another commentor contends that locating the tritium supply and recycling facility at NTS will retain talented nuclear testing professionals, ensuring continued professional management of the readiness program. One commentor also notes that numerous underground testing and drilling projects at NTS have established its geological and hydrological suitability. In addition, another commentor believes that using NTS as a tritium production facility will preserve important weapons production and testing skills in a cost-effective manner at a location not being retired from the weapons complex.

Response: *The attributes of NTS as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. For NTS, the remote location, the amount of available buffer land, depth to groundwater, compliance with environmental regulations and agreements, site waste management activities and facilities, and the characteristics of the surrounding local economies and communities are all included in the environmental analysis of impacts. Although the local and political support reasons mentioned are factors, they are not considered in the environmental analysis process presented in the PEIS. The potential impacts of additional jobs, the onsite waste infrastructure, and the transportation infrastructure are also considered in the environmental analysis. The preferred alternative identified in section 3.7 of the PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option.*

13.06.02 Siting the tritium supply and recycling facility at NTS would create a synergistic relationship between DOE and area educational institutions stimulating University of Nevada at Las Vegas research programs, according to the commentor.

Response: *DOE agrees that the indirect educational and research benefits to area educational institutions could occur. However, the potential level of involvement and the nature of the relationship cannot be determined at this time.*

13.06.03 Commentors suggest that if the APT technology is chosen to be sited at NTS, the research and other alternative use potential of the technology would benefit the NTS community. According to one commentor, a benefit to the community would be the sale of electricity made possible by the reactor technologies; the commentor also suggests that this should be considered an advantage for NTS.

Response: *Potential uses of the APT for other than tritium production were not considered in the PEIS. However, the design, construction and operation of such a facility for tritium production would significantly advance the science of accelerator technology. The cost benefits of electricity production from the ALWR and the MHTGR reactors are examined in the Technical Reference Report available in DOE reading rooms.*

13.06.04 One commentor asserts that none of the tritium supply and recycling alternatives should be sited at NTS based on two major environmental concerns: (1) limited groundwater to support either phased or full accelerator application and (2) seismic constraints for both reactor-based and accelerator technologies. Another commentor states that the PEIS lists no chemicals for NTS in the chemical inventory section of the PEIS, and recommends this be checked.

Response: *Section 4.3.3.4 of the PEIS discusses the potential groundwater impacts from the tritium supply technologies including that for the APT. Although the groundwater use requirement of the APT is large, it is still below the estimated recharge capacity of the affected aquifer. The potential seismic risks of locating a tritium supply at NTS are discussed in section 4.3.3.5 of the PEIS. Based on the seismic history of the area, a moderate seismic risk exists at NTS but should not preclude safe construction and operation of such a facility. All facilities would be designed to potential earthquake-generated ground acceleration in accordance with DOE Order 5480.28 and appropriate safety guides.*

13.07 Oak Ridge Reservation

13.07.01 Commentors are opposed to siting the tritium facilities at Oak Ridge and one commentor suggests Oak Ridge be removed from the list or placed very low in consideration as a site, due to the abundance at Oak Ridge of existing hazardous materials from dismantlement of nuclear weapons components and storage of highly enriched uranium. This commentor asserts that Oak Ridge has already become polluted with mercury and that safety controls were so poor during World War II that many ORR workers died early deaths.

Response: *The PEIS evaluates the environmental impacts associated with operating the tritium supply at ORR. The potential impacts from such a new facility would be considered additive to the environmental baseline which takes into account past activities at the site. The preferred alternative identified in section 3.7 of the PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option.*

13.07.02 The commentor asserts that the PEIS provides no information on the process that led to the selection of the undeveloped portion of West Bear Creek Valley and West Chestnut Ridge as the location of proposed tritium supply/recycling facilities. The commentor believes that cost and environmental impacts could be reduced if the facilities were located in one of the developed portions of ORR where the new facility could be served by existing infrastructure.

Response: *The site analyzed in the PEIS is appropriate for the programmatic analyses. Section 3.1.1 discusses the planning assumptions and basis of site selection for the tritium supply and recycling location.*

13.07.03 In reference to volume I, summary, pages S-7 and S-8, the commentor suggests DOE provide details of the impact on safety and tritium production if the Watts Bar Nuclear Reactor does not come online as anticipated, or if Watts Bar shuts down during accelerator operations.

Response: *The PEIS evaluates the impact of a dedicated power plant as well as the impacts on the power pool.*

13.08 Pantex Plant

13.08.01 Commentors urge DOE to select Pantex as the site for any new functions dealing with the nuclear weapons complex for many reasons: strong local and statewide support; skilled, lower-cost workforce; existing infrastructure/plant; lower utility costs; environmentally sound operation; no significant adverse impacts to natural resources, human health, welfare and the environment; strong safety record; ideal geographical location (equidistant from east and west coasts); easy access to LANL, Sandia National Laboratories, and Amarillo National Resource Center for Plutonium; favorable business community; available land for expansion; suitable year-round climate for construction and operation; ample water supply; no need to transport nuclear materials or wastes; excellent living conditions; and educational excellence. Several commentors qualified their support with an insistence that tritium supply and recycling operations must be handled in a safe and environmentally sound manner. For many of these same reasons, one commentor suggests that Pantex should also participate in DOE fissile materials storage and disposition activities. Another commentor believes that the two reactor technologies, the MHTGR and the ALWR, would provide additional electric power generation capacity for the Pantex area and the APT technology would provide the advantage of tritium production with minimum production of nuclear and hazardous waste.

Response: *The attributes of Pantex as well as each of the other four sites considered for siting the tritium supply and recycling facility would be included as part of the decision process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. For Pantex, the amount of available land and water, compliance with environmental regulations and agreements, site waste management activities and facilities, and the surrounding local economies are all included in the environmental analysis of impacts. Although the local and political support reasons mentioned are factors, they are not considered in the environmental analysis process presented in the PEIS. Cost factors are addressed in the Technical Reference Report available in DOE reading rooms and will be considered in the decision analysis process along with the environmental impact analysis presented in the PEIS. The preferred alternative identified in section 3.7 of the PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option.*

13.08.02 The commentor requests clarification of the energy consumption at Pantex: page ES-28, table ES-1, page 1 of 31: does this statement mean after the year 2010.

Response: *The definition of No Action means from 2010 onward in the absence of any changes as a result of this PEIS.*

13.08.03 Commentors state that Pantex should not be selected as the site for tritium supply and recycling because of insufficient water and adverse impacts on agricultural lands surrounding the site. One commentor suggests that the negative effects of the tritium supply and recycling facility on the (Ogallala) aquifer should be fully acknowledged in the PEIS. Also, given that the Pantex Plant is the smallest of all sites under consideration, the commentor believes it is much too close to farmland and adequate security could not be provided because of its size.

Response: *Comments received during the public hearings on the PEIS indicated that Ogallala water would not be required for the tritium supply technologies if sited at Pantex. More than enough reclaimed advanced treated sanitary wastewater is available from the city of Amarillo's Hollywood Road Wastewater Treatment Plant to meet the need of all tritium supply technologies considered, including the APT. Adverse impacts on agricultural lands are not expected from the proposed project using reclaimed water. The location of Pantex relative to agricultural lands and the city of Amarillo has been considered in the analysis of impacts presented in the PEIS. Security at Pantex is more than adequate to protect any new missions the site may receive.*

13.08.04 In the hopes that Pantex is selected for tritium supply and recycling, the commentors suggest that DOE in the Final PEIS include a thorough evaluation of the use of treated wastewater to meet cooling requirements for a tritium production accelerator, and that the environmental impacts assessed include impacts where the water is currently being discharged.

Response: *The PEIS now includes an evaluation of the use of treated wastewater to meet cooling requirements for all of the tritium supply options.*

13.09 Savannah River Site

13.09.01 Commentors urge DOE to site the tritium supply and recycling facility at SRS for many reasons: existing infrastructure; technology and work force base; existing tritium recycling facilities (including the new Replacement Tritium Facility); extensive local public, business community, and political support; 40 years of safe tritium operations experience; adequate secured land; strong safety record; many trained laborers; readily available water; weather conditions which permit year-round work; the fact that SRS has consistently met local, state, and Federal environmental regulations and related Federal requirements; would cause fewer environmental impacts; would benefit the economy; and would be the most cost-effective option. According to one commentor, SRS also processes and stores all waste produced on the site and is developing the most comprehensive capability in the Complex to handle all types of radioactive waste, including burial vaults, consolidated incinerator, and the Defense Waste Processing Facility. The Aiken Commerce Board supports a decision to place the tritium supply and recycling facility at SRS. Another commentor supports the Tritium Supply and Recycling Program at SRS but recommends that DOE get some new management oversight to replace Westinghouse. The commentor's specific recommendation is to look at somebody with credentials of DuPont. Another commentor asserts that collocation of the Nation's new tritium supply source at the SRS could be the determining factor in locating the International Thermal Experimental Reactor in the United States. A sufficient power supply and new tritium handling capabilities would make the SRS site much more attractive than the French or German sites, according to the commentor. According to another commentor, it took 10 years for SRS to establish a training program that worked well. Therefore, it would be too costly to develop a training program when one is already in place at SRS.

Response: *The preferred alternative identified in section 3.7 of the PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option. The attributes of SRS, as well as each of the other four sites considered for siting the tritium supply and recycling facility, would be included as part of the decision process. However, the PEIS considers these site factors only as they relate to evaluating the environmental impacts of the tritium supply and recycling facility at each site. For SRS, the Replacement Tritium Facility, the amount of available land and water, compliance with environmental regulations and agreements, site waste management activities and facilities, and the surrounding local economies are all included in the environmental analysis of impacts. Although the local and political support reasons mentioned are factors, they are not considered in the environmental analysis process presented in the PEIS. Cost factors are included in the Technical Reference Report available in DOE reading rooms, and will be considered in the decision analysis process along with the environmental impact analysis presented in the PEIS.*

13.09.02 The commentor suggests that data on aborted attempts to sell a New Production Reactor for tritium at SRS should be set forth and quantified in the PEIS.

Response: *As stated in section 1.4.2, the New Production Reactor Program was folded into the then Reconfiguration Program in November 1991 since the urgency to develop a new tritium supply source was eased due to stockpile reductions. This was reported and explained in a* Federal Register Notice *on November 29, 1991 (56 FR 60985).*

13.09.03 The commentor suggests that the PEIS include an analysis of the relative environmental effects if the tritium mission at SRS is terminated.

Response: *The PEIS describes the environmental impacts of phasing out the tritium recycling mission at SRS in section 4.6.3. Under each resource and issue topic within the section a discussion of these impacts is found under the italic heading "Tritium Recycling Phaseout."*

13.09.04 Commentors believe that South Carolina does not need another tritium facility. According to one commentor, South Carolina already has more than its share of toxic waste in the groundwater and should clean up sites instead. The commentor urges the United States to set an example for other countries. Another commentor states that nuclear weapons production at SRS has severely impacted the land and water around Aiken, South Carolina.

Response: *Remediation of contamination due to past operation of DOE facilities is an ongoing program under the direction of the DOE Office of Environmental Management. The characterization activities of potential contamination areas or any planned or ongoing remediation activities would be considered in the siting of any tritium supply technology at any site. Lessons learned from past DOE production reactors and the incorporation of the latest designs in proposed tritium supply technologies are being used to ensure the protection of the environment and minimize the generation of additional waste.*

13.09.05 The commentor states that the Defense Waste Processor is not included under SRS in the table in the executive summary.

Response: *Although not explicitly stated in the executive summary, the Defense Waste Processing Facility is assumed to be operating under No Action at SRS. The possible use of that facility would be considered in a site-specific tiered NEPA document. The preconceptual designs of the tritium supply and recycling facilities include their own waste management infrastructure with the exception of the upgraded recycling facility at SRS.*

13.09.06 Commentors express the opinion that the cooling tower at SRS be evaluated in the decision process. One commentor asserts that availability of the newly constructed cooling tower at SRS will yield significant cost savings. According to the commentor, the proposed location of the tritium supply facility (near the N Area) would take advantage of existing 10 miles of cooling water discharge pipe leading from K-Reactor to the Savannah River. Only 4 miles of new piping would be required, according the commentor.

Response: *If SRS is chosen as the site for tritium supply, a site-specific tiered NEPA document would be completed prior to construction. If the preferred alternative identified a reactor technology, an evaluation of the possible use of the K-Reactor cooling tower would be appropriate. If the APT is selected consistent with the preferred alternative, the K-Reactor cooling tower would probably not be used.*

13.09.07 Commentors assert that the PEIS features an invalidated major assumption by assuming that the existing tritium facility will be able to handle a new tritium supply when it is at least 17 years old. One commentor suggests that it may need major upgrades by then, so the PEIS must calculate how much the facility costs, its worth today, and the cost to upgrade it by 2010.

Response: *Section 3.4.3.2 discusses the upgrades of the existing Replacement Tritium Facility. Cost and technical analysis reports are included in the Technical Reference Report available in DOE reading rooms.*

14 RELATIONSHIP TO OTHER DOE PROGRAMS/ACTIVITIES

14.01 Commentors suggest that DOE should delay the decision on a tritium production facility for several reasons - to allow other EISs to reach the same stage so that decisions made reflect an integrated approach to all EISs pertaining to the Complex; to see how the PEIS for Tritium Supply and Recycling relates to other PEISs relative to costs and viability; and to consider the cumulative impacts on the entire Complex. According to one commentor, DOE should do a thorough evaluation of the impact of the multipurpose reactor versus the separate tritium supply facility and the plutonium facility (one facility versus two) and should also consider other options such as a fusion facility. Some commentors express opposition to the combining of tritium production with plutonium disposition activities. These commentors believe that DOE should address the disposition of plutonium before deciding to produce tritium; this decision may eliminate the need for tritium.

Response: *DOE does not expect that the ROD on tritium production would restrict or prejudice decisions of any plutonium options. In fact, DOE's preferred alternative would allow for subsequent integration with future plutonium disposition decisions if desired. Due to the rapid decay of tritium, and the long lead time required to bring a new source on line, even new supplies from retired weapons are not sufficient to postpone the need for a tritium supply facility to the point where decisions concerning technology and site selection can be deferred to coincide with other DOE decisions. Accordingly, the PEIS for Tritium Supply and Recycling is a separate action. This is not to say that it is being analyzed in the absence of input concerning other, related DOE activities. The analysis is closely coordinated with the analyses being performed for the Waste Management PEIS, the Stockpile Stewardship and Management PEIS, the Fissile Materials Disposition PEIS, as well as the Site-Wide EISs being conducted by those DOE facilities which have a Defense Program Mission. To the extent that programmatic changes are made in one of the programs which affect the others, the appropriate changes in the PEIS for Tritium Supply and Recycling analyses have been made.*

DOE has also analyzed a multipurpose reactor in the PEIS for Tritium Supply and Recycling. This reactor would utilize either a uranium fuel or a fuel blend of plutonium and uranium (mixed-oxide fuel) to generate tritium while at the same time irradiating surplus quantities of plutonium to the point where it could no longer be utilized in nuclear weapons. DOE is not considering a fusion reactor as an alternative, since this technology is not yet developed to the point of providing the necessary degree of confidence for producing a product so integral to the Nation's defense.

14.02 Several commentors express their dissatisfaction with siting the proposed tritium facility at some of the candidate sites because prior activities have left areas of contamination at these sites. Commentors state that DOE should not put a new facility at a site that needs environmental cleanup. One commentor states that NTS already has a mission as a waste site, and considering the site for another operation is deplorable. Another commentor opposes siting another hazardous project in Idaho because in his opinion Idaho has been a home for nuclear waste for too long (United States Naval nuclear waste in particular). In addition, the commentor fears aquifer contamination. Another commentor opposes locating the tritium facility at SRS because of the need to clean up existing radioactive wastes at the site. Another commentor believes that plutonium storage issues should be resolved and existing contamination cleaned up at Pantex before the tritium production decision is made at Pantex.

Response: *All of DOE's facilities require some level of environmental cleanup. Similar to other industries, DOE facilities were designed in the 1940s and 1950s, prior to environmental regulatory requirements when the understanding of waste management principles was not what it is today. Over the past several years, DOE has had a very aggressive cleanup program and has worked with the Environmental Protection Agency (EPA), states, stakeholders, and the general public to develop long-range programs and commitments to clean up its facilities to acceptable levels. All of these plans and commitments have been reviewed for the proposed sites to determine if there are any conflicts or restrictions which would inhibit these sites from serving as good locations for the facilities proposed in the PEIS for Tritium Supply and Recycling. Nothing was found which would inhibit the alternative sites from performing the required mission. Once a specific site is selected, additional site-specific tiered NEPA documents will be prepared. This analysis will address specific contamination problems of the specific proposed DOE facility and, to the extent mitigative measures are required to allow for ongoing environmental restoration or to prevent additional contamination, it will be an integral part of this site-specific analysis. The preferred alternative identified in section*

3.7 of the PEIS identifies SRS as the preferred location, if an accelerator is selected as the primary production option.

14.03 Commentors state that, because of its efficiency, cost-effectiveness, and existing capital plant, Pantex should be an active participant in fissile material storage and disposition activities.

Response: *The storage and disposition of fissile materials are being addressed in a separate PEIS being prepared by the DOE Office of Fissile Materials Disposition. Pantex is one of the sites being considered for materials storage.*

14.04 Commentors are concerned about the storage of nuclear weapons and fissionable material as described in the Stockpile Stewardship and Management PEIS. DOE should keep waste where it is until a national policy can be developed.

Response: *Storage of nuclear weapons and fissionable materials is beyond the scope of the PEIS for Tritium Supply and Recycling. Storage and disposition of nuclear weapons fissionable materials are being addressed in the Storage and Disposition of Weapons-Usable Fissile Materials PEIS being prepared by the DOE Office of Fissile Materials Disposition. The Waste Management Draft PEIS being prepared by the DOE Office of Environmental Management has recently been completed. These two PEISs address the issue of storing nuclear weapons fissionable material and wastes.*

14.05 The commentor states that DOE should consider NTS for consolidation and future DOE/defense program activities.

Response: *NTS is included in the Stockpile Stewardship and Management PEIS now being prepared by the DOE Office of Reconfiguration. The Stockpile Stewardship and Management Program is evaluating the alternatives for consolidation and future operation of the Complex.*

14.06 The commentor notes that it is stated in volume I, page 1-7 that the New Production Reactor Program was "canceled." The commentor states that the program was, according to the announcement signed by Secretary Watkins, "deferred."

Response: *The commentor is correct and the appropriate changes have been made to the document.*

14.07 In reference to page S-2, the commentor questions whether the receiver sites for the Mound mission are still accurate.

Response: *The mission reassignments identified and analyzed in the Nonnuclear Consolidation Environmental Assessment (June 1993) have not changed and are in the process of being implemented.*

14.08 The commentor suggests that DOE should consider consequences of selling electricity, i.e., competition with public market.

Response: *The sale of any energy produced incident to the operations of a DOE tritium production facility would be governed by Section 44 of the* Atomic Energy Act. *That section expressly provides that "if energy is produced at production facilities of the Commission, such energy may be... sold to publicly, cooperatively, or privately owned utilities at reasonable and nondiscriminatory prices. If the energy produced is electric energy, the price shall be subject to regulation by the appropriate agency having jurisdiction. In contracting for the disposal of such energy, the Commission shall* *give preference and priority to public bodies and cooperatives or to privately owned utilities providing electric utility services to high cost areas not being served by public bodies or cooperatives." Thus, by the very terms of the* Atomic Energy Act, *DOE would not be competing with existing electric energy producers, but rather would be augmenting their production by selling to them. This energy could reduce the burden of ratepayers.*

The electric utility industry is structured and regulated such that DOE would never be in such a position as to compete with electric utilities in the sale of electricity. The generation and sale of electricity is being analyzed for those alternatives in which electric generation could offset the other programmatic costs. In such a situation, DOE would tie into a regional power grid and be compensated for its input, which would be marketed by the electric utilities managing this grid at rates to be determined by state utility commissions and the Federal Energy Regulatory Commission. For such alternatives, DOE is looking at the environmental impacts associated with the generation of electrical power, pursuant to the requirements of NEPA.

14.09 Commentors express support for the recent establishment of the Amarillo National Resource Center at Pantex and the formation of the Higher Education Consortium by the Texas A&M University System, Texas Tech University, and the University of Texas System to manage the Amarillo National Resource Center. The commentors believe DOE should fund and utilize the Amarillo National Resource Center at Pantex to research critical issues of stewardship of nuclear weapons and their by-products.

Response: *There is no relationship between the tritium supply and the National Resource Center at Pantex.*

15 PUBLIC INVOLVEMENT/COMMUNITY RELATIONS

15.01 Several commentors commended DOE for holding useful and effective public hearings. One commentor states that the meetings make a complex subject easy to understand and ensure consideration of public concerns and views. Although most comments on the format were positive, some commentors offered the following suggestions: have "formal" (traditional format) comment sessions in addition to the new format; present conceptual estimates of costs of alternatives; hold evening sessions at a later time (7:00 p.m.); have a troubleshooting system for the phone system; and, hold meetings in all sites under Tritium Supply and Recycling Program consideration.

Response: *DOE elected to use the interactive meeting format in response to past public comments. The commentor's suggestions will be taken into consideration in the preparation and planning of future public meetings. Meetings were held at every site considered in the PEIS.*

15.02 The commentor states that the PEIS does not adequately address key policy issues. Therefore, states the commentor, it is impossible to conduct meaningful public review and discussions of the alternatives presented. The commentor states that DOE should respond to the commentor's and others' concerns in a revised PEIS which is then circulated for public comment.

Response: *The PEIS was prepared to study the potential environmental impacts of a proposed major Federal action. National policy issues are factors that will be considered in the decision making process but will not be addressed in the PEIS. The mechanism for public input to the Nation's policies is through contact with Federal, state, and local elected representatives.*

15.03 Commentors suggest DOE publicize public meetings early and in many different mediums (including Internet, CD-ROM, database) and consider having the PEIS in computer format. One commentor adds that DOE should expand its contact with all aspects of the community including Native American interests, schools, and churches and give the public more time to be involved. Another commentor states that impact and oversight money should be provided for public outreach. Scientists and technical experts should be placed in direct contact with the citizens, perhaps in a round-table approach, according to the commentor. Another commentor states that the public should be given full disclosure regarding the facility including uncertainties involved in the analyses (lack of experience for APT and MHTGR, future need for tritium, sale of electricity from reactor). Focus should be on the national and public interest in the proposed action rather than DOE's interest, according to the commentor.

Response: *DOE has utilized several different methods for publicizing public meetings and providing program information to the public. In addition to advertising in the traditional media, notices and meeting information have been made available electronically. Various documents can be requested or accessed using the toll-free information line, the electronic bulletin board, and the World Wide Web DOE Home Page. It is also possible to access and download the PEIS from a bulletin board service. There has been and will continue to be full disclosure of all relevant technical information concurrent with the publication of the final PEIS. Cost, technical and feasibility analyses for each technology are included in the Technical Reference Report, available in DOE reading rooms.*

Technical experts were present in each of the discussion groups during the public hearings to answer questions and provide additional information to the public. A speaker's bureau has been established with DOE officials available on a limited basis as requested to speak with interested groups concerning program activities and issues. This can be requested through the toll-free line or the electronic bulletin board services. In addition, once the announcement is made to hold public meetings, contact is made with local and Native American officials offering separate briefings prior to the public hearing in that area. Some meetings were requested and held prior to the PEIS public hearings.

15.04 Commentors state that political influence should not be a factor in the tritium supply and recycling decision.

Response: *DOE has analyzed environmental, cost, technical and schedule issues associated with the proposed action. The effects of political influence are beyond the scope of the PEIS.*

15.05 One commentor suggests that DOE should declassify the number of kilograms in the overall tritium inventory, as well as current and projected active and reserve nuclear weapons stockpile requirements. The commentor believes that this would allow the public to draw their own conclusions regarding the reasonableness and urgency of future tritium supply and recycling alternatives. Another commentor suggests that chapter 2 of the PEIS be expanded because the public has the right to know how much tritium is needed at the taxpayer's expense.

Response: *There has been an effort in recent months and years by DOE to provide the public with as much information as is reasonably possible. However, there are still some details and issues which are matters of national security, and, as such, must remain classified. The exact amount of tritium in the inventory is one of these.*

15.06 The commentor expressed the desire to know when people from other areas that are in close proximity to nuclear sites will be compensated like those covered under the 1990 Act.

Response: *This issue is beyond the scope of the PEIS.*

15.07 Commentors ask how DOE will assure the public that their input has been included in the decision process. The commentors believe that DOE should allow the public to comment on the various decision making factors and the ROD.

Response: *Comments received during the public comment period are addressed and considered in preparation of the Final PEIS. Section 1.7.4 of the Final PEIS identifies specific changes made in response to public comments. The Comment Response Document available with the Final PEIS includes copies of all comment documents, summaries of all comments received, and the response by DOE to these comments. Cost and other analyses are included in the Technical Reference Report available in DOE reading rooms. The ROD will explain the factors used in DOE's decision making process and will be a publicly available document.*

15.08 Commentors state that DOE should allow concerned citizens to speak at public hearings and not have biased entities controlling the sessions. A verbatim record of the hearing should be kept, according to the commentors.

Response: *The interactive hearing format was used to provide an opportunity for the public to have questions answered in order to allow more informed input. All participants were given an opportunity to ask questions or comment on the PEIS during sessions which were moderated by neutral facilitators. While verbatim transcripts were not made for the hearings, detailed comment summaries were prepared for consideration in this document. Several other methods (mail, fax, electronic bulletin board, toll-free information line) were available for the submission of written or verbal comments if commentors did not feel confident that their comments would be recorded correctly at the public meetings. DOE will consider these comments in planning future hearings. All comments, regardless of how received, are considered equally when preparing the Final PEIS.*

15.09 Commentors state that DOE should select the preferred alternative before asking for public comment.

Response: *Council on Environmental Quality (CEQ) regulations require an agency to identify a preferred alternative in the draft only when one or more exists (40 CFR 1502.14(e)). At the time that the Draft PEIS was published, no preferred alternative existed. Studies have now been completed and the preferred alternative is now identified in section 3.7 of the Final PEIS. Members of the public may submit comments on the Final PEIS, including the preferred alternative. A decision on tritium supply and recycling will not be made until at least 30 days after issuance of the Final PEIS.*

15.10 The commentor states that DOE should stick to its Tritium Supply and Recycling Program decision to be stated in the ROD and not deviate as it has done in the past. Changing the decision wastes money, according to the commentor.

Response: *Any actions taken will be in compliance with the requirements of NEPA. Should DOE determine or need to modify its decision as stated in the ROD, it will either issue a new ROD or modify the PEIS.*

16 NEPA PROCESS

16.01 The commentor states that under the requirements of NEPA, DOE, in the PEIS, should: discuss the accountability and responsibility for data gathering; include life cycle cost conducted on alternatives and cost analysis of waste disposal; evaluate the alternatives; explain operating scenarios for the sites; explain differences between tritium and other nuclear-type materials such as plutonium; indicate the number of weapons that will constitute START II Protocol levels and the number that constitutes a genuine deterrent; and include an unclassified version of the Nuclear Weapons Stockpile Memorandum and Plan.

Response: *The PEIS provides a full and fair evaluation of the environmental impacts of the reasonable alternatives. Data to support the analysis has been gathered from most recent environmental monitoring reports and from engineering analyses of the proposed alternatives. The estimated number of weapons (for START II stockpile levels) has been added to chapter 2. This chapter is the unclassified version of the* Nuclear Weapons Stockpile Plan *and Memorandum. The cost analysis is provided in the Technical Reference Report available in DOE reading rooms.*

16.02 One commentor suggests that further stockpile reductions would allow DOE to use the tritium from the retired weapons, thereby eliminating the need for a brand new facility. The commentor believes that this alternative of further stockpile reduction should be considered by DOE and analyzed in the PEIS in accordance with the NEPA process.

Response: *Chapter 2 provides the rationale for stockpile size. DOE has to support the* Nuclear Weapons Stockpile Plan *under the* Atomic Energy Act *of 1954. These levels are established to provide an effective nuclear deterrent. DOE cannot unilaterally change the stockpile size. The PEIS also includes an analysis of providing tritium at an earlier date should that become necessary. For a stockpile size smaller than START II, the need for new tritium could be extended beyond approximately 2011. If the need date for new tritium were significantly later than 2011, DOE would not have a proposal for a new tritium supply, and would not be preparing a PEIS for Tritium Supply and Recycling.*

16.03 One commentor is of the opinion that DOE should accelerate the process of technology and site selection to avoid loss of talent of the current workforce. Another commentor contends that more time is needed for the public to review the scientific analysis and decision making process for a project that will span 50 years. In fact, the commentor suggests that the government and DOE should use a scientific timeframe, instead of a political one, in the NEPA process. Another commentor advocates more continuous involvement between DOE and contractors in preparing EISs.

Response: *Technology and siting decisions will be identified in the ROD at least 30 days after the Final PEIS is published. In order to compare the potential environmental impacts of each technology, start dates in the PEIS were established around a peak construction date of 2005. The construction of a tritium supply facility would not occur before the appropriate site-specific tiered NEPA documents were completed, and detailed engineering designs of the facility completed.*

16.04 The commentor notes that NEPA imposes a requirement for "sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public" through the analysis of alternatives in an EIS (40 CFR 1502.14). The commentor states that not only does the Draft PEIS fail to identify a preferred alternative, it fails even to present a consistent set of criteria by which the preferred alternative could be selected in the future. The summary comparison tables located in the executive summary (page ES-1), in section 3.6 of the Draft PEIS, and appendix I, do not clearly reveal which alternative at which site entails the least overall environmental impact and public health risk for a given level of investment. The commentor feels that evaluating the environmental risks of various proposed alternative technology/site combinations relative to their financial costs is impossible because no cost data is presented. According to the commentor, the Draft PEIS fails to present a comparative, qualitative discussion of the environmental impacts of the various alternatives in a manner that would allow the concerned citizen to gain an understanding of which option poses the least overall environmental burdens and risks. The commentor feels this is a clear defect in the current draft that must be remedied in the Final PEIS. According to the commentor, this strongly implies that the selection of a preferred alternative will be made on the basis of information not available to the public in the Draft PEIS, an action that would be in plain violation of NEPA. In this case, the PEIS must be reissued as a draft incorporating such information, including comprehensive cost, technical risk, and schedule risk data. The commentor claims politics, especially pressure from South Carolina and Georgia supporting SRS, should not have an influence on the preferred alternative and the ROD.

Response: *In addition to the summary comparison table, table 3.6-1, and appendix I, the summary and executive summary of the PEIS have been revised to include a concise, reader-friendly presentation of the alternatives. Section 3.7 of the PEIS defines the preferred alternative as the alternative that the DOE believes would fulfill its statutory mission, giving consideration to environmental, economic, technical, and other factors. CEQ regulations require an agency to identify a preferred alternative in the draft only when one or more exists (40 CFR 1502.14(e)). At the time that the Draft PEIS was published, no preferred alternative existed. Studies have now been completed and the preferred alternative is now identified in section 3.7 of the Final PEIS. The summary comparison of the environmental impacts of the tritium supply and recycling and the various options presented in table 3.6-1 and in appendix I do not present the relationship between costs and the protection of the environment as correctly noted by the commentor. The cost analyses for the various tritium supply technologies and recycling facilities are included in the Technical Reference Report prepared to support the program and decisions identified in the ROD prepared after this PEIS. The Technical Reference Report is available in DOE reading rooms.*

16.05 One commentor suggests that the PEIS does not, but should, address the environmental impact resulting from resource requirements and waste for each alternative. Another commentor states that DOE should hold each site to equitable standards in the analysis of environmental compliance while cost factors should be weighted less as far as a decision making factor.

Response: *Sections 4.2.3, 4.3.3, 4.4.3, 4.5.3, and 4.6.3 of the PEIS discuss the resource requirements and impacts of construction and operation of each alternative at the five candidate sites. In the comparison of the alternative sites, DOE made every effort to hold each site to consistent and equitable environmental standards. The analysis for the PEIS was conducted in accordance with CEQ regulations (40 CFR 1500-1508), and DOE's NEPA Procedures. Furthermore, in the design of the various technology facilities, full compliance with all applicable Federal, state and local environmental requirements was considered. DOE has made every effort to utilize the NEPA process early on in the planning stages of the tritium supply program and, to the maximum extent practicable, has taken extra steps to include public participation in this decision making process. The weighting of cost factors is not a PEIS issue but will be explained in the ROD.*

16.06 Commentors believe DOE should list the factors, including the weighting factors affecting technology and siting decisions. In fact, one commentor suggests DOE provide a clear description of the weighting factors which will be used in decision making before the public hearings. The commentor also states that it would be helpful to know how much weight the public hearings have in the decision making process.

Response: *The rationale for making tritium supply and recycling decisions will be identified in the ROD. DOE's decision making process will weigh factors such as cost, technological feasibility, environmental issues, and policy considerations.*

16.07 A commentor notes that the Draft PEIS should have included an economic evaluation for the technologies. For example, costs associated with maintenance, operation, and implementation of the technologies should be evaluated and distributed to the public. Without cost estimates, the commentor believes it is not possible to weigh the relevance of any differences between the technologies. The commentor further states that the lack of budget information makes it difficult to provide informed comments and decisions on any of the tritium supply and recycling technologies and sites. In the commentor's opinion, the most cost efficient production source of acceptable reliability should be chosen with all cost factors considered. Another commentor states that the cost analysis and production assurance documents seem to be more important decision making factors than the PEIS. In addition, a commentor suggests that economic evaluations should also consider combining plutonium disposition and tritium production and the impact of privatizing the facilities on costs to the government.

Response: *Cost and technical feasibility studies are not part of an environmental impact statement but are included as a part of the Technical Reference Report available in DOE reading rooms. The analysis for the PEIS is being conducted in accordance with the CEQ Regulations (40 CFR 1500-1508), and DOE's NEPA Procedures.*

16.08 Several commentors believe that a cost-benefit analysis should be developed to support a programmatic decision concerning which technology to employ for tritium production.

Response: *DOE has developed cost, technical, feasibility, and schedule analyses which are included in the Technical Reference Report available in DOE reading rooms. These factors will be weighed in the decision making process along with environmental considerations.*

16.09 The commentor believes that DOE should look at cost studies determining transportation of LLW by rail. There may be money to be saved by using the railroad, according to the commentor.

Response: *Impacts of transporting LLW to NTS from Pantex are analyzed in the PEIS. Highway transportation is the only available method to ship LLW from Pantex to NTS.*

16.10 The commentor believes that DOE should consider the advantages of using existing DOE sites' infrastructure in the cost analysis for tritium production and recycling.

Response: *Section 3.3 of the PEIS lists the assumptions that were used in selecting reference sites. Site-specific analysis would consider the existing site infrastructure and any differences in cost. In determining the preferred alternative identified in section 3.7 of the PEIS, site infrastructure issues were among the many issues considered. SRS is the preferred location if an accelerator is selected as the primary production option.*

16.11 The commentor states that representatives in Congress need to have more input into the Secretary's decision on the PEIS for tritium supply and recycling.

Response: *DOE participates regularly in Congressional hearings on defense issues in which the tritium issue is discussed. Congress determines how funds are allotted and DOE spends monies consistent with Congressional direction. Therefore, Congress ultimately determines whether the preferred alternative will be implemented.*

16.12 Commentors state that the public should have access and input to the cost analyses and the weight given to the various costs in the final decision. The commentors feel the public should have an opportunity to comment on the cost analyses and the other associated studies. In fact, some commentors express concern that materials such as cost analyses and associated studies be released to the public early enough for review and comment before the ROD is issued. If materials cannot be released until after the Final PEIS is published, one commentor suggests that the comment period before the ROD be extended. In particular, the commentors believe that the public should be fully informed about the cradle to grave costs (including long-term waste costs, and D&D) of the facility. One commentor notes that a D&D comparison (including financial costs) between technologies should be included in the environmental effects section of the Final PEIS. Additionally, commentors suggest that the cost analysis should include decommissioning and revenues associated with any of the technologies, and any cost overruns with the APT. The commentors state the public needs to be convinced that developmental status of the accelerator option is properly reflected in cost and schedule sensitivity analyses.

Response: *CEQ regulations require an agency to identify a preferred alternative in the draft only when one or more exists (40 CFR 1502.14(e)). At the time that the Draft PEIS was published, no preferred alternative existed. Studies have now been completed and the preferred alternative is now identified in section 3.7 of the Final PEIS. Members of the public may submit comments on the Final PEIS, including the preferred alternative. A decision on tritium supply and recycling will not be made until at least 30 days after issuance of the Final PEIS. The specific environmental impacts of D&D cannot be determined at this time because of the preconceptual designs of proposed facilities. However, a relative comparison of the D&D activities and potential impacts between the tritium supply technologies is presented in section 4.15 of the PEIS. The costs associated with D&D are detailed in the supporting cost analyses included in the Technical Reference Report available in DOE reading rooms. The ROD will describe the basis for DOE's decision.*

16.13 The commentor expresses interest in the cost benefits of the previously developed New Production Reactor Program in relation to this program.

Response: *The records for New Production Reactor Program have been archived and can be accessed through the National Archives.*

16.14 Referring to volume I, chapter 3, section 3.6, commentors suggest providing an analysis of the cost associated with each of the alternatives to include direct cost of construction, project maintenance costs, research and development costs, and other indirect costs. The commentors state that the Tritium Supply and Recycling Program will compete with other Defense Program projects, such as the National Ignition Facility, with the programmatic responsibilities of Defense Programs, and with environmental cleanup. The commentors feel a fair analysis of the projects' impacts should include the billions of dollars of cleanup that will not occur, or will be deferred due to the Tritium Supply and Recycling Program. The commentor believes the absence of cost figures from the PEIS is a calculated attempt to avoid political attack. Since tritium decays, early production carries a financial penalty of roughly \$200 to \$400 million per year if interest costs on construction are added to operating costs. For example, the commentor states that Los Alamos National Laboratories (LANL) recently disposed of 106 curies of tritium because recovery was not deemed important. Finally, the commentors suggest that DOE should have a full budget analysis of how much this facility will cost in out years (into the next century).

Response: *Cost and technical feasibility studies are not part of an environmental impact statement but are included as a part of the Technical Reference Report available in the DOE reading rooms.*

The analysis for the PEIS is being conducted in accordance with the CEQ regulations (40 CFR 1500-1508), and DOE's NEPA procedures.

16.15 The commentor expresses the opinion that the NEPA process being used by DOE for the Tritium Supply and Recycling Program is flawed because it didn't address the combined impacts of different activities described in the PEIS. In the commentor's opinion, the approach to conduct individual assessments could run the serious risk of making the process appear to be "result-oriented."

Response: *The approach presented in the PEIS does describe the effects of individual facilities (tritium supply alone), but also provides the effects of the possible combinations of these facilities (e.g., tritium supply and recycling). The analysis also presents different operation scenarios to meeting tritium requirements (less than baseline operation). The methodology and presentation allow the public and the decision maker to review and consider all aspects of the project in the course of decision making. Section 4.9 has been expanded to include potential cumulative environmental impacts from other programs.*

16.16 The commentor states that the current draft does not meet the requirements of NEPA and its implementing regulations. The CEQ regulations for implementing NEPA call the discussion of alternatives "the heart of the environmental impact statement" (40 CFR 1502.14). An EIS must discuss a reasonable range of alternatives, and an EIS that fails to do so violates NEPA (refer to Natural Resources Defense Council v. Morton, 458 F.2d 827 (D.C. Cir. 1972)). Because the PEIS analysis is not based on a reasonable range of estimates for the size of the post START II nuclear weapons stockpile for the period of 2003 to 2050 - when the period a tritium supply option would actually be constructed and operated - this PEIS fails to analyze a reasonable range of tritium supply alternatives and thereby violates NEPA. The uneven treatment and inadequate discussion of some of the alternatives considered in the analysis also violate NEPA.

Response: *As stated in chapter 2 of the PEIS, the tritium requirements in this document are based on the 1994* Nuclear Weapons Stockpile Plan *approved by the President on March 7, 1994, which projects a need for new tritium by approximately 2011 based on a START II level stockpile size of approximately 3,500 accountable weapons. For a stockpile size smaller than START II, the need for new tritium could be extended beyond approximately 2011. If the need date for new tritium were significantly later than 2011, DOE would not have a proposal for a new tritium supply, and would not be preparing a PEIS for Tritium Supply and Recycling. Section 4.11 of the PEIS now includes an analysis of an increased stockpile level and a tritium need date of 2005. The PEIS analyzes the reasonable range of alternatives to meet the National security requirements for tritium.*

16.17 The commentor feels the decision making process is not truly a public involvement process. In the commentor's opinion the public does not vote and therefore the public does not have an opportunity to decide how tax dollars are spent.

Response: *DOE is required by NEPA to allow several opportunities for the public to provide input on the proposed action and associated environmental impacts. In addition to public scoping meetings and public hearings held at specifically determined points in the review and development process, several other methods for public input are available. The public can request and review information by mail, electronically through the electronic bulletin board and Internet sites established by DOE, and by calling the toll-free information line. Members of the public are also encouraged to contact their elected officials concerning the decision making process as well as the spending and budget process.*

16.18 The commentor notes that there is no mention of site-specific EISs on environmental restoration and waste management or other proposed projects (except those specifically related to weapons material), which would be relevant in assessing cumulative impacts and in choosing a site. The commentor asks if these will be considered in the future site-specific tiered NEPA process.

Response: *Compliance agreements at the candidate sites regarding environmental restoration and waste management were reviewed relative to environmental impacts as addressed in section 3.3. The analysis also includes the types of waste management facilities, their capacity, and projected life. The project impacts were evaluated based on these levels. More detailed analysis would be included in future site-specific tiered NEPA documents. Section 4.9 (cumulative impacts) describes the impacts of these actions.*

16.19 The commentor greatly approves of the Draft PEIS format and indicates that the following sections were particularly helpful: section 3.1.1 - planning assumptions and analysis, section 3.1.2 - environmental impact analysis, and section 4.1.1 - environmental resource methodologies. The commentor also notes that these sections placed up front in the document rather than buried in an appendix provide a clearer introduction to the alternatives and impact assessments. In fact, the commentor believes that all of DOE's EISs should include similar sections. The commentor also likes the co-presentation of the affected environment and environmental impacts for each candidate site.

Response: *DOE will consider these comments in future NEPA documents prepared by the Office of Reconfiguration and in other DOE programs.*

16.20 The commentor suggests that DOE have the NRC review the PEIS. The NRC is not listed in table 6.2-1 of the Implementation Plan (IP) (1/95) for purposes of coordination and consultation. In 10 CFR 1021.100, 1021.101, and 1021.103, DOE acknowledges its obligation to comply with the regulations issued by the CEQ as given in 40 CFR 1500 - 1509. Specifically, under 40 CFR 1502.19, DOE is required to furnish the entire statement to "any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved," and, under 40 CFR 1502.24, DOE "shall ensure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements."

Response: *NRC has been provided with copies of this document for review as suggested. Meetings and discussions were held with NRC and they have been included in the PEIS process.*

16.21 The commentor feels that tritium production environmental impacts, "from initial material collection to end by-products," need to be considered. In addition, the commentor feels other focus areas for consideration should include: how will tritium affect endangered and other species, and how will they be protected; what measures will be undertaken should a radiological accident occur; and how, when, and where will tritium "end" products be stored and disposed of. Also, another commentor states that the PEIS for Tritium Supply and Recycling should include information on the environmental conditions (for example, Superfund activities) of each site.

Response: *The PEIS does consider and evaluate the environmental impacts of the potential tritium supply and recycling facilities on biotic resources including endangered species at each site (see sections 4.2.3.6, 4.3.3.6, 4.4.3.6, 4.5.3.6, and 4.6.3.6). The emergency planning and emergency preparedness plans and procedures in place at each site are described in the affected environment sections for each site under the heading "radiation and hazardous chemical environment." More discussion of the emergency preparedness procedures as they relate to potential reactor accidents has been added to these sections in the Final PEIS. The "end" products of radioactive waste,* *hazardous waste, and spent nuclear fuel are addressed and included in the analysis presented in the PEIS (see the waste management sections 4.2.3.10, 4.3.3.10, 4.4.3.10, 4.5.3.10, and 4.6.3.10).*

16.22 The commentor believes that DOE is being politically pressured into making a premature and unnecessary decision. The PEIS does not fully reflect this fact, but the commentor strongly encourages DOE to insist on completion of a thorough and open analysis and discussion of this matter before any decision on future tritium production is made.

Response: *As discussed in chapter 2, DOE has conducted a thorough and open analysis on the tritium issue. DOE does not think this is a premature and unnecessary decision. Rather, DOE is conducting this action in order to meet its responsibilities set forth in the* Atomic Energy Act.

16.23 The commentor believes that each of the alternative technologies and sites has environmental impacts that will need to be further evaluated and mitigated in future NEPA documentation. The commentor further suggests that the ratings of the programmatic alternatives do not preclude the possibility of future, potentially significant, environmental impacts that may arise when site-specific tiered NEPA analyses are done.

Response: *DOE has already identified the need for further NEPA analysis in site-specific tiered NEPA documents and discusses the proposed compliance with NEPA for tritium supply and recycling in section 1.2 of the PEIS. The possibility of future significant impacts could arise but the PEIS attempted to bound the analysis so that impacts identified in site-specific tiered NEPA documents would be encompassed.*

16.24 In reference to page S-3, paragraph 4, the commentor suggests that the ROD should also include a decision as to when to start to build the new supply and when it must be online.

Response: *The ROD will select potential tritium supply technologies and site locations; other issues such as construction and online data for operation are not expected to be provided in the ROD. However, the current guidance shows that the tritium supply must be online by 2011. The detailed start and ending dates for any tritium supply and recycling facilities will be included in subsequent, site-specific tiered NEPA document for such facilities.*

16.25 The commentor notes that an operational date for the new supply given on page S-4, paragraph 5 does not appear to be consistent with the date given near the end of page S-1.

Response: *The statement that new tritium be available for use in the year 2011 is consistent in both sections referred to by the commentor. The confusion may be in the statement on page S-1 that a new "source" of tritium be available by 2009. This means that a tritium supply technology must be constructed and ready to irradiate targets in the year 2009 so that the tritium can be extracted and be available for replenishment of the tritium reserves in the year 2011.*

16.26 The commentor asks how a person with a Q-clearance gains access to the classified appendix CA.

Response: *Personnel with an active Q-clearance may be able to gain access by contacting the Director of the Office of Reconfiguration at the following address: Office of Reconfiguration, US Department of Energy, P.O. Box 3417, Alexandria, Virginia 22302. In addition, interested parties can call the following toll-free number to obtain more information: 1-800-776-2765.*

16.27 The commentor notes that page 1-1, paragraph 1 contains the statement that there is no capability to produce tritium within the Complex. While this may be technically correct, the commentor points out that DOE has significant capacity to produce tritium as described on page S-9.

Response: *The statement in section 1.1 has been changed to clarify that DOE does not have the capability to produce the required amounts of tritium.*

16.28 The commentor requests that the particular NEPA documents referred to on page 1-2, top of second column concerning the commitment of resources be specified.

Response: *The other NEPA documents referred to in this section are the Waste Management PEIS being prepared by the DOE Office of Environmental Management; the Storage and Disposition of Weapons-Usable Fissile Materials PEIS being prepared by the DOE Office of Materials Disposition; the Foreign Research Reactor Spent Nuclear Fuel EIS and Programmatic Spent Nuclear Fuel Management EIS recently completed by the DOE Office of Environmental Management. A discussion of these documents is presented in section 1.5. To better clarify this, a reference to section 1.5 has been added to the paragraph noted by the commentor.*

16.29 The commentor asks how can a requirement for tritium depend on funding levels as mentioned on page 1-2 of the PEIS. In addition, the commentor asks why the operational date for a new supply is not set only by military needs, treaty commitments, and the size of the existing tritium supply.

Response: *The tritium requirements are independent of funding levels. The need date is independent of funding, however, the operation date is dependent on funding.*

16.30 The commentor notes that the fourth sentence on page 3-4 concerning the storage of spent fuel states "but no acceptance criteria has been established." Since criteria is plural, the word "has" should be replaced by the word "have".

Response: *The commentor is correct and the appropriate changes have been made to section 3.1.1 of the Final PEIS.*

16.31 The commentor believes that DOE personnel and contractors are resources paid for by the taxpayers and should be accounted for in the PEIS. The commentor states that such an accounting may put to bed concerns that DOE creates programs to maximize DOE jobs via study and development programs with DOE employees/contractors.

Response: *The PEIS addresses the socioeconomic issues for each of the alternatives. The Tritium Supply and Recycling Program is a result of national defense needs and not a program for creating jobs.*

17 Regulatory Compliance

17.01 The commentor is of the opinion that DOE needs to resolve the facility regulatory oversight issue and disclose its decision. In addition, the commentor also suggests that DOE should be wary of allowing the state to set regulatory standards as they are often too high.

Response: *States have the legal authority to establish environmental standards which may be more stringent than Federal standards. In response to concerns that DOE needs regulatory oversight at its nuclear facilities, the Secretary has created an independent Task Force on External Regulation.*

This task force is presently reviewing various alternatives for external oversight of activities at DOE's nuclear facilities and will submit a report, with recommendations, early in 1996.

17.02 Six departments within the state government of South Carolina, after reviewing the Tritium Supply and Recycling Program, state that it is consistent with their goals and objectives. In addition, the proposal is consistent with the South Carolina Coastal Zone Management Program.

Response: *As explained in the PEIS, DOE intends to meet all applicable state regulations of the affected state in the siting, construction, and operation of the tritium supply technology.*

17.03 The commentor notes the classification of radioactive wastes generated by the target, multiplying blanket, and beam stop in the APT is under the jurisdiction of the NRC per sections 2(12)(B) and 2(16)(B) of the *Nuclear Waste Policy Act* of 1982, as amended, and per section 2(9)(B) of the *Low-Level Radioactive Waste Policy Act*. In addition, the commentor suggests that the NRC review the nuclear waste classifications for all options discussed in the PEIS.

Response: *Currently DOE-generated LLW is disposed of at DOE facilities and it is not regulated by the NRC. The PEIS was provided to the NRC for review. Mixed LLW is shipped offsite and does comply with NRC provisions.*

17.04 The commentor provides a rewrite for volume I, chapter 5, table 5.3-4, page 4-14, water resources row, potential applicability/permits column. The suggested rephrasing is as follows: A permit may be required prior to any modification of waters of the state including stream alteration for the construction of intakes, discharges, bridges, submarine utility crossings, etc.

Response: *The phrase "A permit may be required prior to any modification of waters of the state including stream alteration for the construction of intakes, discharges, bridges, submarine utility crossings, etc." has been substituted in table 5.3-4 in section 5.3 of the Final PEIS.*

17.05 The commentor suggests DOE ensure that all Nevada action alternatives are consistent with the State of Nevada's water protection laws. A copy of the those laws were mailed to DOE. In addition, the commentor believes that PEIS table 5.3-4, page 2 of 5 should be modified to indicate that a ground-water withdrawal permit is or will be required from the Nevada State Engineer.

Response: *DOE believes the proposed action at NTS would be consistent with applicable Federal law and State of Nevada water laws. The site-specific NEPA document will analyze these issues in more detail and DOE will comply with all applicable Federal, state, and local laws if NTS is selected.*

18 NATIONAL NUCLEAR WEAPONS POLICIES

18.01 Several commentors express opposition to additional tritium production and continuation of nuclear weapons production for the following reasons: such activity is a contradiction of the Non-Proliferation Treaty and the decision should be No Action; it does not show good faith to other countries; tritium from dismantled weapons can be used beyond the year 2011; it is unwise from a fiscal, health, and political standpoint; and it produces tremendous amounts of hazardous waste which we are already unable to handle. Also, commentors suggest reduced nuclear threat has reduced the need for nuclear bombs, and results of a re-evaluation/negotiation of the Non-Proliferation Treaty could eliminate the need for a production facility.

Response: *As a result of the START I Treaty, the START II Protocol, and the recently completed Nuclear Posture Review, the Nation's nuclear stockpile is being greatly reduced. The Nuclear Posture Review forecasts steady declines in both the size and diversity of the stockpile through the year 2003. Thus, DOE is currently engaged in a significant dismantlement effort. Such actions are consistent with the recently reaffirmed Nuclear Non-Proliferation Treaty. Additionally, DOE has made significant progress in consolidating the Complex, and is now considering further consolidation to make the Complex smaller and less costly to operate, while protecting the environment and public and worker safety. With the exception of a facility to make tritium, DOE is not considering the construction of any major new weapons production facilities. The need for a new tritium supply is discussed in chapter 2 of the PEIS.*

18.02 The commentor is of the opinion that DOE should not create any more nuclear waste until a positive use can be found for it.

Response: *As discussed in the waste management sections, all tritium supply alternatives will create waste. DOE cannot meet its responsibilities without generating waste. DOE will attempt to minimize any waste that is produced and to manage waste in a safe and environmentally conscious manner in accordance with all applicable regulatory requirements.*

18.03 The commentor states that we should abolish all weapons and not further destroy the land and the environment. According to the commentor, the SRS tritium production plant has already released significant amounts of radiation into air and water. The commentor adds that radioactive elements cannot be stored safely for long periods of time. In addition, the commentor notes that some of the land on military bases that have such storage will not be able to be used again.

Response: *DOE recognizes that its facilities require varying levels of environmental cleanup and has instituted a cleanup program over the past several years. DOE has worked with EPA, states, stakeholders, and the general public to develop long-range programs and commitments to clean up its facilities to acceptable levels. All of these plans and commitments have been reviewed for the proposed sites to determine if there are any conflicts or restrictions which would inhibit these sites from serving as good locations for the facilities proposed in the PEIS for tritium supply and recycling. Nothing was found which would inhibit the alternative sites from performing the required mission. Once a specific site is selected, additional site-specific tiered NEPA documents will be prepared. This analysis will address specific contamination problems of the specific proposed DOE facility and, to the extent mitigative measures are required to allow for ongoing environmental restoration or to prevent additional contamination, it will be an integral part of this site-specific analysis.*

18.04 Commentors state that DOE should consider technology alternatives that use a commercial reactor for defense purposes and that create saleable electricity. One commentor suggests DOE consider producing excess tritium for sale to other countries to affect taxpayer burden. Another commentor states that developing APT technology could possibly pose a greater proliferation threat than using ALWRs, which have become a worldwide standard and are a controlled known technology.

Response: *The primary purpose of the proposed action is to obtain a new source of tritium to meet the National defense needs of the future. The PEIS evaluates the reasonable alternatives to meet defense requirements and potential environmental impacts associated with each tritium supply technology. Although there are other commercial uses for tritium both in the United States and abroad, this use of the new tritium supply to provide tritium for these uses is not proposed. The use of a commercial reactor to irradiate tritium target rods is now included as a reasonable alternative and has been added in the PEIS. The preferred alternative identified in section 3.7 of the PEIS is a dual track* *strategy to pursue both the use of an existing commercial light water reactor and the construction of an accelerator to produce tritium. The preferred alternative also identifies SRS as the preferred site if an accelerator is selected as the primary production option.*

18.05 Commentors express support for the National Defense Policy and general mission of DOE. Another commentor notes that this is an important process and an important decision.

Response: *These comments will be considered in the decision making process.*

18.06 The commentor is of the opinion that controversy over the nuclear program conceals hidden agendas designed to kill nuclear power.

Response: *The PEIS contains a fair and open assessment of the proposed alternatives.*

18.07 One commentor states that the government continues to practice "pork barrel economics" by suggesting the possibility of a multipurpose reactor which can dispose of plutonium, produce tritium and generate electricity. Another commentor suggests using a plutonium trigger for weapons less than 20 tons of TNT equivalent.

Response: *The decision on the tritium supply technology will not be identified until the ROD has been published after this PEIS. Two of the technologies analyzed for tritium production in the PEIS have the capability to burn plutonium (ALWR and MHTGR), as does the commercial reactor alternative. The potential use of these technologies for plutonium disposition has been addressed in the PEIS. DOE does not expect that the ROD on tritium production would restrict or prejudice decisions of any plutonium options. In fact, DOE's preferred alternative would allow for subsequent integration with future plutonium disposition decisions if desired.*

18.08 Commentors suggest that DOE should provide a declassified *Nuclear Weapon Stockpile Plan* showing what it considers a safe and reliable nuclear deterrent.

Response: *Chapter 2 of the PEIS is the unclassified version of the* Nuclear Weapons Stockpile Plan.

18.09 One commentor refers to volume I, chapter 2, section 2.1 and requests that an explanation or history of the Nation's nuclear weapons stockpile adjustments be provided (i.e., the impact of recent treaties, the fall of the Soviet Union, the projected threat, and other associated factors that would affect future tritium needs). In addition, another commentor states that the public should be aware of the actual numbers and amounts of tritium that are needed. In the commentor's opinion, more analysis on tritium and weapons needs is necessary and might indicate that further reductions could be made thereby eliminating the need for a new facility. Another commentor suggests that the Final PEIS should address the total tritium supply needs for not only strategic defense but also for other defense missions, critical non-defense missions and energy security consistent with the legally binding goals imposed in Sections 1602, 2001, and 2114 of the *Energy Policy Act* of 1992.

Response: *The previous and current number of actual nuclear weapons in the stockpile, as well as the amount of tritium required for such stockpile numbers, remains classified. To the extent possible, the general levels, as well as a correlation to the various treaty activities, have been reflected in the PEIS.*

18.10 In reference to the last paragraph on page S-1, the commentor questions the basis for the year 2009 as the time when the new supply of tritium must be available. The commentor also asks if this is based on START II levels or something else.

Response: *As stated in chapter 2 of the PEIS, the tritium requirements in this document are based on the 1994* Nuclear Weapons Stockpile Plan *approved by the President on March 7, 1994. These levels are based on START II levels.*

18.11 The commentor asks if DOE is turned over to DOD, what effect, if any, will that have on site selection and technology for tritium.

Response: *The requirements for tritium would not change as a result of a shift of responsibility from DOE to the DOD. The existing Complex has in the past and is currently charged with monitoring the Nation's nuclear weapons stockpile. There is no reason to believe that under DOD the potential sites or the technologies considered for tritium production would change.*

18.12 The commentor asks what would be the impact of failing to supply tritium by 2011 and by 2016.

Response: *The consequences of failing to supply tritium by 2011 and 2016 is explained in section 2.1 of the PEIS. Essentially, after 2011 it would be necessary to use the strategic reserve of tritium to maintain the readiness of the nuclear stockpile. Without a new source of tritium, the strategic reserve would be depleted by 2016 and the nuclear deterrent capability would degrade because the weapons in the stockpile would not all be capable of functioning as designed.*

18.13 The commentor states that it is unacceptable for the Federal Government to knowingly proceed with a project that they know will cause an increase in the levels of cancer estimated for the alternative PEIS sites.

Response: *Potential human health impacts are discussed in the PEIS and the ROD will consider these in any decisions for selecting a tritium supply technology or site.*

18.14 The commentor states that the manufacturing of nuclear weapons has become a hornet's nest of environmental catastrophes. The cost of cleaning up these catastrophes, the commentor believes, is astronomical. Therefore, the commentor suggests that DOE should stop making weapons that it never intends on using.

Response: *The Nation has significantly reduced its nuclear arsenal. However, even with international treaties and major reductions, tritium will still be required. Chapter 2 of the PEIS addresses the purpose of and need to provide a tritium supply. The DOE Office of Environmental Management directs an ongoing program to remediate contamination of DOE facilities due to past operations. The characterization activities of potential contamination areas or any planned or ongoing remediation activities would be considered in the siting of any tritium supply technology at any site. Lessons learned from past DOE production reactors and the incorporation of the latest designs in proposed tritium supply technologies are being used to ensure the protection of the environment and minimize the generation of additional waste.*

18:15 Commentors believe that global nuclear disarmament should also be considered an important variable in the decision to produce tritium. Several commentors believe that the continued existence of nuclear weapons and the materials to assemble them is a threat to our safety. According to the commentors, as a result of the reduced Russian threat there is no longer a need to produce nuclear weapons. Commentors feel reducing more weapons adds to the possibility of increased terrorist threats. The commentors state that the United States has almost 20 years to continue to seek quick ratification of START II and negotiate deeper cuts. In addition, the commentors suggest that DOE analyze various stockpile levels, not just conservative ones. If reductions are made, the commentors believe that recycling could continue to supply tritium into the twenty first century thereby greatly reducing the need for tritium. Finally, the commentors note that while DOE may not have final authority over whether a tritium facility should be built, DOE should make the case with the Nuclear Weapons Council that the United States does not need to make an immediate decision. Commentors recommend a delay since an immediate decision to build may be dangerous for the United States.

In addition, commentors refer to section 2.1, paragraph 3, and section 3.1.1, paragraph 3 and request that the section on sizing be expanded to include the specific reductions in the stockpile, or limitations on the stockpile, as a result of specific treaties and international agreements. The commentors ask how much tritium is required to support the START I and START II levels, as a percentage of the pre-START I levels. With this information, the commentors believe that it will be easier to understand why the new supply needs to come online at a specified data. For example, the commentors note that if the START II level is 25 percent of the pre-START I level and the last production of tritium was in 1988, then a new supply must be available in 2013. The commentors note that under START II, implemented in 2003, our arsenal will contain approximately 8,000 weapons. By 2010, the commentors believe that number should be reduced as the result of negotiating further cuts. Therefore, the commentors feel that the need for additional tritium could be delayed well beyond 2010.

Response: *The Nation has significantly reduced its nuclear arsenal. Even with these treaties and major reductions, tritium will still be required. Chapter 2 provides the rationale for stockpile size. DOE has to support* Nuclear Weapons Stockpile Plan *under the* Atomic Energy Act *of 1954. These levels are established to provide an effective nuclear deterrent. DOE cannot unilaterally change the stockpile size. The previous and current number of actual nuclear weapons in the stockpile, as well as the amount of tritium required for such stockpile numbers, remains classified. To the extent possible, the general levels, as well as a correlation to the various treaty activities have been reflected in the PEIS.*

19 ALLOCATION OF FEDERAL FUNDS

19.01 Commentors believe DOE should not fund a tritium facility. One commentor claims that taxpayers are not ready to pay for a tritium facility for several reasons: the Federal Government is trying to reduce spending; it is a poor use of money that should be spent on environmental cleanup so as not to leave the cleanup legacy to our children; given the imminent financial insolvency of Medicare and the poor state of American schools, proceeding with tritium supply and recycling will only weaken the value of United States currency; and money should be used for people's needs. Also, after spending a lot of money, the commentor notes that the project could be canceled. Another commentor believes that DOE's decisions regarding the Tritium Supply and Recycling Program should keep pace with the proposed legislation to drastically reduce and balance government spending.

Response: *Congress determines how funds are allotted. DOE spends monies consistent with Congressional direction. All of DOE's facilities require some level of environmental cleanup. DOE facilities were designed in the 1940s and 1950s, prior to environmental regulatory requirements when the understanding of waste management principals was not what it is today. Over the past several years, DOE has had a very aggressive cleanup program and has worked with EPA, states, stakeholders and the general public to develop long-range programs and commitments to clean up its facilities to acceptable levels.*

19.02 The commentor suggests that money should be spent on solar power and other alternative energy sources.

Response: *The evaluation of utilizing power from a Solar Powered Demonstration Project at NTS has been added to the PEIS. Any further evaluation of methods to reduce electricity costs will be done in the site-specific tiered NEPA documentation as appropriate.*

19.03 The commentor is of the opinion that DOE should include funding support for the multipurpose facility as part of the FY'95 Energy and Water Appropriation Bill.

Response: *The development of the budget and congressional spending process are beyond the scope to the PEIS.*

20 SUPPORT OF OR OPPOSITION TO DOE POLICY

20.01 Several commentors oppose the funding and construction of the Tritium Supply and Recycling Program because they believe DOE should spend more time and funds on environmental cleanup and waste management at existing sites. One commentor expresses the opinion that DOE should counter any efforts to reduce funds allocated for environmental cleanup. For example, the commentor notes that a 9.2 percent decrease in such funding might require DOE to default on legally binding cleanup commitments. The commentor further suggests that if DOE would include in funding estimates for a tritium facility the costs required to dispose of waste produced by the facility, the project probably wouldn't be practical. In addition, the commentors also believe that opening a tritium supply facility will have a negative environmental impact. In fact, one commentor states that the tritium facility should not be built because weapons use is costly and as morally wrong as the Vietnam War. The commentor contends that the United States should be reducing weapons stockpiles instead of planning more weapons plant construction, which the commentor believes sends the wrong signal to the other nations and contradicts the assertion that DOE is downsizing. Another commentor favors tritium recycling instead of producing more tritium because it is safer and less expensive.

Response: *As a result of the START I Treaty, the START II Protocol, and the recently completed Nuclear Posture Review, the Nation's nuclear stockpile is being greatly reduced. With the exception of a facility to make tritium, DOE is not considering the construction of any major new weapons productions facilities. Remediation of contamination due to past operation of DOE facilities is an ongoing program of DOE under the direction of the Office of Environmental Management. The characterization activities of potential contamination areas or any planned or ongoing remediation activities would be considered in the siting of any tritium supply technology at any site. Lessons learned from past DOE production reactors and the incorporation of the latest designs in proposed tritium supply technologies are being used to ensure the protection of the environment and minimize the generation of additional waste. Congress determines how funds are allotted. DOE has no direct participation in funding, only allocation.*

20.02 The commentor claims that originally, DOE was going to obey a CEQ requirement that DOE identify a preferred alternative for the tritium production facility. The commentor states that choice was to be the APT, located at NTS. However, the commentor contends that politicians from South Carolina and Georgia pressured the Secretary of Energy to postpone the decision. Pork barrel politics should not be involved in the choice, according to the commentor.

Response: *CEQ regulations require an agency identify a preferred alternative in the draft only when one or more exists (40 CFR 1502.14(e)). At the time the Draft PEIS was published a preferred alternative did not exist because cost and technical studies were not completed. These studies now exist and a preferred alternative is identified in section 3.7 of the Final PEIS. The rationale for selecting the tritium supply and recycling alternative will be identified in the ROD. DOE's decision making* *process will weigh factors such as cost, technological feasibility, environmental issues, and policy considerations.*

20.03 The commentor states that DOE should not continue with its engineering studies that are scheduled for the next 5 years. In the commentor's opinion, this will just be an additional burden on the taxpayers. If DOE decides to proceed with the studies, the commentor believes that it will mean that the tritium facility will be built.

Response: *Engineering studies will continue to support decisions made by the ROD.*

20.04 The commentor asserts that weapons should not be redesigned to avoid the need for tritium.

Response: *DOE considered but eliminated from detailed study the redesign of weapons to require less or no tritium. The reasons why redesign is not proposed are discussed in section 3.1.3 of the PEIS.*

20.05 The commentor believes that the use of nuclear weapons is never appropriate and urges a No Action decision.

Response: *The PEIS analyzes the potential environmental impacts associated with various site and technology alternatives for the production of tritium. Under the No Action scenario, DOE would not have sufficient quantities of tritium to fulfill its requirements under the* Atomic Energy Act *of 1954 to support the enduring stockpile as directed by the President and approved and funded by Congress. The tritium in weapons which are being retired from the stockpile as a result of recent arms negotiations can be recovered and utilized in the existing weapons, but this supply is not sufficient to replace the tritium which decays in the existing weapons. Based on a stockpile consistent with the requirements of START II levels, it is expected that an additional supply of tritium will be required by 2011. Accordingly, DOE is proposing to develop a new source of tritium. The use of nuclear weapons is beyond the scope of the PEIS.*

20.06 The commentor believes that Idaho has shouldered the Nation's most undesirable waste for far too long. In the commentor's opinion, the other states should accept an equal share of the waste. In addition, the commentor would like to see more environmental protection and less nuclear development.

Response: *Only waste generated at INEL would be handled there. No outside waste would be sent to INEL under any other alternatives.*

20.07 The commentor believes that DOE should build a reactor fueled by plutonium or highly enriched uranium.

Response: *Section 4.8.3 of the PEIS discusses the option of building a reactor capable of burning this type of fuel.*

20.08 The commentor believes that Westinghouse should be replaced as the prime contractor.

Response: *This issue is beyond the scope of the PEIS. However, DOE contracts are reviewed on a regular basis.*

20.09 One commentor believes that new technology would be developed if sufficient time were allowed to pass before the project is approved, making the Tritium Supply and Recycling Program unnecessary. The commentor notes that by rushing headlong into the project now, we are precluding some feasible alternatives (using tritium from retired weapons). This kind of action the commentor states is what lead to the arms race/build-up in the first place. In addition, another commentor believes DOE should delay its decision to build a new tritium supply source for 20 years to save money and to phase-out "thermonuclear" weapons production here and in nuclear-capable nations.

Response: *Chapter 2 provides the rationale for stockpile size. DOE has to support the* Nuclear Weapons Stockpile Plan *under the* Atomic Energy Act *of 1954. These levels are established to provide an effective nuclear deterrent. DOE cannot unilaterally change the stockpile size.*

21 STORAGE OF SPECIAL NUCLEAR MATERIALS

21.01 Commentors state concerns about waste management in Nevada. One commentor is opposed to storage or disposal of surplus special nuclear materials or high-level waste in Nevada. Another notes that State of Nevada officials contend that the PEIS fails to provide any real discussion or assessment of the real waste management risks and equity issues important to Nevadans. Currently, virtually all of the LLW being shipped to the NTS is shipped from offsite generators. Equity issues are concerns for Nevadans since DOE has stated that the NTS site could become the largest burial ground in the DOE Complex for defense-related radioactive waste. Finally, the commentor states, while the PEIS includes an assessment of the potential cumulative impacts associated with some of these storage activities, it fails to consider the civilian spent reactor fuel to be placed at Yucca Mountain.

Response: *Section 4.3.3.10 addresses the potential waste management impacts at NTS. None of the tritium supply technologies will generate high-level waste. Impacts of spent nuclear fuel at Yucca Mountain are not quantifiable at the present time.*

22 COMMERCIAL REACTOR ALTERNATIVE

22.01 Several commentors believe that cost issues are a priority and offer suggestions on addressing this matter in the PEIS. One commentor asserts that there needs to be a cost estimate for a tritium production and plutonium disposition facility together and a cost estimate for each facility separately. DOE also needs to compare the three cost estimates. The cost analysis, according to another commentor, should also include the cost to the government of a privately financed reactor proposal - how would DOE inform the public on the costs/benefits of a privately- or publicly-owned multipurpose reactor. In addition, another commentor feels the high cycle costs of the proposed technology alternatives should be a major consideration in the ROD. The commentors also believe that DOE should compare the costs of accelerator-produced versus reactor-produced tritium and a per-gram tritium cost comparison. Finally, the commentors suggest evaluating the cost of buying tritium versus producing it. The obvious cost-effective option is to locate the tritium facility where a tritium recycling facility already exists, at SRS. Other cost-effectiveness-related comments from the commentors include: the idea to utilize and upgrade existing DOE tritium recycling facilities and reactors or accelerators; the idea to purchase foreign-source tritium such as from North American Free Trade Agreement partner, Canada; and purchasing irradiation services from existing commercial facilities.

Response: *DOE has conducted extensive cost and technical reliability analyses for each of the alternatives analyzed in the PEIS. All of this information will be considered along with the information developed through the PEIS to reach an ultimate decision. Information developed to analyze the costs associated with the various alternatives for the PEIS was further placed under the additional scrutiny of an independent review. Although these cost studies are not included in the PEIS, as the PEIS deals with the projected environmental impacts of the various programmatic alternatives, they are reflected in the Technical Reference Report which is available in DOE reading rooms. No cost* *analysis was performed on the purchase of tritium from a foreign source. This alternative was considered, but determined to be unreasonable, since it would place the Nation's defense at the mercy of the supply source nation.*

22.02 Several commentors state that DOE should consider more closely the use of an existing commercial reactor. Using a commercial reactor might create fewer negative environmental impacts and save money compared to building a new facility, according to the commentors. Commentors suggest that an analysis be provided of the modifications necessary to convert a functioning reactor to tritium production and discuss the prospect of converting a commercial reactor to tritium reduction in more detail, with relation to costs, engineering feasibility, and public health and environmental issues. Other commentors believe that the PEIS does not adequately explain the exclusion of either the commercial reactor-purchase or control rod production alternatives from the full-scale analysis of tritium supply alternatives on page 3-7 and in section 4.10. The commentors further state that they believe nothing in existing nonproliferation law or practice suggests that the United States could not legally produce tritium for military or civil purposes in a "civil" reactor. One commentor notes that tritium is not a material subject to IAEA safeguards, is not regarded as central to the proliferation problem, and is also produced for civil purposes, such as runway lighting and fusion energy research. Finally, Commentors believe that the existing reactor option should be analyzed in more detail in the PEIS and also suggest that DOE develop a list of commercial reactors that are under consideration.

One commentor feels that the nonproliferation policy of the reactor purchase options are not sufficiently different from DOE's own proposed ALWR alternative, which includes the use of a next generation civil reactor design and the generation of electricity for commercial sale, to justify its "elimination from detailed study." Another commentor contends that if DOE is now considering the existing reactor option that they should also consider the privatized multipurpose reactor. The commentor further states that if the existing reactor option were chosen then it should also include the large evolutionary light water reactor as well. In contrast, other commentors believe that the United States should not use commercial reactors for tritium production because we have asked other countries not to use their commercial reactors for national security efforts and it would be considered a violation of the Nonproliferation Treaty. In addition, commentors express skepticism about the conversion of commercial power reactor to tritium production, even if a new reactor were employed. Commentors also state that military and civilian nuclear technologies should be kept separate.

Response: *Section 3.1.3 of the Draft PEIS, alternatives considered but eliminated from detailed study addressed the issues of potentially using commercial reactors for the production of tritium. As a result of comments received on the Draft PEIS, DOE is now considering both the purchase of a commercial reactor and conversion to tritium production and the use of a commercial reactor for irradiation services as an alternative. A more detailed and comprehensive analysis of the purchase of an existing light water reactor has been added to the PEIS. DOE invited public comments on this specific issue, including comments on the potential environmental impacts described in section 4.10 of the Draft PEIS, in a special 21 day comment period. Results of that additional comment period are included in this Comment Response Document.*

22.03 In reference to page 3-29, section 3.4.2.1, commentors request that a discussion be included on why a power-producing HWR, such as the Canadian CANDU reactor, has not been considered. One commentor asserts that given the objectives on page A-31, it would seem that basing the design on a modern design that is currently in commercial service, like the CANDU, would be preferable to using technology from the 1950s. Another commentor expresses opposition to considering the use of a CANDU reactor as an alternative, and states the United States must stop subsidizing the CANDU reactor in Canada.

Response: *Utilization of the CANDU reactors was not considered because the utilization of such facilities, or the sale of tritium generated from these facilities for use in nuclear weapons, is precluded by Canadian law. The heavy water reactor being considered as an alternative by DOE, however, is similar in design to the CANDU reactor. The CANDU reactor is a reliable but older reactor design. The heavy water reactor alternative being considered in the PEIS is the next generation reactor design, is much more advanced than the CANDU reactor, and has many more design safety features built in to it.*

22.04 Several commentors express dissatisfaction with the length (21 days) of the extended comment period for the commercial reactor alternative. One commentor states that section 4.10 of the Draft PEIS does not provide a detailed study of the existing reactor option eliminated as a reasonable alternative. The commentor believes that DOE has not provided adequate justification for the "last minute" decision to allow existing reactors to be included in the Final PEIS. The commentor further suggests that DOE provide an opportunity for public comments on the Final PEIS, prior to issuing the ROD.

Response: *As discussed in the* Federal Register Notice *of August 25, 1995 (60 FR 44327), the public comment period was reopened for a limited period to solicit comments on DOE's intention to consider utilizing a commercial reactor or reactors (securing irradiation services) as a reasonable alternative in the PEIS. The decision to treat the irradiation services scenario as a reasonable alternative was reached after further evaluation in response to public comments on the Draft PEIS, in which several commentors asserted that irradiation services (or purchase of a commercial reactor, which was considered a reasonable alternative in the Draft PEIS) have the potential to be a low cost option that would not violate any law nor weaken nonproliferation efforts. Section 4.10 of the Draft PEIS included an evaluation of the environmental impacts of both of these scenarios, and this discussion has been expanded in the Final PEIS. Although the irradiation services scenario was considered as a contingency in the case of a national emergency and not as a reasonable alternative in the Draft PEIS, the impacts were evaluated in detail and were not added to the Final PEIS without providing the opportunity for public review and comment. As the reopened public comment period was intended only to solicit additional comments on analysis available to the public throughout the original comment period, the 21 day period was deemed to be sufficient. Members of the public may submit comments on the Final PEIS, including the alternatives considered and the preferred alternative. A decision on tritium supply and recycling will not be made until at least 30 days after the issuance of the Final PEIS.*

23 COMMERCIAL IRRADIATION SERVICES

23.01 Some commentors express support for the purchase or lease of irradiation services for tritium production. One commentor states that such a purchase from a utility with an existing reactor is less costly than rebuilding a new facility since the infrastructure is already set. Other commentors favor the purchase of irradiation services only in the event of a national emergency or as a contingency source of tritium. In contrast, one commentor argues that building a new facility to produce tritium or leasing irradiation services is contradictory to the Nation's goals of reducing its nuclear weapons stockpile.

Response: *The decision to consider utilizing a commercial reactor or reactors (securing irradiation services) as a reasonable alternative in the PEIS was reached after further evaluation in response to public comments on the Draft PEIS, in which several commentors asserted that both have the potential to be a low cost option that would not violate any law nor weaken nonproliferation efforts. DOE has conducted extensive cost and technical reliability analyses for each of the alternatives analyzed in the PEIS. Although the irradiation services scenario described above was originally* *considered by DOE only in the case of a national emergency, as described in section 3.1.3 of the Draft PEIS, DOE has since concluded that it represents a reasonable alternative to be considered for all tritium supply requirements. These issues will also be considered in the decision on tritium supply and recycling.*

Department of Energy
Washington, DC 20585

October 19, 1995

Dear Interested Party:

The Final Programmatic Environmental Impact Statement (PEIS) for Tritium Supply and Recycling has now been completed. Tritium is an essential component of every warhead in the current and projected United States nuclear weapons stockpile. Tritium decays at a rate of 5.5 percent per year and must be replaced periodically as long as the Nation relies on a nuclear deterrent. In accordance with the Atomic Energy Act of 1954, as amended, the Department of Energy is responsible for developing and maintaining the capability to produce nuclear materials such as tritium. Currently, the Department does not have the capability to produce tritium in the required amounts.

The Tritium Supply and Recycling PEIS evaluates the siting, construction, and operation of tritium supply technology alternatives and recycling facilities at each of five candidate sites. The PEIS also evaluates the use of a commercial reactor for producing tritium.

On October 10, 1995, the Department announced its preferred alternative, a dual-track strategy under which the Department would begin work on two promising production options: use of an existing commercial light water reactor and construction of a linear accelerator. The Savannah River Site in South Carolina has been identified as the preferred site for an accelerator, should one be constructed. Details on this preferred alternative can be found in the Executive Summary and in section 3.7 of Volume I of the PEIS. A Record of Decision will follow in late November.

The Department of Energy appreciates your continued participation in this Program.

Sincerely,

Stephen M. Sohinki

Stephen M. Sohinki, Director
Office of Reconfiguration