REMEDIAL ACTION AT WEST VALLEY, NEW YORK

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

FIRST SESSION

ON

AMENDING THE DEPARTMENT OF ENERGY AUTHORIZATION BILL FOR FISCAL YEAR 1980, REGARDING REMEDIAL ACTION AT ~~WEST VALLEY~~, NEW YORK

HEARING HELD IN WASHINGTON, D.C.
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REMEDIAL ACTION AT WEST VALLEY, N.Y.

THURSDAY, MAY 31, 1979

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:45 a.m., in room 1324 of the Longworth House Office Building, Hon. Morris K. Udall (chairman of the subcommittee) presiding.

The CHAIRMAN. The subcommittee will be in session. We are meeting today to consider an amendment to the Department of Energy authorization bill for fiscal year 1980 which has been recommended to the House by the Committee on Science and Technology.

The amendment is sponsored by our distinguished colleague, Mr. Lundine, and provides Federal assistance in a confused and hazardous situation at a defunct nuclear fuel facility at West Valley, N.Y.

Both high- and low-level nuclear wastes are now being stored at the site. A nuclear fuel reprocessing facility located there no longer meets NRC licensing standards and it is doubtful that it will ever be operated again.

The Federal Government was deeply involved in the development of this site and many of us have thought that Congress ought to be involved in helping to clean it up.

The Department of Energy was requested in its fiscal year 1978 authorization act to carry out a study of the West Valley situation and then to lay out some options for addressing the problem. A copy of that final report was sent to each subcommittee member along with the Lundine amendment so that we could begin to assess whether that amendment provides an appropriate mechanism for Federal action in this case.

Let me, before we begin, briefly review the basis for our subcommittee's interest in the Lundine amendment. The Congress and particularly this committee have recently set some important precedents for Federal involvement in cleaning up nuclear hazards created by what have turned out to be misguided and occasionally irresponsible actions by the old Atomic Energy Commission.

Last year for example, the Congress passed a bill of this type produced by this subcommittee, the Uranium Mill Tailings Control Act. In developing that legislation we tried to make explicit the recognition of well defined State and Federal roles in taking care of the problem, and we worked to insure that the hazard would be addressed thoroughly under broad regulatory control.

To the extent that the Lundine amendment provides for research and development activities, those activities are under the exclusive jurisdiction of the Science Committee.

But the amendment also provides that the best available existing technology ultimately be applied to assist non-Federal bodies in taking care of a nuclear waste problem. As this is the most important objective of the amendment, we must carefully assess the environmental and regulatory impacts of the proposal, assure that the project is justified and appropriate.

If the Federal Government is to act to help remedy this situation, the basis for that action, the responsibility of other parties must be made clear. In considering this issue, I am sure that the subcommittee will want to focus on the important questions that have been raised by Mr. Lundine.

First, I hope we can clarify how we will assure that the technology used to solidify high-level wastes at the West Valley site will meet criteria that are still to be developed by the NRC. It would be extremely wasteful to proceed to solidify wastes into a form that would not be optimum for permanent burial.

I think we also need to determine whether the Commission has been assigned an adequate role in supervising this solidification process, and the decommissioning of the processing facility.

The Commission does not, under existing law, have the authority to regulate R. & D. activities of the Department. While this project is part research and development, it also involves management of commercial and nuclear wastes and actions which will impact our permanent nuclear waste repository.

These activities pose risks to workers and the general public. Perhaps the NRC should be more closely involved.

Finally, it is not exactly clear how much financial burden would be accepted by the Federal Government in the West Valley problem under the Lundine amendment. The amendment clearly provides that the Secretary of Energy should not be responsible for decommissioning of facilities not involved in waste solidification.

But the proposal seems to anticipate using the old reprocessing facility in the project, so that it seems the only areas left to be taken care of would be some waste burial grounds and a spent-fuel storage pool, all of which might be valuable for further use.

If this is a remedial activity, the cleanup of a facility owned and operated by a State or private company, we should ask to what extent these other parties share the financial responsibility.

I hope our witnesses today will help us and provide some ideas in these different areas. We will begin with the amendment sponsor, the Honorable Stanley Lundine. Stan, glad to have you here today and appreciate hearing from you.

[Mr. Lundine's prepared statement may be found in the appendix.]

[The text of Mr. Lundine's amendment follows:]

(B) Civilian waste management—operating expenses, $186,150,000, including the following amounts for—

(1) Terminal isolation research and development, $158,100,000;

(2) Waste treatment technology and other activities, $23,050,000.

(3) West Valley Project—

(a) The Secretary of Energy (hereinafter in this section referred to as the "Secretary") shall carry out a nuclear waste management demonstration project at the Western New York Nuclear Service Center in West Valley, New York by vitrifying the high-level liquid nuclear wastes which are present there, or by employing the most effective technology for solidification available at the time of implementation, transporting such solidified waste as soon as feasible to an appropriate Federal repository for long term burial, and decommissioning and decontaminating the facilities, materials, and hardware used in connection with this project. In carrying out the project, the Secretary shall consult with the Nuclear Regula-

tory Commission, the Administrator of the Environmental Protection Agency, the head of the United States Geological Survey, the State of New York, and the commercial operator of the Service Center.

(b) The Secretary shall complete the demonstration project within a ten-year period beginning on date of enactment of this Act. Not later than February 1 of each calendar year during which the demonstration project is being conducted by the Secretary (beginning in 1980) the Secretary shall submit to the appropriate committees of the Congress a report containing a detailed description of the activities carried out by the Secretary under provision 107(B)(3) of this section. Subject to such reporting requirements, during the first year of the project the Secretary shall undertake the following activities:

(1) prepare a plan for safe removal of these high level wastes from tank numbered 8D–2 and any other storage tank containing these wastes at that site, including safely breaching the tank

or tanks, operating waste removal equipment, and sluicing techniques;

(2) determination of the feasibility of immobilization and waste handling techniques required by the unique situation of the high level wastes at the site, including initiation of detailed engineering and cost estimates as well as safety analyses and environmental impact analyses.

(c) Except for the costs of carrying out the demonstration project authorized by provision 107(B)(3) of this section, which shall be borne by the Secretary, nothing in this section shall be construed as affecting any of the rights, obligations, or liabilities of the commercial operator of the Service Center, the State of New York or any person arising under the Atomic Energy Act of 1954 or under any other law, contract, or agreement for the operation, maintenance, or decontamination of any facilities or property not used in conducting the demonstration project. If it is necessary for the Secretary to incur any costs to decontaminate the existing property

or facilities or correct defects in them in order to use them in the demonstration project, such costs shall remain the financial responsibility of the person or persons responsible therefor under the Atomic Energy Act of 1954, or any other law, contract, or agreement. The Attorney General of the United States may file suit in any court of competent jurisdiction to recover such costs.

(d) The Secretary is hereby authorized to enter into necessary contracts and agreements with the State of New York and others to carry out provision 107(B)(3) of this section. In carrying out the demonstration project, the Secretary with the State of New York shall, among other things, make arrangements to utilize certain property and facilities, and the Secretary shall take title to the high level liquid nuclear waste, presently existing at the Service Center.

(e) There are authorized to be appropriated to carry out the demonstration project under this section not more than $5,000,000 for the fiscal year ending September 30, 1980.

STATEMENT OF HON. STANLEY N. LUNDINE, A U.S. REPRESENTATIVE FROM THE STATE OF NEW YORK

Mr. LUNDINE. Thank you very much, Mr. Chairman, and gentlemen of the subcommittee. I appreciate the opportunity to appear before you. I have a prepared statement which I would like to request be entered into the record in its entirety.

The CHAIRMAN. It will be entered in our record and you may summarize.

Mr. LUNDINE. I will attempt to summarize very briefly. I appreciate the interest of this subcommittee and the resolution of the very complex problems at the West Valley site.

The amendment which I support authorizes the Department of Energy to carry out a waste solidification demonstration project at the West Valley site. Among other things located there, there are about 600,000 gallons of high level liquid wastes generated during the nuclear reprocessing operations which were conducted between 1966 and 1972.

This amendment does include the decontamination of the facilities used in connection with the project. It does not, however, commit the Federal Government to a major role in resolving the long term waste management and decontamination problems associated with the rest of the site.

Under the amendment, the two solid waste burial grounds at the site remain the responsibility of the State of New York and/or the commercial operator, Nuclear Fuel Services. In addition, the amendment does not disturb the present responsibility for decommissioning and long term management of the spent fuel receiving pool or other waste treatment areas of the site used during reprocessing and resulting from the past operation of the site.

As you point out, the Department of Energy did conduct a study in response to a congressional authorization and estimated the cost of this solidification project at approximately $130 million, of which they maintain $5 million would be necessary in fiscal year 1980 to commence the project.

Briefly, I would like to talk about the solidification technology. The Science and Technology Committee felt that the vitrification or glassification process was the most advanced. However, we have received testimony indicating that there should be careful consideration given to other solidification technologies as well.

I would emphasize, however, that it is my judgment that we should proceed to demonstrate our capacity to actually solidify this liquid waste to the point where it could be safely transported from the site to an ultimate repository and not just go to some intermediate form of possibly semisolid substance which would not be able to be removed.

It seems to me that we are at a point in the development and management of nuclear wastes where we need to demonstrate the safe and environmentally acceptable capacity to not only solidify it, but transport it and ultimately dispose of these radioactive elements.

The State and the commercial operator would have financial liability for decontaminating the site as a result of past operation. The use of the facilities at West Valley would be of substantial advantage to the Federal Government because otherwise in con-

ducting such a necessary demonstration a new facility would have to be built.

In light of all this, I would like to address your committee's concern that this amendment might be unwarranted or premature. I do not believe that the action can be characterized as unwarranted. There is a clear need to protect the health and safety of the public.

The wastes cannot remain indefinitely in a liquid state and we know that it will take up to 10 years to complete a solidification project such as outlined in the amendment. Nor do I believe this amendment can be characterized as premature.

Last year the Congress authorized a study of the West Valley situation. The Department of Energy concluded that the Federal Government has a high responsibility factor in regard to solidification of the liquid wastes at the site. An independent task force comprised of interested citizens and representatives of State and Federal Government concluded that the high level liquid waste problem demanded urgent action.

More important than all the history is the fact that the Federal Government stands to gain a great deal from the nuclear waste management project authorized by this amendment. High level nuclear waste handling and disposal techniques have not been demonstrated on a major scale anywhere in the United States. It is time we take the whole management and technology out of the laboratory and demonstrate to the people that it can be done successfully. At the outset, we can gain firsthand experience in dealing with nuclear wastes to see if these theoretical approaches hold true when taken from the laboratory and are subjected to significant scale demonstration.

In conclusion, I believe that this amendment which I have sponsored to carry out a demonstration project at West Valley is justifiable and has substantial benefit to the Federal Government. I represent the West Valley community and the Congress so, naturally I care deeply about the future of this tiny community in upstate western New York.

But I also care a great deal about this, one of the most sophisticated technological challenges facing this country. My concern transcends the immediate community to the national level; the problem which Congress has a responsibility to address—the long term isolation of hazardous nuclear waste.

Experience gained under this demonstration project can provide us with the necessary insight to make policy decisions in the nuclear area over the next decade. I do not believe we can afford not to begin work at West Valley. I urge your concurrence with the Science and Technology Committee action on this matter and your support on the floor of this amendment. I would be glad to answer any questions.

The CHAIRMAN. Thank you, Congressman Lundine. Let me make sure that I understand what the result of passage of your amendment would mean. We now have at West Valley this closed reprocessing facility which includes buildings and facilities that were to chop up fuels rods and turn them into useable form.

You also have a number of tanks in which we have these high level liquid wastes. I think you said about 600,000 gallons. You also

have at West Valley some low level waste burial grounds that have been utilized over a period of years.

What you are trying to do as I understand your amendment is to focus strictly on those liquid wastes. Your bill would require that the Department of Energy come up with the necessary facilities and plans to turn those liquid wastes into a vitrified or glassified product in some kind of blocks or shapes that would be made out of the waste. Am I correct so far?

Mr. LUNDINE. Yes sir.

The CHAIRMAN. Your bill does not deal with the reprocessing facility itself nor with the handling of the low level wastes?

Mr. LUNDINE. It clearly does not deal with the handling of the low level wastes. Presumably the reprocessing facility itself would be useful; it would be the physical place where some of the solidification would take place.

That solidification may or may not involve vitrification, as we have indicated that that appears to be a preferable technology, but certainly left the option open to examining other forms of solidification.

The. CHAIRMAN. The final decision on that under your amendment would be made by DOE. They would have the option to choose any one of several processes.

Mr. LUNDINE. Yes. DOE would have the option to choose. I think though that in my prepared statement I indicate that the site is presently licensed by the Nuclear Regulatory Commission and, therefore, I believe that they would have a role in approving of that decision.

The CHAIRMAN. But your amendment seems to limit that role to consultation—that DOE would have the power to decide the process, erect the facilities, take the steps to solidify the wastes, NRC would not issue them a liscense or a permit, would be involved only on a consultation basis?

Mr. LUNDINE. I am not certain that I would agree with that. I think that is more a matter of not what is provided in this amendment but interpretation of existing law. I do not pretend to be an expert on that. It has been my understanding that because the site is licensed by the Nuclear Regulatory Commission, that they would still have the same authority to approve or take action that they would have now under the existing one.

The CHAIRMAN. This is a sensitive matter, and as the author of the amendment, your view of what it might or might not do is important. I think DOE understandably would like to be able to be the decisionmaker and to have some friendly consultation with the NRC folks.

On the other hand, NRC, some people there believe that unless its a licensed facility, that unless they had more than just consultation rights that this would be an impairment of their role. It might even result in a lack of public confidence in what was going on in the sense that DOE has been looked upon as an organization that promotes nuclear power, and the NRC has been looked upon as an impartial referee that makes decisions in the interest of the public health and safety.

So it would be important to me to know whether you, a contemplater, would accept language that would make it clear that NRC

has a license permitting role rather than simply the right to have somebody run by for a few minutes and say we consulted you before we made the decision.

Mr. LUNDINE. That is one of the reasons that I indicated that these hearings were useful, Mr. Chairman, is that I think some detailed examination into that question ought to be made. And, you have just characterized the position of the Department of Energy and the Nuclear Regulatory Commission.

I am not certain, at least on the record, I do not have any indication of their positions and I think you will get them later today. It would be very useful for all of us interested in this subject to confer or to seriously consider what that testimony is and make a judgment ultimately with respect to the issue of whether or not there should be some formal licensing approval or disapproval or, on the other hand, whether there should be some form of consultation that is not casual and is meaningful, but somehow falls short of complete power to approve or disapprove.

So, I think that is one of the very useful aspects of this hearing. I can only say that it is my attitude as the sponsor of this amendment, that while I want to get a project done I do not want to see it snarled in unending controversy. At the same time, I want to do it according to our procedure that assures that the very best processes will be followed.

Certainly I do not take casually the question of the health and safety and public participation of either that small community of just a few hundred people nor of the entire area in western New York that is affected.

The CHAIRMAN. I am sure of that and I respect the statesmanship with which you approach the problem. Let me ask you two more quick questions.

Under your amendment, the cost is limited or estimated at $130 million?

Mr. LUNDINE. That was the Department of Energy estimate in their study that was congressionally authorized.

The CHAIRMAN. And all of this would be paid by the Federals?

Mr. LUNDINE. Yes, sir.

The CHAIRMAN. How will you answer the objection that part of this cost ought to be borne by the operator, by the State of New York, and by other people and ought not to be a total Federal responsibility?

Mr. LUNDINE. First of all, it would be under my amendment, as I understand it, the responsibility of the State and/or the commercial operator to pay for the decontamination of the facilities from past operations. And, also for the preparation of that site, for use as part of the solidification project. Estimates of that cost that I have seen range to $35 million.

Second, the State and/or the commercial operator remain liable for the permanent management of the low level burial grounds. There are two, one is our NRC licensed and one State licensed. And, there is the question of management of the spent fuel storage pool.

So, it seems to me that there is in fact a cost sharing, but the appeal of approaching it on the basis we have is that it is clear where the management responsibility for the major aspect, the

major health and safety problem, and the major demonstration opportunity is with respect to the high level liquid waste.

When I first got into office I asked for briefing from every group you could imagine with respect to the issues at West Valley. I asked every group, sciences, that came to help me on this problem, a similar question which was, "How long can we let that liquid waste just sit in the carbon steel tank?" It all sits in one tank there. There is an alternate tank you could pump it into if you wanted, and I got estimates ranging from 2 years to 400 years.

That to me is as though I was starting out on a trip and asked somebody how far it is and they said, "Well, it might be 2 miles or it might be 400 miles." I have to take the conservative assumption that we have to get on with this solidification process.

I honestly believe that it will provide substantial Federal benefit, and by having the management concentrated in the Department of Energy, I think we are going to get a job done, not only for the people at West Valley, but for the people of this country. That job will be to demonstrate the best way possible to take these highly radioactive liquid materials and solidify them so they can be transported and ultimately disposed of in a repository.

The CHAIRMAN. I want to save some time for my colleagues. Let me ask one final question. Does your amendment deal, relate to, or contemplate the additional problem, and I would like your own thinking on that. We pass this amendment, we solidify this stuff, and what are we going to do with it then? Is it going to stay at West Valley or are we going to ask somebody in Idaho or Washington State or South Carolina to undertake the honor of being host to this?

Mr. LUNDINE. Each block will have a little letter indicating its ultimate source destination.

The CHAIRMAN. They would like some in Lansing, Mich.

Mr. LUNDINE. Get right close to home. Well, one of the decisions which should be made in determining what material the liquid will be solidified to will be what is the design for a repository for the ultimate disposition of these wastes.

I understand that this process, this early design phase, will take 2 or 3 years with environmental reviews and all that is required. During that period of time I certainly hope, and I hope this project sort of serves as a stimulant to getting on with the decisions about that critical issue.

It is not a question, I do not think, of whether it goes to New Mexico or Washington or stays in New York State. Clearly, West Valley is not an appropriate geologic site for the ultimate disposition of nuclear waste. I think also, West Valley has borne its share of the Nation's nuclear experiment, but be that as it may, without arguing the equity, I think that scientists would——

The CHAIRMAN. Does your amendment deal or does it not deal with the question?

Mr. LUNDINE. Yes. It provides that it shall be transported offsite to a repository. Now I want to point out that I am not taking that issue lightly however. The IRG report which indicates places throughout the United States which might be considered for repository, identifies an area including one in my own district that might

be a candidate as well as areas in Michigan, Ohio, and other States in the East, in addition to those in the West.

I think it is important we get on with the question of the ultimate repository and my amendment does provide for the transporting of the solidified waste offsite to such a repository.

The CHAIRMAN. All right. Mr. Cheney, Mr. Marriott, I think, was here first.

Mr. MARRIOTT. If I understand what you are saying, Congressman, you are not simply trying to shift liability from New York State and Nuclear Fuel Services, Inc., to the Federal Government. You still believe that both the State and New York and the private contractor do have some liabilities in this situation?

Mr. LUNDINE. Yes, sir. That is right.

Mr. MARRIOTT. And it is, I guess, uncertain as to who is responsible for what at this point. Could you enlighten us on that?

Mr. LUNDINE. The reason I have talked on all morning is that those legal issues are not resolved and I do not think are of great interest to the Federal Government at this point; but yes, either the State or the commercial operator or both should have some of that responsibility.

Mr. MARRIOTT. What immediate action do you perceive as being necessary today to protect the health and safety of the residents of this area? How many people are we talking about that live around these places?

Mr. LUNDINE. In the immediate area, there are probably less than 1,000, but just across the creek in the Erie County, Springville, N.Y., probably has a population of 5,000 or 6,000 and the environment is substantially larger than that. The Buttermilk Creek which runs through the site, runs into Cattaraugus Creek which runs into Lake Erie. Some of the low level burial ground has had some problems with seepage of radioactive elements in Cattaraugus Creek. Lake Erie is the water supply for Buffalo, as well as other small towns in that area. We are talking about a population in the immediate vicinity of the plant of over 1 million people.

Mr. MARRIOTT. So what specific action needs to be taken immediately in order to preserve the safety of those people? What is the risk at this point?

Mr. LUNDINE. I do not think there is any substantial risk today where remedial action needs to be taken. There is a defect in the pan that sits under the tank, in which this highly radioactive liquid waste is piled. However, that pan is simply there to monitor and catch any leaks from the tank itself. There is no evidence that there has been any leaking in the tank itself, and I do not see any evidence that there is an immediate threat to the people at West Valley or the people of western New York.

But as I pointed out, it takes a long time to get this liquid out of that tank and into some kind of form where it can be dealt with safely and disposed of. Unless we get on with that job today, in 5 years or in 3 years, or in some uncertain period of time, we may very well have a serious problem there.

Mr. MARRIOTT. Do you favor an environmental impact statement before the work begins at West Valley?

Mr. LUNDINE. Yes, I do.

Mr. MARRIOTT. I have no more questions.

The CHAIRMAN. Mr. Carr?

Mr. CARR. Thank you, Mr. Chairman. For my own frame of reference, can you locate where West Valley is?

Mr. LUNDINE. It is about 30 miles south of Buffalo. If you fly from Washington to Buffalo, you get a spectacular view of the plant. It sticks out rather clearly and it is just about due south of Buffalo. It is farm country in northern Cattaraugus County. The largest town in Cattaraugus County is Olean.

I know you are familiar with Salamanca as well. It is 40 miles north of Olean and Salamanca, maybe not quite that far. Essentially, it is about halfway between the Salamanca/Olean area on the southern tier and Buffalo and the Niagara frontier area of western New York.

Mr. CARR. You are talking here in your amendment about a demonstration project for a certain kind of technology. We all might agree that that is an important technology to demonstrate. However, how do you answer the question of why is West Valley the place to demonstrate it, other than the fact that you have a particular problem there? There are other places in the United States, presumably, where if not the same similar waste storage facilities were placed, where local populations may now have second thoughts, and where environmentalists and other concerned people are getting edgy about tanks potentially leaking. Why do we have to demonstrate this at West Valley, as opposed to having a demonstration project and then opening the site location to yet another division?

Mr. LUNDINE. I think there are essentially two reasons why I would choose West Valley. First of all, these other areas are on military reservations or large Federal reservations, and it is my understanding that environmentally can be left in their present form for a relatively longer period of time without grave environmental risks.

But more importantly, I would say, although you do not have to use West Valley, it would be advantageous to do so because there is a large enough quantity of waste to constitute a significant demonstration but small enough quantity to do without the investment of billions of dollars in the project.

Furthermore, you have a facility there that can be used. You do not have to construct it new. It takes a great deal of intensive construction activity to prepare such a facility, and you can use this former reprocessing plant very well for the solidification process. So basically, there it sits, a considerable environmental hazard not far from a population of a million people. Somehow we have got to resolve it. But most importantly, from the Federal Government's standpoint, there sits an asset, a facility that can be used to do something which we could do elsewhere, but not nearly for $130 million. To do this for the waste aspect, at Savannah River, for example, I am told would cost well over $1 billion, well over $1 billion. You would not have a greater demonstration. You would not have any more scientific knowledge.

So it seems to me that it is small enough to get your arms around, but large enough to be a significant demonstration.

Mr. CARR. I appreciate your explanation for the record. I think that West Valley might be in a position to make a strong advocacy

as to why it ought to house the demonstration; however, it seems to me that if we are going to have open hearings on a demonstration project, we really ought to let the other areas come in and make their point to see if there is not something unique about their areas which recommends a demonstration in their particular area.

In other words, what I am telling you, is that I think your amendment is worthwhile and for a lot of reasons which you probably already know. I have a great deal of sympathy with what you are trying to do here, but I think you are combining in one amendment a demonstration-type program which recommends open bidding for a lot of people to get in on it and a Colorado mill-tilling type of thing, which is recommending that the Federal Government do something about a problem in West Valley, N.Y. By combining the two—I am just wondering out loud, I guess—if you are not causing yourself more practical and political problems in this and other committees on the House floor, than you mean to do.

If West Valley has a real problem and is crying out for help, I will be there to help it. But if we are going to do this thing under the guise and cleverness of demonstration programs, I think we are compelled by fairness to allow these other areas of the country to put in their bid.

Mr. LUNDINE. I do not think it is a guise, I really do not. I think the Science Committee has taken a look at that. Mike McCormick is the chairman of that subcommittee.

Mr. CARR. He, however, does not think it is a problem.

Mr. LUNDINE. Perhaps I do have political and practical problems, and I am not sure about your comment about my compounding them. I am not trying to compound them, I assure you. I do not think it is a question of a lot of communities bidding. There has not been a lot of other communities bidding from my understanding of the situation. If there were, I assure you, that an objective look at this situation would, in my opinion, result in a conclusion that West Valley is the best place, and not under any guise, to do a demonstration that needs to be done.

Mr. CARR. For what it is worth, I just think that we really have to ask those questions if we are going to write West Valley in as the recipient of demonstration sites.

Mr. LUNDINE. I do not mind your asking the question. I am simply trying to say that I think that the Science Committee has taken something of a look at that, and I know of no competing proposal to do that kind of demonstration.

The CHAIRMAN. Mr. Cheney?

Mr. CHENEY. Thank you, Mr. Chairman. I have just one quick question. Is there any possibility, Mr. Congressman, that the process of taking the material out of the tank and putting it through the solidification process would constitute an increased risk for the community rather than leaving it, for example, where it is for a few more years until we had a better handle on the technology that is involved?

Are there risks involved in processing the waste itself that would not exist if we left it where it is?

Mr. LUNDINE. I have certainly never lost my amateur status as chemist or a nuclear engineer. I am not one of those politicians

that has been around and indicated that I am some nuclear expert. The best of my ability to understand the situation there is that, well of course there is some risk in carrying out a demonstration of a technology that has only been tested in the laboratory. That risk is not considerable. We have had scientists who are strong opponents of glassification and scientists who are strong proponents of the glassification approach before our subcommittee rather recently. All would agree that there is not much risk. All of those who are highly qualified in doing the research in this area, say there is not an appreciable risk of health and safety, and that it is usable at this time.

Mr. CHENEY. Thank you.

The CHAIRMAN. Mr. Bingham?

Mr. BINGHAM. Thank you, Mr. Chairman. I would like to compliment my colleague from New York for what I think is an extremely constructive initiative. We in New York have long been talking about West Valley and what a horror it is, and really nobody until now has come up with much of any constructive suggestions as to what to do about it.

It seems to me that it is an appropriate opportunity for us to carry out the kind of demonstration project that we are talking about. I assume that in doing this, we would be looking at what the French, for example, have done. I think they have had some experience in vitrifying solid waste. Certainly we need to carry out this kind of demonstration project and it does seem to be an appropriate way to make use of what is otherwise a totally wasted facility, a total drag on our economy.

I understand that there is some talk of the Department of Energy undertaking to pay cleanup expenses if the West Valley facility would agree to accept spent fuel from other facilities in the Northeast area. Have you heard that report, and what is our attitude toward it?

Mr. LUNDINE. Yes, I have heard a little bit about that. It has been reported in the press that there was an agreement in principle between the State and the Federal Government that in exchange for a project to solidify the high level of waste, the State would agree to reopen a low level burial grounds and would also agree to allow additional spent fuel to be shipped to an away from reactor site, namely the unused capacity at the pool at West Valley.

I personally am not in favor of either of those measures; however, I feel they ought to be decided in their own time and on their own merit. That is to say that I do not think there ought to be an exchange here. I honestly believe that this demonstration project can be justified in the Federal interest on its own merit. The question of the low level burial ground is largely a State question, although the NRC certainly has useful oversight, particular of the one burial ground.

The whole AFR issue is one that is yet to be resolved by the Congress. Finally, I would point out that an agreement, in my understanding of those terms, means who is going to pay the other party, how much, and for what rights? I do not think those agreements have been made by the State or the Federal Government to the best of my knowledge and understanding of the facts.

I have kept in relative close touch with Commissioner Larocca, who you will hear from later, and with officials at the Department of Energy, including Dr. Worth Bateman, who is here to testify today. I think they are approaching it in the interests of the State and in the interests of the total program of the Department of Energy. I certainly have no quarrel with their doing so.

Ultimately, though, Congress is going to have to act. I am here as an advocate for what is in the national interest as well as happening to be, in my judgment, in the interests of this small community I represent, to undertake a solidification demonstration project. These other questions actually, in fact, remain unresolved and should be decided on their merit.

Mr. BINGHAM. I have read your statement and I think it is an excellent one. I do have a little question as to whether your amendment does not differ in some ways from what you are describing in your statement. In a sense, the very first sentence of your amendment speaks of carrying out a nuclear waste management demonstration project by vitrifying or employing effective technology for solidification. It is OK so far. But then it goes on in the same sentence to say, "The Government should take responsibility for transporting, decommissioning, and decontaminating the facility."

I am not sure that the last two items really belong in the category of a demonstration project such as you have in mind. It may be that some of the questions that have been raised here would be answered and that concerns would be allayed if, in the language of the amendment, it was made clear that the demonstration project, as such, only goes to the question of what to do and how to handle the liquid waste.

Mr. LUNDINE. I feel very strongly otherwise. We must prove that we can get this material into a solid form where it can be safely transported, and I believe we can. As you have pointed out, the French have some experience here. The Swedes have a different process which does not involve glass that is interesting. It solidifies these elements to the point where they can be safely transported. Unless that is demonstrated, then I think we still have unresolved questions in respect to nuclear waste management.

Second, during the solidification, the facility would again become contaminated. Unless the Federal Government at the end of that process can clean it up again and leave it in a state where it is not highly dangerous, then I do not think we have demonstrated our capacity to the people of this country to manage successfully a project, complete it, and show there is an environmentally acceptable solution to this kind of a problem.

Mr. BINGHAM. Are you really saying, Stan, that the demonstration projects should include decommissioning and decontaminating the facilities, material and hardware used in connection with this project? Maybe you just mean in connection with the particular project involved, but not with West Valley as a whole.

Mr. LUNDINE. With the project, that is correct. I am really saying that it should be decontaminated as a result of this particular project, and by the project, we mean the solidification project.

Mr. BINGHAM. So you feel that those three elements really are all part of the demonstration?

Mr. LUNDINE. Yes, and I would point out that they are also a part of the $130 million cost estimate. As a matter of fact, the transportation is a major part of that cost. But I do not think we have done very much more than what has already been done in the laboratory, if all you do is solidify it, put it in blocks, and let it sit there at West Valley. You have not proved that you can clean up this kind of a situation. You have not proved that you have something that is capable of being taken to a repository and properly disposed of.

Mr. BINGHAM. A question has been raised as to whether the language should include something like demonstration project and remedial action. I am not sure what that would accomplish, but what is your reaction to that?

Mr. LUNDINE. My reaction is that it should be, and I am proposing, that it be a demonstration project. Now there is no question but that it remedies a problem at West Valley. The justification for the Federal involvement in this, I believe, is primarily and exclusively to demonstrate the solidification technology and the capacity to deal, both in a technical and management sense, with a significant, high level, nuclear waste problem. So I would defend the language and not encourage expanding on it.

Mr. BINGHAM. Let me just ask one final question to clarify my own thinking. If this were done, would there still not be cleanup problems remaining at West Valley? Low-level waste?

Mr. LUNDINE. Sure. The report of the Department of Energy goes into high-level options and low-level options for every aspect of the West Valley problem. As the Chairman and others have pointed out, there are many other aspects of the situation at West Valley. When you are completely done with this, hopefully within 10 years, you would be left with a plant. I do not maintain that the plant would have to be torn down and carted away to some other State or anything like that. You will be left with some low-level burial grounds that whether they are used or not, will have to be maintained. There will have to be some security around the site.

Hopefully, the entire several thousand acre site would not have to be restricted, but certainly the hundreds of acres that begin in and about the plant itself, should be. The high-level option in the DOE report was to exhume all the low-level burial ground and cart them off. Now that Mr. Lujan is here, I would say primarily to New Mexico. I would not have wanted to say that in his absence. That is a ridiculous expenditure. I mean, I cannot justify that, either as the representative of West Valley and certainly not as a national legislator.

That is what got the price tag. If you took all the high options up to $1.1 billion. I say let us be practical. Let us deal with those problems that are in the national interest and let us let West Valley or New York State, or however you want to look at it, provide for the maintenance for those more expensive and less advantageous aspects.

Moreover, I personally feel that there is more chance of occupational exposure in digging up and carting away, in many cases, than there is in careful custody of what is there now.

Mr. BINGHAM. Thank you very much.

The CHAIRMAN. Any other questions? Mr. Corrada?

Mr. CORRADA. I just want to commend our colleague from New York for his interest in helping to resolve the problem at West Valley, and I do tend to agree with his statement that his concern is not one of parochial nature, but one that relates to the long-term problem of isolating the nuclear wastes which is a national problem.

I understand that the total cost of the commissioning of the West Valley facility is estimated to be around $200 million. Whose responsibility is it under contractual or legal obligations, to incur the cost, of decommissioning?

Mr. LUNDINE. That is one of the most difficult questions to answer, not because I want to be obscure but as I often say at town meetings back home, they used to pay me for my legal advice and now I am not paid anything for it, and you get exactly what you are paid for.

I have read the contract between the State and the commercial operator. It provides that at the end of 1980, the commercial operator can leave the site and presumably the State is left with the responsibility of managing that site. However, there is a question as to whether or not, because of past operations, there is any liability on the part of the commercial operator. There is further a question, because of the base loading agreement, understand that about three-quarters of all the waste that was reprocessed at West Valley was Federal defense waste, not from powerplants, and that was done not on a casual basis but on a baseloading agreement by the former Atomic Energy Commission.

There therefore is some question as to whether or not, while there is not a contract which says the Federal Government is responsible, a legal argument could not be made that the Federal Government bears a legal responsibility here.

I believe that reasonable lawyers could differ about those questions and that that matter could end up in court and be litigated for almost as long as the solidification project. And frankly, that is my nightmare about West Valley. It is not so much that the tank is going to start to leak tomorrow, it is that we are going to get into a big argument over who is responsible. We are not going to look at it as, "Well, we have a problem, but we have also got an asset here." And we are going to end up arguing in the courts for years. Meanwhile nothing is going to be done either to remedy the problem at West Valley or to use that facility in the national interest.

Mr. CORRADA. Is there any reason to believe that whoever may have the responsibility, contractual or legal to decommission the facility, would utilize a solidification technology that could prove valuable not only in terms of helping to solve the problem at West Valley but also providing a demonstration of a technology that could be utilized elsewhere?

Mr. LUNDINE. There is every reason to believe that. I can say that most of the members of our Science and Technology Committee who have discussed it and debated the question have so indicated and certainly virtually every witness, scientific and other witness we have heard from in the course of fairly extensive hearings on nuclear waste management have indicated that it would be a

very useful demonstration that could be applied to other similar situations.

Mr. CORRADA. But would that opportunity exist if we do not get involved—the Federal Government—in bringing about the demonstration project? If we just let the process of decommissioning take place without the approval of your amendment?

Mr. LUNDINE. There probably are other approaches than my amendment. Obviously I think that it is best, but my judgment would be that if the Federal Government does nothing, that the State has neither a capacity nor the resources to go ahead and decommission the facility. And you can ask the State witness about that. But I would predict that the facility would be left roughly in its present condition for the foreseeable future if the Federal Government were to take no action.

Mr. CORRADA. You would not expect that certainly a solidification technology would be applied or would you?

Mr. LUNDINE. I would not expect that absent Federal participation or sponsorship of such a project.

Mr. CORRADA. Thank you. I do not have any further questions.

The CHAIRMAN. Any further questions?

Mr. LUJAN. We are not talking about decommissioning the whole West Valley plant. We are just talking about cleaning up the tank and then decommissioning the vitrification facility, is that the case?

Mr. LUNDINE. That is correct.

The CHAIRMAN. All right. Thank you Congressman Lundine. We appreciate your help here this morning.

Mr. LUNDINE. Thank you.

The CHAIRMAN. Our next witness is Dr. Worth Bateman, Deputy Director of Energy Research, Department of Energy. I understand he is accompanied by Mr. Sheldon Meyers.

[Prepared statement of Hon. Worth Bateman, with attachments, may be found in the appendix.]

STATEMENT OF HON. WORTH BATEMAN, ACTING DEPUTY ASSISTANT SECRETARY FOR ENERGY TECHNOLOGY, DEPARTMENT OF ENERGY, ACCOMPANIED BY SHELDON MEYERS, PROGRAM DIRECTOR, OFFICE OF NUCLEAR WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Mr. BATEMAN. Thank you, Mr. Chairman. I have a prepared statement, which with your permission I would like to have entered in the record and then I will just summarize it briefly.

The CHAIRMAN. We will do so and appreciate your summary.

Mr. BATEMAN. First of all, let me say that we recognize at the Department and in the administration that there is a serious problem at West Valley that needs to be addressed. The history of this project I have tried to summarize in my statement and I will not spend the time here repeating that. Let me just say that this facility was originally built with strong encouragement and involvement of the Federal Government and the active participation of the State of New York. It was built at a time when there was great interest in commercializing this aspect of the nuclear fuel cycle. After a period of operations, which had been developed after

the plant was first licensed, it was found to not meet regulatory standards and operation ceased.

There is a serious problem connected with the wastes that are now stored in the tank. The problem has been brought out in previous testimony and it includes not only those wastes but low-level wastes stored at the site, spent fuel hulls from the reprocessing operation, and some damaged high-level fuel elements from the defense activities at Hanford at the site, a contaminated reprocessing plant and a spent-fuel storage pool.

We believe that all the aspects of the site need to be addressed as well as the question of high-level liquid wastes. But certainly that is a very important problem and we at the Department are eager to address that problem.

Let me spend a minute talking about a study that has been referred to in Mr. Lundine's testimony. I think each of you has a handout which is reproduced from that study and I want to focus our attention for just a moment on what is labeled table 2-1, "Waste Management Options: Impact Summary for the Western New York Nuclear Service Center."

[The Department subsequently submitted the following table:]

Table 2-1

Waste Management Options[E] Impact Summary
for the Western New York Nuclear Service Center

Site Area	Option	One Time Cost to Implement[J] (millions 1978$)	Recurring Annual Costs[J][L] (thousands 1978$)	One Time Radiological Exposure[B] (man-rem) Occupational	Population[C]	Duration[D] of Option (years)
High-Level Liquid Wastes	In-tank Solidification[A]	21	750/70[I]	260	less than 0.5	5[M]
	Immobilization in Glass[A]	130[K]	0	400[F]	14	9[G]
High-Level Waste Tanks	On-site Stabilization	3.3	25	40	less than 0.5	1[M]
	Dismantlement	20[K]	0	240[F]	6	2
NRC-Licensed Burial Area	Extended Care	0.15	35	1	less than 0.5	0.1[M]
	Exhumation	340[K]	0	760[F]	280	10
NYS-Licensed Burial Area	Extended Care	0.11	40	less than 0.5	less than 0.5	0.1[M]
	Exhumation	570[K]	0	1000[F]	780	10
Plant & Ancillary Facilities	Protective Storage	17[H]	480	320[F]	1	4[M]
	Dismantlement	46[K][H]	0	570[F]	18	6

A) includes waste retrieval
B) resulting from waste handling and transportation only, projected exposures resulting from final disposition not included; population dose to the 2 million people living within 50 miles of the Center from natural and medical sources is 400,000 man-rem each year.
C) largest component due to transportation
D) from construction start
E) these options represent the potential low and high limit of financial and radiological impact of what might be done at the WNYNSC. They are not a complete list of what could be done.
F) exposures during final waste disposal not included
G) does not include decommissioning of immobilization equipment
H) costs of shipping spent fuel to another location not included (assumed responsibility of owner)
I) $750,000/yr until about 1996, $70,000/yr after entombment
J) costs rounded to two significant figures
K) totals associated for these options include all costs for removal, transportation and a one-time repository fee
L) includes costs for annual maintenance and surveillance actions at the WNYNSC only.
M) these options require a long term commitment not included in these time estimates.

Mr. LUJAN. What page is that on please?

Mr. BATEMAN. It is on page 15.

This table illustrates a range of options for dealing with each of the problems which I mentioned earlier. In each case an attempt was made to look at a minimum low-cost but satisfactory way of dealing with the problem. But we have contrasted, in each case, an alternative that is more expensive and approaches the problem in a different way, mainly from the point of view that the facility as a whole would ultimately be decommissioned.

For example, if you look at the first line, high-level liquid wastes, the first option, the minimal option is described as in-tank solidification; the alternative is immobilization in glass and as you move across the columns, what is described there are the various costs, whether there are any recurring costs, the kind of radiological exposure that would be associated and how long it would take to perform that option.

The high-level liquid waste line, the in-tank solidification, the presumption there is that after solidification the waste would remain in that form indefinitely at those tanks. Immobilization in glass basically presumes the removal of the waste from the site to a permanent repository and, of course, the costs associated with doing each of those things is quite different.

The $130 million that Mr. Lundine referred to in his testimony is drawn from this table. As you can see the remainder of these problems, the tanks themselves, whether they should be dismantled or simply stabilized on site, the high-level NRC-licensed burial area, again, what was examined was whether to simply leave the high-level wastes buried there at the site and provide long-term care and surveillance, supervision of those wastes, or whether they should be dug up and moved to another location, that is the exhumation line; and similarly on down.

We think this table is a good summary of the various problems, and at least the range of options available for dealing with them.

The second thing I would like to point out about this table is the fact that the predominant costs that have been associated in the public's mind with West Valley cleanup, that is the $1.1 billion figure which Congressman Lundine cited this morning, are really in two lines. I refer you to the line labeled, "NRC-Licensed Burial Area Exhumation", $340 million, and the, "New York State Licensed Burial Area" which is a low-level burial ground, exhumation, $570 million. Clearly that is the lion's share of the costs as we now estimate them for dealing in a comprehensive and complete way with the West Valley problem. It is not something we were advocating or proposing and I do not think Mr. Lundine is either, but I wanted to draw your attention to that fact. Once you put the exhumation options to one side, I think they should be considered, but if we can put those to one side for a minute, the immobilization in glass is, in fact, the next most costly item. And as Mr. Lundine points out, this is a figure which includes not only the actual solidification of these wastes but their interim storage and ultimate removal from the site.

Let me go on to say that when we completed this study, we continued our discussions with the State of New York, involving future actions that might be taken at the West Valley site, includ-

ing each of those listed in the table we have just described as well as other options for future use of the site, including the possible reopening of the low-level waste burial ground and including the possible use of the spent fuel storage pool at the site as an interim, away from reactor storage facility.

As Mr. Lundine points out, in the latter case, the Department of Energy does not have authority at this point to acquire or to store spent fuel away from reactor. The President has sent up legislation requesting that authority and my understanding is that that is before this committee as well as other committees of the Congress. We have not yet had hearings on that legislative proposal.

Our interest was in the reaction, the position of the State, on the use of that existing facility under that authority, should the Congress grant us authority to accept and store spent fuel away from reactor and acquire facilities for doing so. Obviously, the West Valley facility, itself, would have to meet any health, safety standard or other regulatory standards before such use could be made and we do not know, at this point, whether it would meet such standards but I wanted to put Mr. Lundine's comments in that context.

The low-level waste area and what should be done with that is another serious problem as everyone on this committee is aware. There are only three commercially operated and operating low-level waste burial areas in the United States at the present time. There is only one such burial area east of Nevada, and that is in Barnwell, S.C. The Three Mile Island accident, I think, has highlighted the importance of this situation and I think it is appropriate to look at not only West Valley, but other options around the country in trying to meet these low-level waste needs, not only for commercial nuclear waste, that results from commercial nuclear power, but from medical research and health uses and so on.

These discussions basically are continuing with the State of New York. The Department of Energy is trying to look at this facility not only from the point of view of the waste problem there, but what future use might be made of the facility. I think at this point our attention has been primarily focused on the question of what to do with the high-level liquid wastes and the associated reprocessing facility.

Let me spend a moment on Mr. Lundine's amendment. We see many points in the amendment which we favor. The solidification of these wastes we think is appropriate. We think it is appropriate to attempt to use the existing reprocessing facility to house the solidification equipment. Mr. Lundine pointed out that because that facility is there, it is possible to carry out this activity at a much lower cost than would otherwise be possible. We agree that once the waste is solidified, it should be stored on-site but when a repository is available it should be moved to that repository. And we also agree that no more high-level waste should be disposed of at the site.

There are benefits in doing this. We think that clearly this action will clean up or remedy a problem which we all recognize, that sooner or later we are going to have to deal with. At the same time I think that such a project would have useful demonstration benefits in terms of scaling up, at least in U.S. experience the

solidification technology which could be useful in other parts of the nuclear program, particularly the defense waste management program.

On the other hand, there are certain aspects of the Lundine amendment which we think need further examination. The main one I want to mention is the financing question. We believe that not only the Federal Government, but the State government and the operator bear some responsibility for cleaning up the wastes at West Valley and bringing that facility to a safe long-term condition.

I think that if the Congress chooses to approach the West Valley problem not comprehensively but in terms of a piece of the problem at a time, the question does arise as to how that non-Federal responsibility is discharged. So I would simply say that we do not have a firm position on the financing as proposed in Mr. Lundine's amendment; 100-percent Federal financing of the $130 million costs may be entirely appropriate viewed in the context of a total program to deal with the problems at West Valley involving the State, the operator, and the Federal Government, but I would raise that issue for your consideration.

Finally, let me say that I think this hearing is very useful to us in giving us an opportunity to describe the West Valley situation from our perspective, what we think is from a National perspective, and a variety of problems facing the administration and the Congress in the nuclear area, not only waste problems. So with that let me conclude. I would be happy to try to answer any questions that you or other members of the committee have, sir.

The CHAIRMAN. Thank you Dr. Bateman for a fine statement. I have been trying to get up to West Valley and get our subcommittee up there for about a year and we seem to miss connections each time. We are still going to make that trip.

Explain to me as a layman, if you will. I am trying to visualize this process. You have this huge tank which has high level nuclear waste in it. How big is it compared to this room for example?

Mr. BATEMAN. I have not been there either so I have not seen the tank. It is about as big as this room, I understand.

The CHAIRMAN. In the bottom of that tank you have a sludge which contains some of the nuclear waste and then you have a more liquid substance at the top of the tank. Is this basically correct?

Mr. BATEMAN. Yes, sir. That is right.

The CHAIRMAN. This process of petrifying or making this into a solid substance is done how? Do you pipe this out into a building that has a furnance and you hook up or something? Give me a layman's 2-minute description of how you are going to get rid of this?

Mr. BATEMAN. The liquid waste was formed in the reprocessing plant. The fuel was chopped up and exposed to chemicals which separated out the desirable from the undesirable elements and then this liquid by-product or waste was pumped out of the reprocessing facility into that tank.

The CHAIRMAN. Yes.

Mr. BATEMAN. So, the objective would be to get all of the waste that now exists in the tank and the sludge presents a different sort

of problem than the more liquid waste. All of that needs to be removed from the tank, pumped to the equipment to solidify this liquid waste. This solidification equipment is installed in the reprocessing plant in an area that is already shielded and safe because it was built——

The CHAIRMAN. What is this like? I have never been in a glass factory. What do you do? Do you pour this liquid stuff in with some sand and it all blends together or how do you do it?

Mr. BATEMAN. The first thing you have to do is eliminate the liquids and when you do that you are left with two substances. A lot of rather mildly radioactive salt, and then calcine which is the bad stuff, the waste that you want to further immobilize. That is combined in a glass matrix and comes out the other end of the pipe. It is a solid when it comes out. At the end of this entire process what you are left with is a hot piece of glass which has the calcine in it. You have some mildly radioactive salt and you have solidification equipment which is also contaminated. So, you have those three waste forms left.

The CHAIRMAN. Essentially you have a melter in which you pour a glass substance and then you mix these wastes in with it?

Mr. BATEMAN. Yes, sir. That is right.

The CHAIRMAN. Does that give off fumes that are toxic and have other radiological hazards with them as you are doing this?

Mr. BATEMAN. It does give off fumes some of which are toxic and hazardous. The objective is to recycle those fumes through that plant without any human exposure.

The CHAIRMAN. Is there plutonium among the elements?

Mr. BATEMAN. Not much, sir. Most of the plutonium was what was removed from the fuel when it was processed.

The CHAIRMAN. Where has it gone to?

Mr. BATEMAN. A very significant fraction of the fuel that was reprocessed was Government fuel so in that case the plutonium went back to the Government but some of the fuel that was reprocessed was commercial fuel. Although I think we ought to provide a more elaborate answer for the record, Mr. Myers is of the opinion that plutonium was also returned to the Government.

[The Department subsequently supplied the following information.]

About 100 kilograms were shipped to the Federal Republic of Germany by New York State's Atomic Space and Development Authority (ASDA); about 20 kilograms were shipped to Numec; and the remaining 1,800-odd kilograms were shipped directly to Hanford or stored at the ASDA facility and later shipped to Hanford.

The CHAIRMAN. Are there facilities that already do this in other parts of the United States like the DOE? If so, why do we have to build another set of facilities or erect within the existing structure a solidification process? Why can we not ship this out to Idaho or where they have these facilities?

Mr. BATEMAN. There are two parts to this question. Yes. there was a facility built at Hanford, Wash. which did the same thing in terms of technology. It took liquid waste and solidified it. This project completed its operation just this year. This is a small experimental facility and it is the only facility in this country that has actually solidified waste on a pilot scale.

The facility that is being proposed at West Valley would be a larger scale facility. We think there are certain benefits, from an R. & D. point of view, in scaling up.

Your second question is why can we not move it to someplace else. The facility at Hanford is very small and I think it would be impractical to solidify all of the waste at West Valley there. Moreover, health and safety to moving high-level liquid waste from one place to another, so you could not move what is there now without doing something to it. You would have to turn that liquid waste into this radioactive salt and calcine and then you might be able to move the calcine and I think there would be questions about moving that as well.

The CHAIRMAN. Once you get this into a solid state like a petrified block of some kind, does it pose radiological hazards? Can I walk up and sit on it for awhile?

Mr. BATEMAN. No, sir. You would not want to do that.

The CHAIRMAN. How close can you get to these blocks?

Mr. BATEMAN. It depends on what they are shielded with but you would not want to be exposed to them.

The CHAIRMAN. Why are we, as a country, safer once we have solidified this stuff than with it in the tank? Is there danger of this leaking into the atmosphere and getting into the water system?

Mr. BATEMAN. It is basically that. I think, as Mr. Lundine said, we do not believe at this point in time, that these liquid wastes pose an immediate health hazard, but you cannot keep the waste in this form in those tanks for as long as they will be hazardous.

So, you have a choice. The extreme choice is that you pump the waste from the existing tank to another similar tank for a long period of time or you try to put it into a different form so that you don't have to keep doing that.

The CHAIRMAN. I just want to go into one more matter. Has the administration taken a position on the questions that I raised earlier with regard to the role of NRC? This is a licensed facility and it is licensed by the NRC. What you are talking about, the Lundine amendment, that seems to require new facilities, the new kind of undertakings that under agency would require a new license or an amended license. Is it your position and the Department of Energy's position that NRC should not be involved and we simply mandate you by congressional act to do whatever is necessary, only consulting with NRC and not giving them any formal role?

Mr. BATEMAN. We do not have a position on this at the present time. There are many alternatives and you have mentioned some of them. It seems to us that NRC has to be importantly involved in the solidification of these wastes. I do not see how that can be avoided and I do not think it is desirable to do so.

I think though, as you know Mr. Chairman, the licensing question has many many dimensions. I think, that if this facility is primarily considered as a DOE R. & D. facility, NRC licensing authority under present law is unclear. If it is primarily thought of as a commercial waste facility, the NRC licensing authority is much clearer.

The difficulty here, to some extent, is that the facility would have elements of both an R. & D. and commercial waste nature

and I think to take a rigid position with respect to how NRC should be involved in this operation at this time may get us into a lot of controversy over very strongly felt positions without any net gain in terms of public health and safety. I think a number of roles can be devised for NRC involvement which will adequately protect public health and safety, concerns about the environment and so on.

We would like to see the project pursued and the problem dealt with and we think that NRC needs to be involved in it. We would like to keep from taking a rigid position on, for example, should this facility be licensed. I think it is, to a large extent, how the Congress chooses to present this project. If it is going to be an R. & D. facility then we would take a view which involves NRC to the fullest in terms of protection but would stop it short of licensing. If it is considered as a commercial waste facility, we would obviously support NRC licensing of it.

The CHAIRMAN. Mr. Bingham.

Mr. BINGHAM. Just one question, Mr. Chairman. Dr. Bateman, I would like to ask you how soon are we likely to see the administration's recommendation on a comprehensive national waste management solution? What is the status of it and why have we had to wait so long?

Mr. BATEMAN. These are very hard issues and the IRG completed its work in March. There have been intensive discussions going on in each of the 14 agencies involved over the recommendations that would be made to the President. A Presidential memorandum has been drafted and circulated. I think it is very near to being submitted to the President. Each of the agencies have had their opportunity to express their view on each of the issues and I think we are very close to closure there, sir.

Mr. BINGHAM. Thank you.

The CHAIRMAN. Mr. Lujan?

Mr. LUJAN. Thank you, Mr. Chairman. Dr. Bateman, it seems kind of a waste. The amendment calls for building the vitrification plant and then tearing it down, after you do, just clean up there in West Valley. If it is successful on the scale that it is going to be demonstrated, should we not look at building it somewhere else, like Savannah River which has a lot of liquid waste, move the stuff there and vitrify it there? Or—and I am sure this is heresy to New Yorkers—leave it there and move other liquid waste there to vitrify? You have $130 million for the whole process but how much is the facility itself going to cost for just this one-shot deal and then take it apart?

Mr. BATEMAN. I do not have that breakdown with me but I will supply that for you. My impression is that a substantial part is there for transportation but I do not have the exact figures at my fingertips.

[The Department subsequently furnished the following information:]

TABLE 4.4.—SUMMARY COST ESTIMATE FOR WASTE IMMOBILIZATION IN GLASS

[Millions of 1978 dollars]

Item	Retrieval	Vitrification	Option total
Preliminary requirements	1.3	2.0	3.3
Waste sampling and characterization			
Tank structural analysis			
Ion-exchange studies			
Glass-formulation evaluation			
Process studies			
Engineering and design	1.4	8.7	10.1
Facilities and facility installation	6.5	35.0	41.5
Operations	1.9	14.8	16.7
Labor and material			
Containers			
Utilities			
Waste transportation	NA	40.7	40.7
Waste storage	NA	18.9	18.9
Facility decommissioning	.4	NA	.4
Implementation total [1]	12.0	120.0	130.0

[1] Totals are rounded to 2 significant figures.

Mr. LUJAN. Also, the amendment calls for vitrification, or glassification of some kind. Should that be done or should it be left open for whatever other method might be better? Do you have any problem with it just calling for the one process?

Mr. BATEMAN. In fact, one of the comments that we have given to Mr. Lundine on his proposal is, we have reservation about the stress in his bill on vitrification as particular waste technology and waste form. I think that has been modified to some extent. The general term, solidification has been used which could cover a broader set of technologies for dealing with the waste other than vitrification.

We think that the way to proceed is to try to begin the project, leaving open the specific waste form which is ultimately used. It is not necessary, from a technical point of view, to decide in advance whether the waste form will be monolithic glass or glass beads or some metal matrix, or what have you. Much work can go forward several years, and the ultimate waste form can be decided upon after careful examination of each of the options that are technologically ready and after completion of environmental reviews of those forms.

We will also have, hopefully, more information at that time about the nature of the ultimate repository that it may be going to. That would be relevant in making that decision as well.

Mr. LUJAN. One final question and that is, the State's participation. I keep reading where DOE is negotiating with the State of New York on what to do as far as West Valley is concerned. The whole project started by the State acquiring the property because, there was a new industry coming into town and it was going to be good for the area. Then, all of a sudden, it went bad, so, everybody is saying, "Hey, wait a minute. You know, this is Government's responsibility now." But the facts are that it did start out with the encouragement by the State of New York and, of course, by the Federal Government also.

Are we anywhere near coming to some arrangement with the State of New York on sharing part of this cost? I know we are promoting it as demonstration, so, from that standpoint, maybe State participation is not something that should be figured into it but the States certainly bear some responsibility. In these talks, is there some discussion or some direction that they are pointing to?

Mr. BATEMAN. Yes, sir. In all of the discussions in which the Department has had with the State of New York, the question of financial sharing has been there from the beginning. We have never disagreed on the principle that there be a Federal and a non-Federal share in the overall program, assuming there is such a program, for dealing with the site.

I have talked to Mr. Larocca, and others from the State of New York; I have talked to officials from Nuclear Fuel Services. I think everyone recognizes that there will be some non-Federal sharing of the costs. I do not think there is total agreement on how that non-Federal share will be assessed but all of the State officials have agreed that there will be non-Federal sharing of the costs. The Nuclear Fuel Services officials, I think, see a limited and modest role for themselves in dealing with the problems there. Mr. Lundine has always associated himself with the principle that there will be a non-Federal sharing of the cost as well. I think he is very sensitive to that point and I think tried in his testimony this morning to characterize his proposal, in terms of this $130 million, in quite a good way.

I would only reiterate what I said before. I think the Congress has to consider the issue.

Mr. LUJAN. Let me just ask you one more thing before my time runs out. The chairman and I were talking about these little round black things that we were all given that say this is the vitrification process. Should we be scared of them? You say that you should not get close to them, or, do not they not have any waste in them?

Mr. BATEMAN. No sir, they do not have any waste in them.

Mr. LUJAN. Thank you.

The CHAIRMAN. I have a bunch in my office. Except we put some dummy material inside to show how it would look if they had real waste. Is that the idea?

Mr. BATEMAN. Right.

The CHAIRMAN. There was one in particular which was designed to show the quantity of waste attributable to each citizen for 200 nuclear powerplants all operating at the same time. Somehow I assumed that these were real wastes and that they were safe.

Mr. Vento?

Mr. VENTO. Thank you, Mr. Chairman. Mr. Bateman, I paid close attention to the question of my colleague from New Mexico, Mr. Lujan about the vitrification or other solidification methods. You think that, in other words, the state of the art here apparently is uncertain? In other words, you do not know right now—if you have the power to do this—what method you would be using, do you?

Mr. BATEMAN. I think it is unfair to characterize it as we do not know. We have some ideas. I think the state of the art is that the vitrification technology which produces basically a large piece of glass in which the waste is embedded, is the most advanced tech-

nology. That technology has been demonstrated on a small scale at Hanford, Wash.

Other technologies and other waste forms are not as far along in their development, but the Department has a broad program of R. & D. on each of those areas, and we think that we will have a form by the time it is necessary to make a decision on waste form.

Those technologies will be far enough along and enough R. & D. will be completed so that it will be possible to compare those with the vitrification technology and decide among them on a comparative basis which ones we want to select.

Mr. VENTO. I notice in your opening remarks, the demonstration nature of this with the private sector. The corporation name escapes me. NFS in other words, have reprocessing plants that are publicly owned and there are others that are privately owned as well that have the same function.

Mr. BATEMAN. There are three commercial reprocessing plants which are privately owned but only one ever operated.

Mr. VENTO. OK.

Mr. BATEMAN. So there is only one where there are waste problems that exist.

Mr. VENTO. What is unique about this particular problem here apparently is that this is a band and they have got the accumulation of material that is sitting up there in those tanks that apparently caused the breakdown.

The great problem with folks in New York, and we are concerned about it too, is what do we do with the other wastes from the reprocessing plants right now? Is that just sitting around waiting for some answer or solution from your office?

Mr. BATEMAN. Those wastes, and they are much larger in volume than the wastes at West Valley, are stored exclusively on U.S. Government reservations in tanks and will have to be ultimately immobilized and those wastes will have to be solidified.

Mr. VENTO. Would you care to venture what the proportion of wastes are at West Valley compared to the other waste sites that we have that are similar to it? I expect this might all be in the study too, but I am just trying to get a quick oversight here.

Mr. BATEMAN. There are approximately 600,000 gallons of liquid wastes at West Valley. There are about 50 million gallons of liquid waste at Hanford, Wash., and about 20 million gallons of liquid waste at Savannah River, S.C.

Mr. VENTO. This is really less than 1 percent.

Mr. BATEMAN. It is a very small fraction.

Mr. VENTO. Less than 1 percent of what the liquid waste is. Is there some immediate danger involved in this particular waste to the area? I know that the West Valley has a kind of a notorious reputation, but does it come from the method by which wastes are stored there?

Mr. BATEMAN. We do not think there is an immediate danger associated with those tanks.

Mr. VENTO. Is there any interim method that could be used while we are dealing with 1 percent of our liquid waste. I think all of us would kind of look at this as being, you know, a major direction. I think there are some questions of liability here which are not addressed to you but I think should be addressed to others, on the

part of Federal Government's role in this which is something we are very cognizant of.

I can understand Mr. Lundine's enthusiasm to solve this problem in his backyard, but is there any interim method that we could use that would reduce the tension there which would be a safer method of storing these while we discover the best method of a long term storage here?

Mr. BATEMAN. As I said before, the liquid wastes can be safely stored for 30 or 40 years in tanks and then pumped to other new tanks and you can continue that operation. But the hazardous nature of this material has a much longer life than any given tank. So, you either have to accept a course of action which involves a lot of handling of this waste which is quite hazardous, and which provides no definite sort of a termination point or try to get it into a form which ultimately can be disposed of.

So, I think the answer to your question is yes, you can rely on interim measures to deal with the waste, but it is not a solution to the problem.

Mr. VENTO. Neither is the glass, is it? The glass is not going to last the life of this material is it?

Mr. BATEMAN. Yes, the glass with the waste form in a permanent repository, we think, the waste in that manner can be permanently and safely removed from the bias here.

Mr. VENTO. But you do not know if this is a cost-effective method or not, you do not even know if you are going to use that method yet right now.

Mr. BATEMAN. The question is what are the characteristics of the waste form from a technical point of view which are most desirable?

Mr. VENTO. Would you say that the waste is in a more stable position than when it is solidified in any form that you have available as opposed to the liquid form that it would be in right now? Aside, you know, trying to stay away from the liability question of other aspects, who ought to pay for it.

Do you think that there is a cost effective method that this project would in fact demonstrate?

Mr. BATEMAN. As a demonstration, this is very cost effective because it is located in an already built facility which has concrete shielding and so on that can be used to house solidification. So it is a very inexpensive way of demonstrating technology on a fairly sizeable scale. It is cost effective from that point of view, yes sir.

Mr. VENTO. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Rahall?

Mr. RAHALL. Thank you. Mr. Chairman. Dr. Bateman, you have mentioned in your testimony that the overall management responsibility for the cleanup operations at West Valley lies with the Federal Government. Are you saying then that there is a moral obligation on behalf of the Federal Government to assume the management responsibilities for cleanup?

Mr. BATEMAN. I think there is a moral obligation on the part of the Federal Government. I also think that the Federal Government has the technical resources and knowledge from prior projects and experience with the defense program in terms of the reprocessing.

I think for those reasons the U.S. Government is in the best technical position to assume overall management responsibility, yes sir.

Mr. RAHALL. But you do not then believe that Government should pick up the entire financial responsibility?

Mr. BATEMAN. No.

Mr. RAHALL. Since you do not believe that, has any consideration been given to the sharing of the responsibility among Federal Government, the State of New York or the NFS Corp.?

Mr. BATEMAN. Yes. We have talked with the officials from the State as well as Mr. Lundine and some other Members of the congressional delegation. Everyone that I have talked to agrees that some non-Federal sharing of these costs is appropriate.

Mr. RAHALL. But no definite percentages have been discussed or proposed?

Mr. BATEMAN. No. We have talked in terms of a range of possible percentages depending on the particular job that needs to be done. For example, the discussions that we have had with the State of New York; at one time we considered the Federal Government taking responsibility for the actual solidification of the waste and equipment. And the non-Federal responsibility would in fact be getting the waste out of the tanks and back into the reprocessing plant to be solidified.

There are various ways of dividing up the responsibilities. We are not fixed on any particular one. And it depends on which job you are talking about in terms of what the overall share ultimately would come out to be.

Alternatively, one could say the total cost of doing whatever the Congress decides to do is x and the Federal share should be 50 percent of x or 75 percent of x. That is an alternative way to approach the problem.

Mr. RAHALL. I have a question concerning what appears to be one of your oppositions to the Lundine amendment. You state on page 12 that consideration should be given to the position of the State of New York before a proposal is made to ban the temporary storage of spent fuel at the site.

Is it your implication that the Lundine amendment would prevent this?

Mr. BATEMAN. I think this is really an extension to another bill which has been introduced by Mr. Lundine dealing with the whole set of issues at the site, and in that bill, Mr. Lundine proposes a prohibition on any further storage temporary or otherwise of low level waste materials or spent fuel at the site and we certainly disagree with that.

Until we have had an opportunity to assess the adequacy of that site for storage of spent fuel or the State has had an opportunity to consider the possible use of the low-level waste burial ground, we think it is premature to set a legislative prohibition against any further use of the facility on that basis.

Mr. RAHALL. But the present Lundine amendment before this committee then does not prevent temporary storage of spent fuel at the site. Is that correct?

Mr. Bateman. That is right.

Mr. RAHALL. Thank you.

Mr. LUJAN. In 10 years you have got to get it out of there.

Mr. BATEMAN. I think that is the intent, I do not have the legislation in front of me. My recollection of it and my discussions with Mr. Lundine, are that he would like to see this solidification completed within 10 years, and then his amendment would allow the temporary storage of the solidified waste onsite until a Federal repository was available.

That could be longer than 10 years, but then, according to this legislation, it would have to be moved to that repository.

The CHAIRMAN. Mr. Markey. Mr. Rahall, are you through?

Mr. RAHALL. Yes. Thank you.

The CHAIRMAN. Mr. Markey.

Mr. MARKEY. Thank you, Mr. Chairman. One of the interesting developments with the West Valley sitation was the announcement of a secret arrangement between the New York State government and the Department of Energy on the responsibility for the disposal of the nuclear waste at West Valley. It has been proposed that there was a deal that was struck between the New York State government and the Department of Energy, by which in exchange for the Department of Energy's assuming responsibility for the cleaning up of West Valley that the State promised to reopen a burial ground for low level waste and to accept new spent nuclear fuel at West Valley.

Now we have heard statements back and forth between the State energy office, Governor Carey's office, but it seems that you have stated in the Washington Post of March 22, to quote from you, "The spent fuel will stay there but not permanently, I would say would be shipping spent fuel in there for the next 10 to 15 years."

That would indicate that you have already struck a deal, indicate that you would be moving in spent fuel from other areas into the West Valley facility without going through the NEPA requirement that there be some kind of public and open discussion of the question before any further extension of that facility be OK'ed.

Mr. BATEMAN. First of all, let me say, if there was a secret deal between the State of New York and the Department of Energy, it was the least kept secret that I have ever encountered.

Mr. MARKEY. Now we have the Governor and others back peddling and contradicting what they said, so clearly there is——

Mr. BATEMAN. Let me go on. May I go on for a minute?

Mr. MARKEY. Sure.

Mr. BATEMAN. In terms of the Post article that you quoted, the quotes from me in that article were taken entirely out of context. What I said to Mr. O'Toole was, we have legislation before the Congress which would give the Department of Energy authority to accept and take title to spent fuel and store it on an interim basis away from the actual storage facilities.

If that legislation is passed, one of the options that we would consider coming out of that legislation is West Valley, in addition to two other existing sites as well as a new facility.

Mr. O'Toole asked me how long would you use this facility. I said we would use this facility for a 10-year period, probably. That is our current estimate in terms of when a repository would be available.

So, I think that that is just not a fair characterization of the conversation.

Mr. MARKEY. In New York, some public officials are saying that there is no agreement to reopen a burial ground for low level wastes and to accept new spent nuclear fuel at West Valley. You are saying that agreement has not been struck even in principle or in concept, with the New York State government or Mr. Larocca, as he indicated?

Mr. BATEMAN. Not in the way you describe it. What we did and have done and continue to do is to consider possible future uses of that site, how to deal with the problems that already exist there; we are not trying to say we will do this in exchange for that.

The site exists, there is a problem there and we would like to deal with the problem. At the same time, and this is from the national point of view, from the DOE point of view, a low-level waste burial ground exists there which is now closed.

There is a national problem associated with the continued storage and disposal of low-level waste. We believe that the site at New York should be considered along with other sites around the country as possible storage sites for that waste.

Obviously we could not carry out such a program, this is in New York State, the low-level waste burial ground is controlled by the State of New York. That is a decision for them to make, but we are discussing with the State, their posture on the low-level waste. Are they willing to consider that, that is all.

In terms of interim storage, the same thing. We obviously cannot carry this out without congressional authority. And we could not carry it out in the State of New York without completing proper environmental impact statements. In addition, we have proposed legislation before this Committee that the away from reactor storage facility be licensed by the Nuclear Regulatory Commission, so until they approved it, it could not happen.

So I do not think it is fair to characterize these things in such a confusing language.

Mr. MARKEY. That is what I am afraid of. I am afraid that, unless there was an earlier misinterpretation of what exactly did transpire, there was a nuclear blackmail scheme taking place here where the Department of Energy said it would take care of West Valley for New York if the State promises to take care of our away from reactor storage problem. By this means, you both get what you want, in a way which gets commitments from the New York State government to acquiesce in any ultimate decision which is made by DOE in a selection process that ultimately designates West Valley as the away from reactor site. And you are telling me that that is not true at all?

Mr. BATEMAN. Exactly. I am saying that characterization of our discussion in that way is totally unfounded.

Mr. MARKEY. The reason that I am concerned about it is that there is some question as to the high water table that has connecting links to Lake Ontario. With a possible leakage problem at West Valley I think it is somewhat ludicrous to even propose any kind of expansion there without having had a complete and open public discussion of the question and having an environmental impact statement made. That is why I was very concerned over Senator

Moynihan's statements which guaranteed that there was some kind of deal which had been struck.

My other point that I would like to make, Mr. Chairman, is that we are talking here about using glass as the method of spent fuel processing. I was wondering whether or not Mr. Bateman was aware of studies at Penn State that indicate that glass is not a safe enough device to serve as a containment vehicle for this nuclear waste on a long term basis? Are you familiar with that study?

Mr. BATEMAN. I have not read the study personally, but I have heard about it, yes.

Mr. MARKEY. Do you have any comments on it? Mr. Meyers, do you have any comments on it?

Mr. BATEMAN. The only comment that I would make and I would be happy to supply a more elaborate answer for the record on that study——

Mr. MARKEY. It contends that leaching can occur. With the glass methodology I was wondering whether or not you have studied this contradictory evidence.

Mr. BATEMAN. Let me just say we will supply a more elaborate answer for the record, but I think Mr. Meyers would like to make some statement about that.

[The Department subsequently furnished the following information:]

Studies by the Pennsylvania State University and others indicate that some of the properties of the glass matrix which is being considered as a nuclear waste form are altered at temperatures in the range of 300° C and pressures near 1,000 psig. Were this glass waste form contacted by ground water in a repository under these temperature and pressure conditions, the studies indicate that some of the contained radionuclides would be readily leached out of the glass and could then be transported out of a repository by the ground water. However, we do not feel that these findings would prohibit the use of glass for the high-level wastes at West Valley.

The temperature of a waste form is a direct function of the size of the waste canister, the concentration of heat producing radionuclides in the waste form and the temperature of the surroundings in which it is stored. The temperature of a waste canister inside a repository can be controlled by the spacing between waste canisters, the waste canister size, and the waste concentration. Therefore, the temperature of the waste form in a repository can be predetermined such that glass could not reach unacceptable temperatures.

The bulk of the wastes at West Valley are very similar to DOE wastes in that they have been neutralized, are now relatively old, and a large portion of the heat generating radionuclides have decayed away. Calculations show that a 2 ft. by 10 ft. canister of glass containing this type of waste suspended in room temperature air would have a surface temperature less than 100° C. Studies of glass properties at this temperature indicate excellent stability. Consequently, we feel that the Penn State studies do not prohibit the use of the glass process for immobilizing the wastes at West Valley.

Mr. MEYERS. The people at Penn State, as far as I know, have agreed that glass process is suitable for the application for which we intend to use it. In other words, the leaching that you have talked about occurs over 303° C.

We can control the process so that the operating temperature of the cylinder will be approximately 103° C where that process does not take place. And, as I say, for the application, we intend to use it, one can control the temperature of the glass log either by aging the fuel or the waste before it is made, or by diluting the amount of waste that goes into the glass.

Mr. MARKEY. But it is your view, for the record, that the Penn State study does not in any way contradict the purposes for which you intend to use?

Mr. MEYERS. That is right.

Mr. MARKEY. Is that right? Can he also comment that German studies have now indicated that ceramics may be possibly a better way of, a safer solution to the problem, this disposal problem. Have you taken a look at that approach yet on the German study?

Mr. MEYERS. The Germans and some of the other European countries are studying ultimate waste forms, but by and large most of them have committed to vitrified glass today.

Mr. MARKEY. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Vento?

Mr. VENTO. Mr. Chairman, I think that this gets back to the point that I was making. This legislation says you have absolute flexibility and this legislation be used for whatever is the appropriate means to store this waste, do you not? This legislation does not specify one method. It does not specify glass only. In fact, you went through some pain to point out to us that it has an option.

Mr. BATEMAN. It stresses vitrification but I think there is language in there which allows a broader range of waste form and we think that is desirable.

Mr. MARKEY. Of course I see that the Lundine amendment calls for consultation with a lot of people. But in the end, the Department of Energy is to make the final decision on this nuclear waste solidification demonstration project. Should not this project at least be subject to the license process of the NRC so as to provide the necessary safeguards.

We are talking about a major demonstration project. What types of demonstration projects are there going to be? Everything else is going to have to be licensed and this is not.

The CHAIRMAN. I went into that earlier.

Mr. BATEMAN. As I said before, I think there are many ways in which the health and safety concerns in this project can be handled with proper NRC involvement. I think we are not going to take the position on one of those options until we know how the Congress is going to characterize the project.

If it is going to be primarily an R. & D. project, we will have an answer for you. If it is going to be primarily a commercial waste management project, the answer will probably be different. But we do not think that although how NRC is involved may be different, I think in terms of the impact on public health and safety, involvement can be in a way that health and safety is basically unaffected by the particular form of involvement of NRC.

Mr. VENTO. Mr. Chairman, one of the other points is that this is as you pointed out, the only privately owned site where this demonstration was supposed to be going on, it seems to me that the concern is that all of a sudden this demonstration project is being used as a method to dump the liability on the Government.

It may not be the intent here to do so, but anytime you process something you are doing something to it, you are manipulating it; you are going to remain liable for whatever you do. If it is vitrification, if you put it in ceramics, whatever the method is used to store it, if that does not work or if there is some liablity that grows out

of that as a consequence of our involvement, DOE or NRC, we would then make up a liability.

It perhaps is beyond your purview to address that, but it seems to me that they can put a demonstration project where we have the one commercial processing plant. This is a method of sort of transferring this responsibility by creating some sort of a demonstration experimental project where in fact, it seems a point to me that we ought to probably do this under a different type of pressure.

Mr. BATEMAN. Yes; I agree with a lot of what you said. I think that the problem here is—one of the problems is sort of the precedential nature of this in terms of what does this mean for future Federal involvement in other aspects of commercial waste management.

I totally sympathize with your concerns about the role the Federal Government takes in this project being used as sort of an applicable precedent to other areas of commercial waste management.

What we are trying to do is to stress that the West Valley situation is very complicated because of the various roles people had in bringing us to the point we are at now there. We are trying to sort that out in a way which we will deal with that problem but which is sensitive to the very important issues that you are raising.

It is going to be very hard, I think, to devise a solution to West Valley which is going to be fully satisfactory on this broad range of issues. But I think, hopefully, as this proposal goes forward this year or next year or whenever the Congress acts on it that the history and the debate and the record will show that a proper sensitivity is taken and proper care is taken to make sure that we are not using a unique situation at West Valley as a precedent for Federal involvement in a lot of other areas where I think we are much clearer about who should bear financial responsibility for which parts of the fuel cycle.

Mr. VENTO. Thank you.

The CHAIRMAN. Thank you, gentlemen. I appreciate your help today. I am going to take out of order, Mr. Larocca who apparently has an airplane problem.

We have two more witnesses to go in a limited time. If you could summarize your testimony it would be helpful.

Mr. LAROCCA. Yes, sir. I have a prepared statement, which I can provide for the record. As well, I had a prepared summary of that prepared statement, which I will also provide. I have brought with me some testimony that I had provided to the New York State Legislature, which goes to several of the questions that Mr. Markey was asking, as to the existence of an agreement or agreement in principle with the Federal Government. I think it would be useful if you had that for the record as well.

The CHAIRMAN. We appreciate all of those and they will be made part of our hearing record.

[Prepared statement of James Larocca, may be found in the appendix.]

STATEMENT OF JAMES LAROCCA, CHAIRMAN, NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY

Mr. LAROCCA. Mr. Chairman, the essential message of all of these documents that I am leaving with you is that we in New York very badly need Federal help in solving this problem at West Valley. The history of this facility tells me as a lawyer that what we have here is a joint venture between the Federal Government and the State of New York and private enterprise to commercialize nuclear power, a certain aspect of it; that this joint venture did not work, in very large measure, because of a changing Federal regulatory environment. I think the history amply demonstrates that growing out of this is a substantial legal and moral responsibility on the part of the Federal Government to participate fully in the development of a program to resolve the wastes that remain as a result of this failed enterprise.

We accept in New York that all of the parties in this joint venture do bear a responsibility for participating in a solution. We are prepared to work with the Congress and with the Department of Energy and with everyone else, the appropriate nature of that responsibility.

One of the matters that I would like comment on that I hear as I sit here today is the Lundine amendment and the focus of this hearing today. It does look at the most significant of all of the problems, and that is the high-level liquid waste residing in the tanks.

For my part, my responsibility of the authority that owns this facility is that we must have a program that deals with all of the aspects at West Valley. Those are enumerated in my testimony. It was in the development of a comprehensive program that dealt with the solidification of the high-level wastes, the decommissioning and decontamination of the tanks, the handling of the facility itself, the spent fuel storage pool, the high-level burial ground, the low-level burial ground, that we attempted to identify with the Federal Government an overall program, of which one piece was solidification of the high-level wastes.

It was that context that gave rise to discussion of agreements, or agreements of principle and so forth. I think in all events, while the appropriate focus here today is on the appropriate way in which to proceed with solidification of the high-level waste, there must also be attention now or soon to these other elements. One concern I have is that if the only focus that the Congress gives at this point is to the high-level liquid waste, we will have trouble getting your attention again on dealing with the rest of this site. The rest of the site poses significant problems to us as well.

So we would hope that the program that ensues from consideration of this amendment or other amendments does yield an overall program that deals with all of our problems. My final thought would be that I detect that there are certainly questions of jurisdiction, questions of process, in terms of whatever program would be developed. New York as a State is institutionally neutral to how those matters are resolved here, but I would observe that the NRC has had jurisdiction over this site throughout this history, and has had formal, certain knowledge since at least 1976 that this facility would never again operate as a reprocessing plant, yet under its

licensing responsibility, has yet to deal with the phasing out of this facility under the license.

It would seem to me that the jurisdiction has long been there to develop the decommissioning program, and in fact, under the existing licenses, a facility continues to remain in a highly contaminated state even though we know that the facility will never again operate as a reprocessing plant. In fact, NRC has had the ability, going back at least to 1976, to get on with the proceedings that could result in the decontamination and decommissioning of this facility.

So as you sort out the jurisdiction, we want help. We want the problems presented by this facility resolved. We remain neutral as to who within the Federal establishment takes which responsibility, but we think that ultimately the major responsibility does lie with the Federal Government. Thank you.

The CHAIRMAN. Very good. Mr. Bingham?

Mr. BINGHAM. Thank you, Mr. Chairman. I would like to welcome Chairman Larocca here. He is well known to us in the New York delegation because he worked for quite some time as the Governor's representative here. I think he presents a reasonable position.

I would like to ask you, Jim, whether you are in favor of the amendment offered by Stan Lundine. I am not quite clear on that from your summary of your summary.

Mr. LAROCCA. Essentially yes, because the Lundine amendment does provide for the solidification of the high-level wastes, which is one of the key elements to an overall program.

Mr. BINGHAM. Are you suggesting that by proceeding on that amendment we would somehow be neglecting, in a dilatorious way, the other parts of the problem?

Mr. LAROCCA. No, sir. I believe that amendment should be moved. At the same time, though, I would like your attention shared to the other elements of the facility: the high-level burial ground, the low-level burial ground, the spent fuel storage pool.

Mr. BINGHAM. Would you develop for us the thought that you just mentioned quickly in passing, that a great part of the problem that arose here was because the Federal Government changed its standards or its licensing procedures in midstream?

Mr. LAROCCA. Around 1972, 6 years into the operation of this facility, the commercial operator determined that in order to compete commercially, to make this venture successful, it would have to expand considerably its activities, the volume of capacity that it had. He, therefore, shut down and undertook a proceeding to expand.

During the course of the consideration of that expansion, the seismic criteria and other regulatory criteria were changed, making it virtually impossible for this site to qualify under the new regulations. The figures that the company has used is that an expansion originally contemplated to involve capital of about $15 million, under the changed criteria would have actually cost in the hundreds of millions of dollars in order to expand and comply with these regulations.

It was in the face of that judgment that they determined instead to close down. So the criteria that existed when this venture was

conceived are not the criteria that exist today. It was the company's judgment that they could not conform to the new criteria.

Mr. BINGHAM. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Lujan?

Mr. LUJAN. Thank you, Mr. Chairman. Mr. Larocca, let me pursue this. What happens after it is vitrified? The concern of New York is that all of this glass just be taken out of New York as soon as possible. Where to?

Mr. LAROCCA. That is a question that I usually pose, Mr. Lujan. We can only respond by making reference to the National Waste Terminal program, to the extent it exists at all. Our understanding is that the Federal Government will at some point establish a Federal repository for the deep earth permanent disposition of nuclear waste. As nearly as I can determine from following this, there are some sites, the leading one of which appears to be in your State.

There are many people in my State who have advocated that the only solution to West Valley is the complete decontamination and decommissioning of the entire facility, loading it up on trucks, and carrying it off somewhere——

Mr. LUJAN. To New Mexico, yes. Or the copper pits in Arizona maybe, places like that. What I am trying to raise is that same problem, that if New York takes that attitude—my first thought is, when we are going to contaminate West Valley, they have burial grounds there: why not bury it right there. But the New York attitude is, "Just get it out of here. We do not want anything to do with it. Take it out to New Mexico."

Our response is that much of that waste comes from powerplants in New York. We do not have any nuclear plants in New Mexico so we do not have any of that kind of waste. Assuming that every State takes that attitude, we are stymied as far as doing anything in West Valley then.

It kind of reminds one of the whole question of the gas shortage, where it is the worst in California, and they have brought it on themselves. They do not want any refineries there. We try to ship the oil through California over into west Texas where it can be refined, made into gasoline and shipped out into the other areas of the country. But everybody wants to be so pristine in not accepting any environmental problems that we are in a tough position.

I can almost tell you that a high-level waste repository is not an acceptable thing in our State. Most people in the East think that is a good place to put it. There is nobody out there. It is just the wasteland of the world, so there are not too many people over there.

The CHAIRMAN. Horny toads and lizards.

Mr. LUJAN. Some of those. That presents a real problem to us, the amendment saying, "Just get it out of here."

Mr. LAROCCA. The amendment says, "To a Federal repository." I would say that one of the things that has made it very difficult for me to be an effective advocate for my State in working out a solution here is a perceived notion that New York's expectations are unreasonable. And to the extent that we in New York are projecting a message that says, "You have to come in and spend hundreds of millions of dollars, clean up this site, move it out to

somebody else's State," I know that is absurd and ridiculous on its face. It was in the knowledge that we had to take a more reasonable position that we examined very carefully with the Department of Energy what role we could play in the spent fuel storage program, what role we could play in the low-level storage program, for which I have taken a bath in my own State for even entertaining these ideas. Yet I have tried to convey the message to people at home that I worked here, as Jack Bingham pointed out, as a lobbyist for the State of New York, and I am aware that there are 435 Members, and they are not all from New York, and we are going to have to be perceived as having raised a reasonable expectation in order for the Congress to act upon it.

Mr. LUJAN. The reason I bring that up is that in the questioning of Dr. Bateman by Mr. Markey, the discussion seemed to go, "How dare you think of doing anything like that in New York, off-site storage of more low-level waste." If New York is not willing to entertain some compromise, that is the way the world works. We give you something and you give something in return.

Let me get to another point. Your concern was that we are not attacking the entire problem. I agree with you. What do we do with the rest of it? Could that be solved by beginning with an entire environmental impact statement as to entire project? Should we be moving in that direction, that addresses the entire question, rather than just the liquid waste?

Mr. LAROCCA. I understand the temptation to go to a full-blown, generic environmental review process that deals with the whole site. My concern about that is that I have a room full of studies back in Albany that have already been done. We know an awful lot about the problem. We know an awful lot about the environmental impacts of doing this or that with what we have there. I am very concerned that at the end of 1980, under the existing agreements, if there is no legal or other intercession, the wastes and the entire facility could revert to the State of New York. I do not have the technical or financial resources to deal with it. I think we know enough to begin to make some decisions.

At the same time I think each of the decisions that might be made should be subjected to an appropriate degree of review and impact analysis process. I am worried about striking a balance that allows us to make an informed judgment about what to do, but not buy us another 10 years of process, while in the meantime the tanks would continue to deteriorate in terms of their design life.

One thing I have learned in the relatively brief time I have been responsible for this is that we do not know what could go wrong, but it is not a bad idea to assume that something will. We are well into the term of design on those tanks that tells us we ought to—and the solutions being offered are 10 or 12 or 14 years. I am worried about there being so much process that there are no decisions made.

Mr. LUJAN. Thank you.

The CHAIRMAN. Mr. Vento.

Mr. VENTO. Thank you. Mr. Larocca, you point out a $4 million fund that exists somewhere to deal with part of this problem. Where did that come from?

Mr. LAROCCA. The original concept called for the owners of the fuel that was delivered, the spent fuel that was delivered to West Valley to pay a fee to the operator of the site for the disposition of those wastes, as well as anyone who sent waste there for burial paid a fee; as well, each year the commercial operator paid a fixed fee.

All of these fees were to be assembled in a fund for the maintenance care of the waste. As a result of the fees never being constituted large enough, as well as there not being as much activity as there was originally contemplated, the fund only amounts to this relatively small $4 million. That was, under the original agreements, contemplated to be the resource to deal with the disposition or maintenance or perpetual care of these wastes into eternity. So the $4 million looks pretty paltry in the face of the estimates that we have seen to deal with it.

Mr. VENTO. Sort of an underestimate, all right. In other words, did the Federal Government pay its share in those instances as well? You pointed out the Federal Government sent fuel. They paid a certain amount.

Mr. LAROCCA. The Federal Government not only paid a fee for the disposition, but the Federal Government guaranteed, under something called the base load agreement, guaranteed to the commercial operator that a certain quantity of fuel would be there to assure the commercial viability of the program. In fact, most of the liquid that is there now had in its origin waste that came from the Federal defense program.

Mr. VENTO. But that was necessary to maintain the economic viability of this plant. In other words, until commercial reactors currently on line which it would primarily serve were in operation.

Mr. LAROCCA. That was the perception, but it never actually was commercially viable.

Mr. VENTO. Yes, they built a plant that had a magnitude of something like 200, and they understood that they wanted to go to 800. Then when they discovered that they had to go to 800 they ran into a whole host of other requirements, which in the end apparently the business decision was not to proceed with that particular activity. You disagree. I notice that you took some moment to find out the regulatory problems that ensued, but most of those problems, I guess, the NRC's role today is under critical fire for what they do and do not require with regard to the commercial operation of nuclear powerplants.

Mr. LAROCCA. Let me give you an example. When it became clear on the nuclear fuel services, when the commerical operator advised everyone, including NRC, that they had no further intention to operate it as a reprocessing plant, it seems to me it would have been appropriate for NRC to begin then, immediately, the process of reducing the level of radioactivity in this plant, because the license would no longer be utilized and it would no longer be appropriate to maintain this plant and its high level of radioactivity.

The NRC has still not even amended the license to reflect that the plant is no longer authorized for reprocessing. Under its existing license, legally, technically, it could begin reprocessing tomor-

row, when in fact years have passed in which we know that that is not the case.

Mr. VENTO. I expect that 1976, I guess, was the date that I read here, so it has been a few years. But do you know what the legal implications are of modifying the license, and then who is legally responsible for the wastes or for the capital loss? Can you speak to that issue?

I do not know the answer to it, but I expect there might be a reason that the NRC has not moved in the direction that you imply.

Mr. LAROCCA. Your question raises a number of complex questions——

Mr. VENTO. It is not my question. I think it is your answer.

Mr. LAROCCA. The implications of requiring that the radioactivity level be brought to an unattended standby condition which reflects the actual use of the plant now and the fact that it would never be used for reprocessing again would impose burdens on the commerical operator to undertake a decontamination of that facility. I find no appropriate reason why that should not be undertaken and why it should not have been undertaken as far back as 1976.

With regard to the overall questions of the conditions of the wastes and the various responsibilities for decommissioning and decontamination, I can only tell you that there are two agreements in existence between the State and the commerical operator, which are hundreds of pages, that deal with the various responsibilities for various actions for various elements of the program.

For example, there is one degree of responsibility with regard to the tanks. There is another degree of responsibility with regard to the reprocessing plant. There are other degrees of responsibility for the burial grounds. I can tell you that these are matters in which we do not find ourselves and the commercial operator in very much agreement.

Mr. VENTO. I can appreciate that problem. You mention that DOE is the only one that really has the expertise to do this right now. First of all, they talked about the solidification. You do not know what the method is going to be right now for certain, as was pointed out right here. I guess there are certain degrees of knowing, in fairness to Mr. Bateman, that occur.

Plus you do not know yet if DOE will do it itself or if it will have a contractor do it. In other words, private involvement by virtue of contract. So you do not really know who is going to be doing it. You do not know if the material, the product that is solidified will be stored on that site. Preferably you would prefer some other site, wherever that might be. So the problem is here.

I could go through the same reiteration with regard to Minnesota. So this problem: you could very well have the involvement of another private contractor, and the processing of this opens up, I think, another question of liability on the part of the Government.

I know you are concerned about the overall parameters of solving the problem. The high-level waste seems to be the one, at least according to the study, that we have more responsibility for that perhaps than some of the other problems that you find yourself facing. But do you think that this ought to be the center for a

demonstration, sort of an experiment to see if this works based on that?

This is the thing that concerns me about it. I do not really think it is a demonstration as such. I am not at all convinced, nor am I convinced that this is the one area where we should jump and have a demonstration if we are going to have one of this size.

Mr. LAROCCA. I am hesitant to choose a word which I would agree to as the appropriate characterization to put on what the Federal Government does so long as we get a program that renders these liquids into a safer form in a safer way and provides the resources to do it and deals with these other problems for which we have no current solution. It can be called a demonstration or something else.

I do not know the implication of all of that in terms of budgetary and jurisdictional questions here, but we kind of have the generic feeling that we know what kinds of things need to be done, however you characterize it.

Mr. VENTO. Thank you, Mr. Chairman.

The CHAIRMAN. We will now hear from William Dircks, of the Nuclear Regulatory Commission.

[Prepared statement of Hon. William J. Dircks, with attachments, may be found in the appendix.]

STATEMENT OF HON. WILLIAM J. DIRCKS, DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Mr. DIRCKS. With me today, Mr. Chairman, is Richard Cunningham, who is the Director of the Fuel Cycle and Materials Safety Division. In the interest of time, Mr. Chairman, I will submit the prepared statement, and summarize, as best I can, the statement.

The CHAIRMAN. Good, I would appreciate that. We are crowded for time. I personally have read it here in the last few minutes. It is a very good paper.

Mr. DIRCKS. Also Mr. Chairman, you asked us some specific questions in the letter of invitation. We are submitting those separately although I will try to cover them as best I can in the statement itself.

There are three issues I would like to address briefly. One is the licensing considerations for the proposed project; two, the broad technical issues that are associated with that licensing; and three, the benefits that we think could be derived from undertaking the project as defined the proposed amendment to the DOE authorization bill.

The NRC control of the NFS West Valley site is administered through a single facility license, CSF-1. There are two colicensees, the site owner, the New York State Energy and Research Development Authority, and the site operator, the Nuclear Fuel Services, Inc., a subsidiary of Getty Oil Co.

In addition to the NRC license on the site, the State of New York exercises regulatory control as an agreement state over the commercial burial ground for low level waste located at the West Valley site. The proposed amendment to the DOE authorization bill would authorize the Secretary to enter into contracts and agreements with the State of New York and others to carry out the

project as defined in the bill. The Secretary would also take title to the liquid high level waste. It is not clear at this time whether the project will be carried out by private contractors, such as NFS, which are subject to licensing. It is also not clear at what point in the process the Secretary would take title to the liquid high level waste, or who would act on behalf of the Secretary to assure its safe management.

The facility license, CSF-1 contains conditions called technical specifications which define limited activities which are permitted under the license, as well as operational safety parameters. As they stand, these technical specifications essentially cover the operation of the reprocessing plant as it was contemplated in 1966. They do not permit NFS to transfer their high level waste from the tanks in order to operate a waste and solidification plant.

Such activities involve safety and environmental questions which were not reviewed prior to the issuance of the existing operations. Before such operations could be initiated under the license, a safety and environmental evaluation would have to be completed and the license amended to appropriate changes in the technical specification or a new license would have to be issued.

If DOE were to construct and operate a waste solidification plant on the West Valley site while that site continues to be subject to regulatory control under our license, an NRC license evaluation and amendment would also be necessary.

The safety and environmental interactions between those activities presently covered under the NFS license, such as the storage or transfer of the liquid high level waste, and any new operations, such as waste solidification, are not separate. Also, any private contractor, other than NFS, which carried out the solidification process for DOE, might itself be subject to licensing.

If DOE were to assume complete responsibility for that portion of the site now covered by our license CSF-1, the storage of commercial high level liquid waste in the tanks, the onsite storage of that waste following solidification, and the continued storage of commercial and irradiated fuel in the storage pool, would also be subject to regulatory control under the provisions of the Energy Reorganization Act of 1974.

It would also be necessary to terminate the existing NFS license. Any action to terminate that license would, in itself, require that the consequences of that step be analyzed. Therefore, we anticipate that no matter how DOE proposes to implement their program, the NRC would be required to conduct substantial safety and environmental analyses and make appropriate amendments to the license and issue new licenses to NFS, and other private contractors or to DOE.

There are a number of technical problems that will need to be resolved in the course of designing a solidification process. We visualize the design and construction of a solidification process to be a chemical engineering problem which would not be abnormally difficult to evaluate from a health, safety, and environmental standpoint. The difficult task will be the engineering and process work necessary to remove the waste from the high level waste tanks, and to transfer to the solidification operation.

We believe that the engineering work and the safety and environmental analysis should be initiated now. The work being undertaken by the staff to assess the continuing safety of the tanks by the NRC staff will provide useful data for the waste.

Another technical issue is the selection of the solidification process itself. Although decisions on solid waste form have not been made, we believe that work on the project can proceed for several years prior to reaching a final decision on the exact waste form. We believe there is no point in delaying this undertaking at West Valley pending future decisions of waste form.

There are a number of benefits to be derived by proceeding now with those activities leading to eventual solidification of the high level waste stored at the site, and transferring those wastes to a Federal repository, decontamination of the plant, and decommissioning those parts of the plant to an extent which is compatible with whatever future use of the facility and the site is contemplated.

If the wastes were to be solidified, packaged, and shipped offsite, it is possible that arrangements would be entered into between DOE and the colicensee, so that the colicensees could be relieved of their respective responsibilities for care of the high level liquid wastes.

There are obvious benefits from demonstration solidification technology and decontamination on a pilot scale, as would be the case with the NFS situation. The most important benefit is neither direct benefits to the licensees, nor the demonstration of a new technology. Rather, it is improved safety. While our studies of the tanks thus far indicate that storage of the high level liquid wastes are safe, and will continue to be safe over the next several decades, liquid wastes are more mobile and difficult to control than are solid wastes. There is more opportunity for something to go wrong in the system. We therefore view the DOE program principally as a remedial action, with its most important benefit being an improved margin of safety.

In summary, we know that as a minimum, the NFS license will have to be amended and other licenses issued to private contractors or DOE, depending on how the project is carried out. We recommend that the West Valley project contemplated under the proposed amendment to the DOE authorization be subject to license control. No matter who undertakes this activity, DOE or other parties, it is particularly important that the total project be subject to an open review which permits public participation in the decisionmaking process. We feel that this can be best accomplished under the existing regulatory procedures which the Nuclear Regulatory Commission now has in place.

This open process will allow the public to participate in many of the types of policy decisions, which we, as a nation, must take in deciding our nuclear future. Although specific details of the DOE program will require careful study and environmental evaluation before the Commission can make a licensing decision, we support the concept of solidifying the high level waste and eventually shipping it offsite. This leads to improved safety at the NFS site. It provides the impetus to move us from the mode of performing studies to one of taking more substantive action in solving the

waste management problem. The program at NFS should provide information which can be useful in other nuclear energy programs.

That completes my statement, Mr. Chairman.

The CHAIRMAN. Thank you, Mr. Dircks. I think you make a very persuasive case for NRC involvement in whatever legislation refunding we crank out of here, and I welcome your testimony. Mr. Bingham?

Mr. BINGHAM. I have no questions, Mr. Chairman. I thank the witness for his testimony and would just emphasize the next to last sentence of his statement, which I think is really a key to what we are confronted with here. The proposal provides the impetus to move us from the mode of performing studies to one of taking more substantive action in solving the waste management problem. I think we are tired of studies. We would like to see some action, and this is the way to get it.

The CHAIRMAN. I agree. Mr. Vento?

Mr. VENTO. Mr. Chairman, you know what my attitude is about studies. I think the $1 million study we put up last year is the reason that we probably have this proposal before us. I am sure that if we had provided an opportunity to engage in contracts, we would have those here, too. I do not know. I think that we have the same issues here. I do not know if they are any more resolved, but we have a million dollars' worth of lobbying anyway with regard to some of these studies.

I have found in my experiences that when we give money for studies, we often build up a whole cadre of people that have a certain persuasion with regards to how the problem ought to be solved. Mr. Dircks, the NRC has had responsibility over the licensing, and apparently were you involved in any way with the NRC involvement in creating this $4 million fund, or was that the State that created that?

Mr. DIRCKS. No, sir. I do not believe we have had any involvement, not to my knowledge.

Mr. VENTO. That was under their authority, as it was transferred to them, that created that which turned out to be inadequate. Do you see any problems with regards to the legal ramifications with regards to who will change the liability by manipulation of this waste?

Mr. DIRCKS. In terms of the liability?

Mr. VENTO. In terms of the high level waste. In other words, when you solidify it and put it into a different form, do something with it, does that change the responsibility of DOE or the Federal Government, or any of the other participants?

Mr. DIRCKS. I do not believe so, sir. I think the way we look at it, the more you move along the task from getting the waste from a liquid form to a solid form, the better off we would be. As I indicated, there are problems in the movement of the waste from the liquid to the solid state.

Mr. VENTO. I understand that you think it would be a more safer state.

Mr. DIRCKS. Yes, sir.

Mr. VENTO. Does it change the legal liability of who is involved? You have a sort of a synthesis of different groups involved from private industry to the State and Federal Government.

Mr. DIRCKS. We have not really looked into the liability question. I do not believe so.

Mr. VENTO. I would appreciate it if you would.

Mr. DIRCKS. We will take a look at it.

Mr. VENTO. The understanding that I have from an earlier part of your statement, is that I think it leaves the impression that we do absorb a higher degree of liability in these instances. It is your viewpoint that the NRC would be very much involved. You do not see the role that the amendment anticipates in terms of the consultation as being adequate, I take it then?

Mr. DIRCKS. We have always had problems in defining what consultation means when it is mentioned. We prefer to, in this case, to look at the straight licensing question.

Mr. VENTO. Do you think that you ought to go beyond that in terms of the State or the other participants here?

Mr. DIRCKS. The way we are looking at it now is that I think we see pretty clearly our responsibilities in the licensing area for the license as it exists today, and for any involvement by DOE that directly or indirectly is in the process. We have not looked at licensing the State activity.

Mr. VENTO. Were the primary contracts in this instance, Mr. Dircks, with the private party, were they drafted by the NRC or who drafted them? What was the nature of the agreement with NFS in terms of this reprocessing plant?

Mr. DIRCKS. That long predates my tenure there, and it predates the formation of the NRC. It was done by the Atomic Energy Commission back in the early 1960's.

Mr. VENTO. You do not know the answer to my question?

Mr. DIRCKS. No, I do not.

Mr. VENTO. I think you are the people that should be able to answer that. Maybe it is answered in the study. If it is, I would be satisfied with that, but if it is not, I would appreciate it if you would provide some insight to the committee on that matter.

Mr. DIRCKS. We will dig into it.

Mr. VENTO. I do not know that it is possible to go back and retrieve the dollars, retrieve the involvement, but I would like to know the basis for a conclusion. It is pretty obvious that there was no conclusion to dealing with waste materials, and that these plants and licenses have gone forth without that. It seems to me that that is the case. I would like to know what the nature of the contract was and how it might be interpreted.

Mr. DIRCKS. Yes, sir.

Mr. VENTO. Thank you, Mr. Chairman.

The CHAIRMAN. Our final witnesses this morning are Mr. Resnikoff and Mr. Pyles.

[Prepared statements of Marvin Resnikoff and David Pyles, with attachments, may be found in the appendix.]

PANEL FROM THE SIERRA CLUB, CONSISTING OF MARVIN RESNIKOFF, CHAIRMAN, NUCLEAR SUBCOMMITTEE, ENERGY POLICY COMMITTEE; AND DAVID PYLES, MEDIA PERSON ON THE SIERRA CLUB RADIOACTIVE WASTE CAMPAIGN

Mr. RESNIKOFF. In my prepared statement, Mr. Chairman, I said, "Good morning." I guess it is the afternoon already. We will just summarize our statements.

The CHAIRMAN. We will be interrupted by a vote here fairly soon. I might say, for myself, I have read your statements here in the last hour while other things were going on and I found them both most interesting.

Mr. RESNIKOFF. Thank you, Mr. Chairman. My name is Marvin Resnikoff and I am chairman of the Nuclear Subcommittee of the Energy Policy Committee of the National Sierra Club. With me this morning is David Pyles, who is our media person in the radioactive waste campaign in New York State and he is a former employee at Nuclear Fuel Services, West Valley. On my right is Drew Diehl, who is the Sierra Club Washington staff person, who focuses primarily on the radioactive waste issue. We greatly appreciate the opportunity to present our views on the Lundine amendment.

We strongly support efforts to clean up the West Valley site and to resolve this very dangerous high level waste situation and we commend Congressman Lundine in his efforts in this regard. However, there are two aspects of the Lundine amendment with which we are in disagreement. One concerns the Department of Energy consultation with the NRC. We believe that should be changed to NRC licensing authority and, for a variety of reasons, we believe that the high level waste should not be vitrified at this time, should be put into an intermediate state, a calcine form.

We have first a map. You have not been to west New York area. I know that you have tried to get up there occasionally but we would like to invite you up sometime. In place of that, we have brought a map to show you where West Valley is located and where Buffalo is located. West Valley is 35 miles south of Buffalo. The plant is located on Cattaraugus Creek which feeds into Lake Erie and the Buffalo water supply is located in Lake Erie here. We also have an overleaf which shows the population distribution in the western New York area. As you can see, most of the population is in Buffalo and Niagara Falls over into Canada and there is some population along the lake but the West Valley area itself is sparsely populated, as the diagram shows.

While the reprocessing plant operated from 1966 to 1972, high levels of radioactivity were recorded by the State of New York from Cattaraugus Creek and, as late as March of 1978, trace amounts of radioactivity were reported in Lake Erie and Lake Ontario so, the plant ceased operation 6 years before that. The plant has had a very unfavorable operating history, as we view it, in western New York. The radiation exposures to workers were the highest in the world, much higher than predicted in the original preliminary safety analysis report. The radiation releases to the environment were over 1,000 times greater than predicted, sometimes over 3,000 times.

In view of this operating experience, the citizens of west New York consider it very important that we be able to legally protect ourselves. For this reason, and others, we believe it necessary to change the wording of the Lundine amendment, from NRC consultation to NRC licensing authority. With NRC licensing authority, that would enable us to intervene in the process on matters of safety. However, as the legislation now reads, as we interpret it, the Department of Energy need only prepare environmental and safety analyses and consult with the NRC and the only protection we would have is NEPA, that DOE prepare an adequate environmental impact statement.

I have taken a quotation from a subcontractor report to indicate to you what is possible when NRC does not regulate the industry. One of the subcontractor reports by E. R. Johnson & Associates has shown that it would have cost only $3 million to remodel the NFS reprocessing plant if it were labeled an R. & D. facility, compared to $600 million estimated by NFS for commercial operation, regulation by the NRC. To quote E. R. Johnson & Associates' report:

> If the operations are to be conducted entirely in accordance with NRC regulations, the following additions and alterations would have to be made: structural changes to improve resistance to natural phenomena * * *.

By that, it means earthquakes and tornados.

> Several general safety and environmental modifications. Notwithstanding the alterations to existing facilities, that would be required in order to place West Valley plant, the commercial operation, under NRC regulations, the existing plant represents an extremely versatile facility for conducting research development and demonstration activities."

Now, clearly, we in west New York are not looking for shortcuts which compromise the health and safety of the public and believe that NRC regulation is an absolute prerequisite. We also believe that this matter of NRC regulation is contrary to the IRG report and is a dangerous precedent. The IRG report has advocated a systems approach to waste management, favoring the waste form containment and geologic mediums to provide a combined deterrent to leakage of this radioactive material. If the NRC were to regulate the Federal repository, it seems to us it would be necessary for them to also regulate the waste form and containment as well.

This brings us also to glass as a final waste form. You heard testimony this morning that glass would be an acceptable form for—the vitrified waste would be an acceptable form because the waste would be cooler at West Valley. But, we must point out that these wastes would be placed in the repository with other wastes. They would be placed in the repository with spent fuel assemblies. So, it cannot be guaranteed unless the NRC has full control over the entire process.

We have indicated in one of our factsheets some of the issues concerning salt as a medium for waste repository. I will not go over many of those points that have been brought up. What we would like done with those wastes at West Valley, and I believe that there is consensus, is that the material must be removed from the tank and that material must be solidified in some form. We have proposed that that material be calcined, that is sprayed in a hot

oven to form a pottery ash, and that process is an intermediate step to making it glass.

We propose the calcination method because it has been done successfully for 15 years at the Idaho National Laboratory. It is a lower process than the glass process and, therefore, there would be less opportunity for the radioactive materials to enter the environment. We would like to quote the National Academy of Sciences on this matter. They have recommended the super calcine form which is forming a calcine with certain additives which reduce the solubility of the calcine material a great deal. The National Academy has mentioned that this super calcine could be incorporated into cement and this would have a leach resistance which is comparable to glass. We think it is a technology which should also be investigated. On the other hand, if glass were made, that would be the final form that one would select. Calcine would allow some versatility in this matter.

We want to point out, finally, one other aspect since this has been brought up today. That concerns the Larocca-Schlesigner scheme to bring more spent fuel to West Valley. Of course, we are opposed to that. We have also included in our attachments to our statement a letter of concern which has been signed by a large number of clergy in the western New York area concerning bringing more waste to West Valley. We do not see the need for a quid pro quo arrangement. It is a dangerous situation. Congress has acted in the past in other situations which were dangerous situations, such as the *Uranium Mill Tailings* case, where, in the legislation that passed, the Federal Government said it had a compassionate responsibility to begin the cleanup work in the Western States. Colorado was not required to take more radioactive waste as a precondition for remedial action on contaminated buildings in Grand Junction and communities suffering from flood disaster do not have to accept radioactive waste before Federal disaster funds are made available.

On the other hand, we do believe that the Federal Government should not pay the entire bill. Provisions should be made for the Attorney General to recover costs and there should be a line item in the Justice Department's budget so that this matter could be pursued further. We believe the costs should be shared. We believe that each of the entities in this matter has a responsibility which we have outlined in our testimony.

That is the end of my summary of what I was going to say. Mr. Pyles has a short statement concerning using the present reprocessing building for the solidification effort and the problems concerned with removing the waste from the high-level-waste tank.

The CHAIRMAN. Mr. Pyles, I have read your statement. It was very interesting. You can summarize or read it, if you choose, but we are probably are going to have to wrap up here in 5 minutes or so.

Mr. PYLES. All right. I would like to summarize it. I also have a statement from the Coalition of West Valley Nuclear Waste, one of the citizens' groups, I would like to submit for the record, if that is possible.

The CHAIRMAN. We would be pleased to have it.

Mr. PYLES. Thank you.

The CHAIRMAN. I am really personally fascinated by this tank of waste and your story about the bottom, where you do not know whether the material on the bottom is like concrete or whether it is like thick soup. I guess there is no easy way to find out and it raises questions how we can assume that all of this stuff can simply be pumped out of there somehow.

Mr. PYLES. Right. This whole situation with the tank is a real problem. They wanted to find out how much sludge was in the tank last year, I guess when DOE was doing this study, so, in order to do that, they took a bottle on a string on the end of the crane and they lowered it down into the high-level-waste tank at West Valley and they lowered the thing until the string went slack. Then they made the assumption that this material that this bottle hit was sludge and they calculated it, the thickness of the sludge in the tank from the volume, and so on. So, we started calling this the calibrated string method of nuclear waste management. But, I think that this sort of points out the whole idea of the status of the technology involved.

That tank, which I also have a diagram of—I left it over at the—it is not a very good diagram. The tank contains a lot of things besides waste. This is a pretty horrible diagram but I think it will make the point. It contains 45 columns that support the roof of the tank, that is, vertical columns. It contains six internal support columns which run all the way through the tank from the bottom of the vault to the top of the vault to hold it up. It contains—which I did not include on here because I thought this is sort of showing enough problems there—it also contains eight air bubbles or sparsures that were basically used in the design to mix the tank. The whole bottom area is a gridwork of I beams, and so on, and all of the sludge is down in this gridwork. They have talked about sluicing this out, and so on, and they have had various problems with it.

The CHAIRMAN. Is there a drain at the bottom where presumably you would plug in and pump this stuff out?

Mr. PYLES. No, there is no drain at the bottom. There are a few openings at the top, the largest of which is 25 inches in diameter. It is called a manway. Just getting the waste out of this tank could pose as much of a problem as doing the entire solidification procedure. There has got to be some sort of mockup built of this tank so the people can do some work on this thing. They can see in a cold environment, a nonradioactive environment, what the problems are going to be. They could simulate sludge; they could go through this whole thing. They have never done a representative sample of this. They have been able to sample supernate, the liquid part at the top, but they have never been able to sample the whole tank. They do not know what is in there. They know from calculations basically what is in there from basic burnup of the fuel but those are sort of rough numbers. They do not know exactly what is in there.

Another thing that was discussed this morning was using the building, the present building to put the vitrification facility in, or the solidification facility, whatever. I worked in that building for 4½ years as a lab supervisor and, basically, the building is a sham.

During the operation of the plant, NFS had the highest radiation exposure of any company in the world, per capita.

The CHAIRMAN. Before that, they would have to hire people to go in there and decontaminate?

Mr. PYLES. Right. This is the thing. During their operation, they ran through something like 1,400 temporary employees. These are kids, 18 or 19 years old, that went for the money. They knew nothing about radiation exposure; they were told none of the possible problems. These guys would go in and work for 10 or 15 minutes and, you know, get 3 months' worth of exposure. It is a real problem.

In other places, they have done mockups. The routine has been to mockup the building, have basically a separate building, a separate cell that is not radioactive so that, when there is a problem, a group of people can go in there; they can look over the problem; they know what they are going to do; they have basically seen the situation ahead of time of where they go into a radioactive area. Then, they move into the radioactive area. They do it in powerplants to train operators in the control room. They do it all over the nuclear industry. This sort of thing needs to be done at West Valley.

To conclude this and get going, the material that is in that waste tank should be removed as soon as possible. It should be solidified but it should be solidified in the safest possible manner. Basically, I think choosing vitrification at this time is a political expedient and it is not necessarily talking about the safest method. The present reprocessing building should not be used for this. There have been problems all through that building and it definitely should not be used. We also believe that no spent fuel, distant spent fuel assemblies should be brought into that site, as the Larocca-Schlesinger agreement in principle, or whatever it is properly called, has suggested.

The CHAIRMAN. No tradeoff?

Mr. PYLES. Right.

The CHAIRMAN. You made some good points and we appreciate your contribution to our hearings here. Mr. Vento?

Mr. VENTO. Mr. Chairman, I have no questions. I just think that it is important. I think there were some questions raised there that had to be asked. I think the question for this committee and for others is, do we want to just leave this all beyond definition in terms of this authorization with DOE, or do we want to sort of hold our feet to the fire in terms of getting them to put this together and come back so that we can finally approve it? I guess the question is how much license or how much flexibility do we want to give them? I think this gives them an awful lot.

The CHAIRMAN. Thank you, Gentlemen. We appreciate your help.

Mr. RESNIKOFF. Thank you, Mr. Chairman.

Mr. PYLES. Thank you, Mr. Chairman.

[Whereupon, at 12:53 p.m. on Thursday, May 31, 1979, the hearing was adjourned.]

A P P E N D I X

Additional Material Submitted for the Hearing Record

STATEMENT OF HON. STANLEY N. LUNDINE, A U.S. REPRESENTATIVE FROM THE STATE OF NEW YORK

Mr. Chairman:

I am pleased to have been invited here today to discuss my amendment to the Department of Energy FY '80 Authorization Bill pertaining to the future disposition of the nation's only commercial nuclear reprocessing site in our history at West Valley, New York. I am glad this subcommittee is taking such an active interest in a resolution of the complex problems at the West Valley site.

I believe a resolution of nuclear waste management problems like those we find at West Valley is one of the most critical environmental issues facing us today and certainly a pivotal concern in defining what type of future nuclear energy may or may not have in the United States and around the world. If we cannot adequately address our nuclear waste management problem, we cannot afford to continue to produce even a small percentage of our electrical generating capacity from nuclear energy.

It is within this context I would like to discuss the West Valley problem here today. First, I'd like to describe for you what the amendment does and does not do and its status. Second, I'd like to comment specifically on what I understand to be a major concern of this subcommittee--- the federal financial commitment contained in this amendment.

The amendment authorizes the Department of Energy to carry out a nuclear waste solidification demonstration project at the West Valley site. Located on the site, among other things, are about 600,000 gallons of high level liquid nuclear waste generated during nuclear reprocessing operations between 1966 and 1972. While this amendment does include as part of this demonstration project decontamination of the facilities used in conjunction with the project, it does not commit the federal government to the major role in resolving the long term waste management and decontamination problems associated with the rest of the site.

Under this amendment, the two solid waste nuclear burial grounds at the site remain the responsibility of the State of New York and/or the commercial operator, Nuclear Fuel Services. In addition, the amendment does not disturb present responsibility for decommissioning and long term management of the spent fuel receiving pool or other waste treatment areas of the site used during reprocessing and resulting from past operation of the site.

The estimated financial commitment being asked of the federal government for this project is about $130 Million according to a Department of Energy report prepared in response to a congressional authorization approved last year. It does not involve a federal commitment of $600 million to a Billion dollars, the figure so often carelessly tossed about in conversations about West Valley. The $600 Million figure is the G.A.O. estimate of the amount necessary to return all parts of the site to pristine condition, a desireable but

perhaps unrealistic goal. The amendment only deals with one aspect of the site, solidification of the high level liquid nuclear waste.

Briefly, I'd like to comment on the specific solidification technology mandated in the amendment. Although the original draft of the amendment as considered by the Science and Technology Committee specified the vitrification (glassification) process, this language has been amended through the committee process to broaden consideration of all other solidification technologies so that the most effective technology is ultimately chosen.

Under the amendment, Nuclear Regulatory Commission authority would be preserved. The West Valley site is currently licensed by the N.R.C. and the N.R.C. must approve the solidification and decommissioning plan for the waste and facility at the site. I will not dwell on this as I'm sure the N.R.C., in their testimony before you today, can more precisely and in greater detail address their prior and prospective role in this process.

Finally, I would call your attention to subsection (c) of the amendment which is designed to preserve state and commercial financial liability for aspects of the West Valley site exclusive from the demonstration project on the high level waste. It specifically provides the federal government with additional authority to recover costs from the state or commercial operator which result from past operations at the site and are not directly associated with the demonstration project.

The amendment has received substantial Congressional support. It has been approved as part of the FY '80 Department of Energy Authorization by the full House Science and Technology Committee. Hearings on West Valley have been held by the Energy, Research and Production Subcommittee of the Science and Technology Committee. The Energy and Water Subcommittee of the House Appropriations Committee has included $5 Million in the FY '80 D.O.E. Appropriations Bill for first year activities under this authorization. Finally, the Senate Armed Services Committee has attached a nearly identical amendment to the FY '80 Department of Energy military research authorization.

In light of all this, nonetheless, I would like to address most directly this committee's concern that this amendment may be "unwarranted or premature". I don't believe this action can be characterized as "unwarranted" as there is a clear need to protect the health and safety of the public involved here. These wastes cannot remain indefinitely in a liquid state and we know that it will take at least ten years to complete a solidification project.

Nor do I believe this amendment can be characterized as "premature". Last year, the Congress authorized the Department of Energy to conduct a one year study of the West Valley site and to make recommendations concerning future disposition and responsibility for carrying out options for dealing with the problems at the site. The results of that study, filed with the Congress on February 25th of this year, indicate that the federal government has a "high" responsibility factor in regard to solidification

of the liquid wastes at the site. In addition, an independent task force comprised of interested citizens and representatives of the state and federal government concluded that the high level liquid nuclear waste demanded "urgent action".

Beyond this, a glimpse back into the history of West Valley and a look toward the future of our national nuclear waste management program provides perhaps the most compelling reasons for a federal commitment to this project. It is clearly established that the federal government conceptualized and encouraged New York State to undertake this project as the first step towards a national goal of full commercialization of the nuclear reprocessing step in the nuclear fuel cycle. The operation would not have been possible had not the federal government concluded a "baseload agreement" to provide the major portion, nearly 70%, of the fuel for reprocessing at the site from federal government operations at the Hanford site. And, after the fuel was reprocessed, the federal government benefited from its further use in federal programs. It is only the waste which has been left behind. Over and above this, however, because this was a first generation reprocessing operation, it existed amid a changing regulatory climate which eventually made the operation obsolete.

More important than all this history, though, is the fact that the federal government stands to gain a great deal from the nuclear waste management project authorized by this amendment. High level nuclear waste handling and disposal techniques have not been demonstrated on a major scale anywhere in the United States. As I indicated at the

outset, we must gain first hand experience with dealing with nuclear waste to see if the paper theories we espouse hold true when taken from the laboratory and subjected to the difficulty of significant scale demonstration.

I understand the concern this subcommittee has over the precedent which may or may not be construed if this Congress acts to authorize the federal government to move ahead with this demonstration project. Even in absence of West Valley, however, the Congress has already established clear precedent for federal involvement in hazardous waste situations as witnessed in the nuclear area by mill tailing legislation enacted last Congress. The only difference being, unlike West Valley, the federal government was not as deeply involved in the creation of the mill tailing problem, and there was no identifiable benefit to the federal government from this assistance except to eliminate an environmental and health hazard.

In summary, I believe the Lundine Amendment to carry out this demonstration project at West Valley is justifiable and has substantial benefit for the federal government. I represent the West Valley community in Congress, so naturally I care very deeply about the future of this small community as its people attempt to cope with one of the most sophisticated technological challenges of our century. My concern transcends this however, to the national level, and to a problem which this Congress has a responsibility to address--- the long term isolation of hazardous nuclear wastes. Experience gained under this demonstration project can provide us with necessary insight

to make policy decisions in the nuclear area over the next decade. I do not believe we can afford not to begin work at West Valley. I urge your concurrence with the Science and Technology Committee action on this matter and your support on the floor for this amendment.

Thank you and I'd be glad to answer any questions.

STATEMENT OF WORTH BATEMAN
ACTING DEPUTY ASSISTANT SECRETARY FOR ENERGY TECHNOLOGY
DEPARTMENT OF ENERGY
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U.S. HOUSE OF REPRESENTATIVES

May 31, 1979

NUCLEAR WASTE MANAGEMENT

Mr. Chairman and Members of the Committee, I am pleased to appear before you today to discuss matters bearing on the situation regarding the radioactive waste now in storage at West Valley, New York. In the course of this discussion, I will also testify on the related amendment to the DOE Authorization for Fiscal Year 1980 which was recently recommended by the House Committee on Science and Technology. I am accompanied today by Mr. Sheldon Meyers, Program Director of our Office of Nuclear Waste Management.

In the Department of Energy, we believe that the legislative and executive actions over the next year or so in regard to managing nuclear waste will be of great importance, not only to the situation at West Valley but to the National health, safety and security. Thus, we are pleased that this Committee is devoting careful attention to these important matters. With your permission, Mr. Chairman, I would like to begin with a brief history of West Valley, including some of the difficulties encountered at the site.

Federal Involvement in the Western New York Nuclear Services Center

With the passage of the Atomic Energy Act of 1954, industry, for the first time, was permitted to enter the nuclear energy field. In furtherance of its responsibilities under that Act, the Atomic Energy Commission undertook a

comprehensive program to demonstrate the commercial practicality of nuclear power reactors and assumed that the spent fuel from privately owned reactors would be reprocessed. In the late 1950's, as the commercial reactor program grew, it was concluded that there was a need for a private reprocessing capability.

New York State's subsequent interest in attracting atomic development culminated in the formation of the Office of Atomic Development (OAD) in 1959 as an independent agency responsible for coordination of atomic regulatory and development functions within the State. To encourage nuclear development, the OAD acquired the West Valley site in 1961, which was designated the Western New York Nuclear Service Center (WNYNSC).

The Davison Chemical Company in the late 1950's considered the feasibility of constructing a reprocessing facility. In 1961, encouraged by New York utilities and other industrial concerns, they expressed interest in operating the WNYNSC. In January 1962, Davison outlined its plans to the AEC for constructing a private reprocessing plant. To pursue this reprocessing venture, they set up Nuclear Fuel Services, Inc. (NFS).

A complex series of negotiations culminated in four contractual agreements. NFS entered into a contract with the AEC under which the AEC would provide a baseload for the first five years of the reprocessing plant operation. NFS also entered into three contracts with NYARDA, OAD's successor: (1) a lease for the WNYNSC; (2) a facilities contract under which NFS would build storage facilities for nuclear fuel and radioactive wastes; and (3) a waste storage agreement which provided the terms for NFS to maintain the wastes for a period of time, limited by the duration of the lease, thereafter turning them over to

NYARDA along with a fund for perpetual care. New York State through NYARDA provided assurance (as amendment No. 1 to the Application for License) to the Federal Government that the State would be responsible for the wastes in perpetuity.

In May 1963, the AEC issued a permit authorizing construction of the NFS plant, and construction was completed in early 1966. Later that year, the AEC issued a license to NFS for operation of the first commercial nuclear fuel reprocessing plant.

In 1972, the plant was shut down to expand its capabilities and to make modifications to reduce radioactive effluences and radiation exposure levels to plant personnel. At the time, NFS estimated this modification program would cost about $15 million and take two years to complete.

The AEC considered that the proposed modification program involved a significant alteration, and, therefore, required a construction permit and a licensing review similar to that required of a newly licensed plant. When the NFS facilities were constructed, the need to withstand certain natural phenomena was recognized and the facilities were built to the specifications of the Uniform Building Code for earthquake zone 3. However, during the licensing review, the AEC stipulated that new facilities must also be able to withstand the effects of the highest magnitude tornado that can be expected to occur at least once in ten million years and the highest magnitude earthquake that can be expected to occur at least once in one million years. AEC also requested that NFS assess the capability of the existing structures to withstand these phenomena. By 1976, NFS judged that over $600 million would be required to complete the proposed modification program.

In April 1976, NFS notified the New York State Energy Research and Development Authority (NYSERDA), the successor to NYARDA, of its intention to exercise its right under the Waste Storage Agreement to surrender the responsibility for all wastes at the WNYNSC to NYSERDA. That September, NFS announced its decision to withdraw from the nuclear fuel reprocessing business, citing rising costs and uncertain regulatory requirements as key factors.

Technical Problems at the West Valley Site

The main process building has about 80,000 square feet of floor space, is 90 feet high, and has a ventilation stack that rises to 200 feet above grade. It is composed of a number of process areas and shielded cells in which remotely operated mechanical and chemical operations were performed. The building also contains the fuel receiving and storage facilities (spent fuel pool), analytical laboratories, and a control room. Smaller structures include an office building, a warehouse, maintenance shops, and a low-level liquid waste treatment facility. The low-level liquid waste treatment facility consists of a building containing waste-treatment process equipment and a peripheral system of lagoons and pits for waste treatment and retention.

High-Level Liquid Wastes (HLLW)

There are about 560,000 gallons of neutralized radioactive wastes from the reprocessing of uranium-based reactor fuels stored in an underground carbon steel tank at the West Valley site. Approximately another 12,000 gallons of acidic radioactive liquid wastes are contained in a separate underground tank fabricated from stainless steel; this acidic waste was produced during the processing of an experimental thorium-based fuel.

The fuel reprocessing scheme used at the Western New York Nuclear Service Center produced an acidic liquid high-level waste which was neutralized prior to storage in the carbon steel tank to reduce corrosion. This neutralization process, which is also in use at DOE's Hanford and Savannah River installations, resulted in the separation of the waste in this tank into two layers: (1) an upper liquid portion, containing most of the radioactive cesium, and (2) a denser solids-containing portion (usually referred to as sludge) which contains most of the radioactive strontium, other fission products, and long-lived elements that constitute less than one-tenth of one percent of the total curies of radioactivity in this tank.

The "sludge" present in the larger tank has been estimated to amount to as much as 124,000 gallons. The acid waste is not expected to contain sludge.

High-Level Liquid Waste Tanks

Each of the two 750,000 gallon carbon steel tanks sits within a steel pan which serves as a second barrier to leaks. However, it has been determined that the pan under the active tank does not hold water. Each tank, with its pan, is enclosed within a two-foot-thick concrete vault. The vaults are surrounded by relatively impermeable soil (silty till) and are eight feet underground. Both 15,000 gallon stainless steel tanks are contained within a reinforced concrete vault which is partially lined with stainless steel. This vault also is surrounded with silty till and is buried six feet underground.

NRC-Licensed Burial Grounds

The NRC-licensed burial area comprises about 7.2 acres, of which approximately one acre has been used. The radioactive wastes buried there consist of metallic cladding hulls from fuel elements reprocessed at the Center; various large items including process vessels and equipment; and miscellaneous items, such as ventilation filters, laboratory wastes, and other process-related debris. Also buried in this area, encased in concrete, are a number of ruptured fuel assemblies from a Government reactor. These wastes were buried in the silty till in 50 foot deep holes (much of the waste was packaged in steel drums). This burial area was originally used to dispose of solid, long-lived radioactive material wastes, TRU wastes, from the reprocessing plant and was licensed as part of the plant complex for this purpose. Its present use is for burial of the small amount of wastes generated by plant maintenance. The total wastes buried there from 1966 to date amount to about 139,000 cubic feet containing approximately 550,000 curies. Records of buried wastes are maintained and the individual holes are marked and indexed.

New York State-Licensed Burial Grounds

The New York State licensed low-level radioactive waste burial grounds were opened as a commercial venture in 1963 to receive low-level wastes for permanent shallow land burial. Although the NRC has jurisdiction over the licensing of such burial sites, it has entered into an agreement, as provided for in the Atomic Energy Act, relinquishing this authority to New York State.

These burial grounds comprise 22 acres of the site, approximately seven acres of which were actually used for radioactive material burial. The facility contains two sets of burial trenches: a north area and a south area, each containing seven trenches. Typically, the trenches were 25 feet wide, 20 feet deep, and 600 to 800 feet long. Three trenches which originally had a minimum of four feet of soil cover have since been reconstructed to prevent rain water infiltration. The remainder have eight to ten feet of covering. Trench boundaries are marked with concrete markers and records of buried materials are maintained.

The holding lagoons for rainwater pumped from open trench areas were also constructed adjacent to the north trenches; a third lagoon was later built near the south trenches. A pipeline connects the lagoons to the low-level liquid waste treatment facility.

About 2.4 million cubic feet of wastes (contained in 55-gallon steel drums or in wooden or cardboard containers) are buried in these facilities. The wastes typically include rags, clothing, gloves, wood, filters, failed equipment, and animal carcasses. About 23 percent of these wastes originated from operations at the Western New York Nuclear Service Center: the remainder came from nuclear power plants (20%) and medical, educational, industrial, and Federal sources (57%).

Congressional Hearings involving discussion of the West Valley site were held before the House Subcommittee on Environment, Energy and Natural Resources on February 23, March 12, and April 6, 1976 (Low-Level Radioactive Waste Disposal); on March 8 and 10, 1977 (Nuclear Waste Disposal Costs (West Valley, New York)); on June 18, 1977 (High-Level Nuclear Waste); and on

September 20, 21, and 22, 1977 (Nuclear Power Costs). Hearings were also held on June 15 and 16, 1977, before the Subcommittee on the Environment and the Atmosphere of the House Committee on Science and Technology.

On February 25, 1978, Public Law 95-238 was passed which authorized a study by the Secretary of Energy to consider the available options in reconciling the responsibilities at the Western New York Nuclear Service Center.

DOE Study

Mr. Chairman, I would now like to turn to the study DOE has completed on the Western New York Nuclear Service Center. As you know, the Department of Energy Act of 1978 directed the Secretary of Energy to prepare and submit to the Congress, within one year, a study to consider the available options, including, but not limited to:

(1) Federal technical and financial aid in support of decommissioning high-level waste disposal operations at West Valley;

(2) Federal operation of the Center for the purposes of decomissioning existing facilities and disposing of existing high-level wastes, including a demonstration program for the solidification of high-level wastes for permanent burial;

(3) Permanent Federal ownership of and responsibility for all or part of the Western New York Nuclear Service Center, and Federal receipt of the license from the present co-licencees; and

(4) Use of the Center for other purposes.

The Legislation stated that the study should recommend allocation of existing and future responsibilities among the Federal Government, the State of New York, and present industrial participants in the Center.

In addition, it directed DOE to conduct informational public hearings to make the study available for public comment and to submit these comments with the study report.

One million dollars was provided for this study. It was determined that the Office of the Assistant Secretary for Energy Technology have the management responsibility for the West Valley study since this Office has technical expertise and programmatic responsibility for high-level waste management and alternative waste solidification processes. Nine hundred thousand dollars was budgeted for Argonne National Laboratory (ANL) to organize and manage the conduct of the study. ANL in turn subcontracted Acree American, Inc. to look at high-level waste disposal by hydraulic fracturing; E. R. Johnson, Inc. to conduct an evaluation of the alternatives of use or decommissioning of the NFS reprocessing plant and associated faclities, Dames and Moore to evaluate the alternatives of the shallow waste burial grounds; United Nuclear Industries, Inc. to develop conceptual decommissioning plans for the site; and ETA Engineering, Inc. to evaluate the spent fuel facility.

The remaining $100,000 of the $1,000,000 authorized for the study remained with the Office of the Assistant Secretary for Environment to provide an overview of Argonne National Laboratory's environmental assessment of the study options for decontamination, decommissioning, and continued utilization of the West Valley site, and also to conduct independent environmental assessments. This portion of the study was conducted under contract with Battelle Columbus Laboratories.

On March 18, 1978, a public meeting was held at West Valley by the Department of Energy to present an outline of the Department's proposed scope and schedule for the study and to solicit comments from all interested parties with regard to the study content.

As a result of the testimony presented at the meeting as well as subsequent comments and statements which DOE received, the study scope was expanded to include the option of complete dismantlement of the site and to look at nonnuclear usage of the site.

In an effort to assist the establishment of appropriate criteria for decontamination and decommissioning, as well as to foster a cooperative spirit between the public and State and Federal organizations, the West Valley Tank Decontamination and Decommissioning Task Force was formed.

The Group was co-chaired by DOE and the New York State Attorney General's Office, and their report on criteria important to decontaminating and decommissioning the Western New York Nuclear Service Center has been included with the DOE study report to Congress.

On June 14 and 15, 1978, Argonne National Laboratory held informal meetings in Hamburg, New York for the purpose of exploring more thoroughly, through direct discussions, some of the technical suggestions which were made at the March 18 DOE public meeting.

Information gathered from the March 18 and June 14-15 meetings, as well as from letters received from concerned persons, was considered and incorporated as appropriate into the Final Report for Public Comment which was released for public review and comment in November 1978. A public informational meeting was held in West Valley on December 16, 1978 to present the report and to

provide a forum for discussing the report contents. A public hearing was held in Buffalo, New York on January 13, 1979 to solicit comments on the report. In addition, written comments were encouraged and those received were submitted along with the transcripts of the December 16 and January 13 meetings to Congress on February 23, 1979.

House Committee on Science and Technology Amendment

I would now like to turn to the question of the amendment to the DOE Authorization for Fiscal Year 1980 recently recommended by the House Committee on Science and Technology.

As the committee knows, a decision memorandum based upon the findings of the IRG is soon to be forwarded to the President. Consequently, until the President has indicated his decisions on several of these issues, my remarks on this proposed amendment must be viewed as preliminary.

With the Chairman's permission, I would now like to indicate those areas where the Department is in agreement with the provisions of this Amendment, and those where we differ. We concur that the overall management responsibility for cleanup operations at West Valley lies with the Federal Government. Underlying all of the related remedial technical development activities that must be undertaken in meeting this responsibility is our awareness of the need to carefully consider the environmental aspects of these activities. In the same vein, we agree that the existing liquid wastes at West Valley must be solidified and that the existing facilities must be decontaminated and decommissioned.

The Department is in further agreement in endorsing the eventual removal and disposal of all solidified high level wastes and spent fuel from the West Valley site. A prohibition on the disposal of additional nuclear wastes at the site is also compatible with this view, insofar as it applies to high level wastes.

The Department does disagree with some aspects of the amendment. For example, additional consideration of the position of the State of New York should be given before a proposal is made to ban the temporary storage of spent fuel at the site and to prohibit additional use by the State of New York of the State licensed low level burial ground. We also disagree with the statement in the amendment that DOE should take title to the high level waste at the Center. We continue to believe, as we stated in the DOE Report, that the financial responsibilities for the disposition of the high-level waste should be shared among the Federal Government, the State of New York, and the NFS Corporation.

The proposed Amendment takes the view that the cleanup of the West Valley site would be of a demonstration project nature. We feel that such a characterization may be unduly limiting, since it might also be viewed in the context of a remedial action. This approach seems to us premature until we have had an opportunity to give full consideration to all options.

A ten year time limit placed upon the DOE role in this effort would be reasonable if all decisions associated with the solidification activity rested with the DOE. IF NRC, EPA, and the State of New York will have substantive input to decisions such as waste form selection and the establishment of appropriate D&D criteria, then the ten year limit is not reasonable.

Finally, I have prepared and attached my formal responses to the questions raised by the Chairman in his letter to me of May 22, 1979.

Summary

In conclusion, the general public comment received in writing and at three public meetings appears to favor a Federal responsibility for an early cleanup at West Valley. In line with this desire, the Administration and the State of New York have worked hard and have made a great deal of progress over the past months in seeking a resolution to the West Valley situation. This progress has been achieved through step by step discussion and consideration of the needs of the citizens of the West Valley area, the State of New York, and the Nation as a whole. Ultimately, we will need legislation to accomplish this resolution.

I would be happy to answer any questions the Committee might have at this time.

RESPONSES TO QUESTIONS
SUBMITTED BY THE COMMITTEE

Q.1: How does the proposed amendment compare to the recommendations made by the Department regarding Federal responsibilities at the West Valley site in its "Western New York Nuclear Service Center Study?"

A. : Recommendations contained in the Department of Energy (DOE) report were limited to recommendations of financial and management responsibilities. The legislation which authorized the DOE study requested that DOE examine technical options for decontamination and decommissioning (D&D) and for possible future uses of the site. The legislation specifically did not ask DOE to make a technical recommendation on the disposition of the site. However, as part of the study a Task Group was established, the West Valley Tank Decontamination and Decommissioning Task Group, which addressed the questions of how to proceed. This Task Group recommended that a general plan for cleanup activities for the entire site be determined before action on specific areas of the site is proposed. DOE is in agreement with this approach and the recommendation that efforts be undertaken for the early solidification of the high-level waste.

At this time, since the general plan for the ultimate disposition of the site has not been established, specific recommendations on what should be done and by when are premature. One very important difference between the DOE report and this amendment is that DOE has recommended and continues to recommend that the financial responsibilities for the disposition of the high-level liquid waste be shared between the Federal Government, the State of New York, and the Nuclear Fuel Service (NFS) corporation. The proposed amendment would legislate a 100 percent financial responsibility for the Federal Government; "the Secretary (of DOE) shall take title to the high-level liquid nuclear waste presently existing at the Center."

Q.2.: Specifically what kind of program does the Department anticipate implementing should the authorization be accepted by the Congress?

A. : At this time, the Department does not have a specific recommendation for a program should the authorization be accepted by Congress. We will address this question over the next few months in anticipation that some authorization for West Valley will occur in Fiscal Year 1980. In view of the answers provided to the previous question, an obvious activity that can be initiated is to begin efforts to establish a general plan for the ultimate disposition of the Center. Whether or not actual technical activities associated with a solidification activity can begin is not yet known. However, we anticipate that some effort to further characterize the existing waste and to perform environmental analysis of alternative solidification schemes would be conducted.

Q.3: To what extent would the proposed project be for the purpose of research and development? To what extent would it be implementation of demonstrated technology for the purpose of remedial action and commitment to apply demonstrated technology in final disposal of high-level wastes at the site?

A. : The proposed Amendment takes the view that the cleanup of the West Valley site would be of a demonstration project nature. While there are benefits to be derived from the project viewed in this way, such a characterization would be unduly limiting, since it might also be viewed as an action which has generic benefits to the nuclear program as a whole.

Q.4: Does the project entail establishment of short-term or long-term Federal operations at the West Valley site which could not strictly be seen as operations necessary to fulfill what may be Federal responsibilities to assist in the decommissioning and decontamination of the Nuclear Fuel Services facility?

The Federal Government has no present responsibility for D&D of the NFS site. The proposed amendment would, in fact, direct DOE to begin some D&D activities. The Federal activity at the site would be limited to this direction.

Q.5.: Under the proposed amendment, what financial or other responsibilities would remain for the State of New York or for Nuclear Fuel Services, Inc., in decontamination and long-term care of the facility? What finally would be the proportionate burdens accepted by the Federal goverment vis-a-vis private parties involved?

A : Under the proposed amendment New York State and NFS would remain responsible for management and financing of decontamination and long-term care of those portions of the facility not used as part of the proposed project. New York State and NFS also would be financially responsible for costs incurred by the Secretary to decontaminate existing property or facilities or correct defects in them to the extent required to carry out the project. DOE would be financially responsible for all of the waste associated with conducting the actual solidification project and for decontaminating and decommissioning all facilities, including storage tanks, used in that project. Although it cannot be possible to precisely determine the proportionate burdens imposed by the amendment, it would seem that the Federal government would be required to assume virtually all of the costs of removing and solidifying and disposing of the wastes and of decontaminating and decommissioning the existing reprocessing facilities.

Q.6: What, if any, provision exists for recovery of costs should parties other than the Federal government be found responsible for nuclear waste at the site?

A. : At this time, the entire responsibility for the Center is shared between the State of New York and the NFS corporation. Thus, the costs connected with the site are currently the responsibility of those parties.

Q.7: What provision exists for regulatory control over remedial actions at the West Valley site?

A. : Activity, of a remedial action type, undertaken by New York State or NFS would be subject to regulatory control by NRC under the provision of the Atomic Energy Act of 1954 as amended. Certain state laws may also govern certain aspects of such remedial action.

Figure 3-3. Summary of Financial Responsibility Factors for Reference Case[a)]

Area/Option	Users	New York State	Nuclear Fuel Services	Federal Government
High-Level Waste Tanks and Wastes				
o High-level wastes	Very low	Low	Very low	High
o High-level waste tanks	Very low	Low	Very low	Medium
NRC-Licensed Burial Ground				
o Extended care	Very low	Medium	Very low	Medium
o Exhumation	Very low	Medium	Very low	Medium
NYS-Licensed Burial Ground				
o Extended care	Very low	Medium	Very low	Low
o Exhumation	Very low	Medium	Very low	Medium
Reprocessing Plant				
o Protective storage	Very low	Medium	Very low	Medium
o Dismantlement	Very low	Medium	Very low	Medium
Spent Fuel Storage Pool				
o Protective storage	Very low	Medium	Very low	Medium
o Dismantlement	Very low	Medium	Very low	Medium

[a]Equal weight was given to Contractual Commitments, Past Benefits and Actions, Future Benefits, and Applicable Precedents.

Responsibility Factor	Corresponding Percentage Responsibility Rating
Zero	0%
Very Low	1% - 20%
Low	21% - 40%
Medium	41% - 60%
High	61% - 80%
Very High	81% - 100%

Responsibility factors were assigned to each of the involved parties for each of the four considerations and were averaged to determine the overall responsibility factor. These factors were determined for each of the technical D&D options explored earlier (Section 2).

3.3.2 Considerations

(1) Contractual Commitments

From a contractual point of view, it is assumed that the ultimate responsibility for the Center rests with the State of New York. (See GAO report to the Conservation, Energy and Natural Resources Subcommittee of March 8, 1977.)

(2) Past Benefits and Actions

Four groups either benefited or expected to benefit from the construction and operation of the NFS plant. These groups were:

- The Federal Government - through the U.S. Atomic Energy Commission, encouraged development of a commercial fuel reprocessing industry;
- The State of New York - acquired the land, encouraged industry to locate there, and willingly accepted risks in the hopes of developing an augmented industrial base in western New York;
- Nuclear Fuel Services, Inc. - achieved an early entry into an industry which they expected to be highly profitable and in which they hoped to obtain the dominant position; and
- The users - utilities which received the benefit of additional space in their spent fuel storage pools and credit for or return of materials recovered in processing.

Statement

of

James L. Larocca

Chairman

New York State Energy Research and Development Authority

before the

Subcommittee on Energy and the Environment

of the

Committee on Interior and Insular Affairs

of the

House of Representatives

Re: Western New York Nuclear Service Center at West Valley, New York

May 31, 1979

I am James L. Larocca, Commissioner of Energy for the State of New York. In that capacity, I also serve as Chairman of the New York State Energy Research and Development Authority ("NYSERDA").

The Western New York Nuclear Service Center, located approximately 30 miles from Buffalo on a 3,345-acre site owned by NYSERDA, is the only commercial nuclear fuel reprocessing plant that ever operated in the United States. The Center was established as a joint venture by NYSERDA's predecessor, the New York Atomic Research and Development Authority ("NYARDA"), which owned the site, by Nuclear Fuel Services, Inc. ("NFS"), at that time a wholly owned subsidiary of W. R. Grace, now a wholly owned subsidiary of Getty Oil, which constructed and operated the facilities and by the Atomic Energy Commission ("AEC"), which was promoting the commercialization of nuclear fuel reprocessing generally in the United States and which provided the spent fuel to be reprocessed.

Shut down since 1972, the reprocessing plant today stands as a symbol of the nation's failure to cope fully with the back end of the nuclear fuel cycle. National and international attention has now focused on West Valley, and intense public concern has arisen regarding the future of the site and facilities, and the nuclear wastes contained therein.

The West Valley site today comprises:

-- A plant for reprocessing spent nuclear fuel, not now in operation.

-- A carbon steel tank storing approximately 600,000 gallons of high-level neutralized liquid waste, plus an identical spare tank.

-- A receiving and storage basin for spent nuclear fuel, now storing about 170 tons of spent fuel rods.

-- A six-acre burial ground for solid, low-level radioactive waste, licensed and regulated by the State.

-- A burial ground, licensed by the Nuclear Regulatory Commission ("NRC"), containing about 100,000 cubic feet of high-level solid wastes, principally spent fuel hulls and other hardware derived primarily from reprocessing operations.

-- A stainless steel tank storing approximately 12,000 gallons of high-level, acid liquid waste and thorium, plus an identical empty spare tank.

In the twelve years since the plant was licensed and the initial agreements were reached among NFS, the AEC, which preceded the NRC, and the precursor of NYSERDA, Federal policy concerning waste management and disposal has changed dramatically. Long-term storage of high-level liquid wastes in tanks is no longer acceptable to the Federal Government. Current Federal regulations call for solidification of high-level wastes within five years of their generation, and shipment to a Federal repository within ten years of their generation. Neither State nor private ownership and operation of high-

level waste disposal sites is being considered today by the Federal government.

The Federal government has attempted to embark on a program for Federal management of both high-level nuclear wastes and the facilities for their storage and disposal. Since 1976 when NFS served notice of its intended surrender to NYSERDA of the waste storage facilities at West Valley, New York has urged the Federal government to participate with the State in the development of a program to decommission, decontaminate, and permanently store the West Valley wastes.

An understanding of the history of this joint venture is essential to any fair and equitable determination of the roles to be played in the disposition of West Valley. It is important to consider who promoted the venture, what the anticipated benefits to the respective parties were, who intended to bear what risk under the agreements and lastly, which of the parties possess the financial and technical resources to deal with a problem with public health and safety implications of this magnitude.

With the Atomic Energy Act of 1954, the Federal government set out to transform a statutory government monopoly in atomic energy into a regulated, civilian power industry -- in short, to commercialize the production of nuclear power. Soon the goal was enlarged to that of commercializing the entire nuclear power fuel cycle, including reprocessing of irradiated, or spent, fuel, as well as management and per-

manent storage of the wastes. It was thought that a truly competitive nuclear power industry, independent of assistance from, although carefully regulated by, the Federal government, would more quickly lower the cost of producing nuclear power. So eager was the AEC to bring this about that it offered to make available to acceptable commercial companies spent fuel from its own nuclear operations, which were primarily military, until sufficient commercial nuclear power plants were operating to furnish the spent fuel load for commercial reprocessing. Even so, private companies did not rush into the nuclear fuel reprocessing business.

As a result of intensive negotiations among the AEC, NFS and the predecessor of NYSERDA, a series of agreements, constituting a joint venture, was executed on May 15, 1963. These agreements, between NYSERDA's predecessor and NFS, and NFS and the AEC, provided for the establishment, construction and operation of the West Valley facility and represented the culmination of seven years of effort by the Congress and the AEC to involve private industry in the chemical reprocessing of spent fuel from electric power reactors.

From the beginning of its negotiations with the AEC to construct and operate a nuclear fuel reprocessing plant, NFS indicated its view that a private corporation should not manage the nuclear wastes in perpetuity. The initial

NFS position was that the AEC should take over the wastes after a specified, finite period, on the grounds that a private corporation could not commit itself to continuation of corporate activities well beyond the life of its plant.

In the face of the AEC's reluctance to assume ultimate responsibility for the wastes, NFS was also negotiating with the State. It was estimated that a care fund of $4 million would suffice for the perpetual care of each filled tank, including its replacement at the end of its expected useful forty years of life.

New York's expectation as it initially entered this venture was solely that it would provide the investment in land. When the AEC and NFS insisted that a governmental entity would have to be responsible as long-term custodian of these wastes, New York (at the AEC's insistence) obliged, but in strict reliance on the AEC's assertion that the perpetual care fund to be established from payments made by the AEC itself and the utilities for reprocessing by NFS would be sufficient for perpetual care.

The Waste Storage Agreement between NFS and New York State which resulted from these negotiations provided that the high-level liquid wastes, and funds set aside for managing those wastes, would be turned over by NFS to the Authority at the end of the leasehold, at which time the Authority was to become responsible for perpetual care of the wastes.

The Base Load Agreement with the AEC provided that the AEC was to supply NFS, until 1967, with a base load of spent fuel, primarily from its military production reactors, for reprocessing, unless commercial sources provided sufficient quantities before that time. The Base Load Agreement limited the charges which NFS could assess against both the AEC and commercial customers for the perpetual care of the wastes. Base load spent fuel came mainly from the AEC's Hanford, Washington, reactor and in small part from the Dresden and Yankee Rowe reactors which together accounted for 480 of the 624 tons of spent fuel NFS processed during its six years of operation.

By 1971, NFS was still only reprocessing very small batches of commercial fuels. It recognized its competitive disadvantage, as other larger plants with improved design were in the process of licensing or construction. NFS therefore shut down its plant in 1972 for the purpose of enlarging its capacity from 250 to about 800 metric tons a year, and to add facilities required by the developing regulations.

During the six years NFS operated, substantial changes were made in Federal policy. High-level radioactive wastes were now to be stored only at Federally owned repositories, and a commercial reprocessing plant's inventory of high-level liquid waste was to be limited to that produced in the prior five years. This inventory was to be converted to a stable solid within that time, for transfer to a Federal repository within ten years of reprocessing.

The West Valley situation is unique. NFS is the only commercial fuel reprocessor ever licensed, and when the AEC determined that high-level waste would have to be solidified, its determination affected only one entity operating in the commercial sector -- the West Valley joint venture.

What happened next was that the father of the venture, the AEC, changed the regulatory requirements governing high-level waste disposal, which among other things made a fund which under any analysis would have been inadequate now grossly inadequate to the newly defined tasks associated with perpetual care.

Here is how it happened:

Shortly after NFS shut down for expansion, the AEC advised the company that its planned expansion required a new construction permit. And then, following passage of the Energy Reorganization Act of 1974, came an alteration of the entire licensing and regulatory procedure. The Act split the AEC into the NRC and U.S. Energy Research and Development Administration ("USERDA").

Recognizing that the new regulations, if applied retroactively, would have placed NFS potentially in violation, and that West Valley's specific problems might take considerable time to resolve, the AEC indicated that, until they were resolved, the present storage method provided reasonable assurance for protection of the health and safety of the public.

Beyond the new equipment and design that the Commission's rule changes demanded, the NRC indicated that the plant as constructed at West Valley might no longer meet its new, more stringent seismic standards.

When the expansion project was first undertaken, NFS estimated that it would cost $15 million. By 1976, the company indicated that more than $600 million might be required.

On September 22, 1976, NFS formally informed the NRC that the operation had become commercially impracticable and NFS was withdrawing from the reprocessing business.

The venture had failed. In light of this failure, and the intimate role the Federal government played at every step, I am here to propound the obvious: It is time for Congress to take cognizance of the Federal responsibility for West Valley, and act on it.

There is little question but that the Federal government bears a significant legal and moral obligation to provide a solution for the West Valley problem -- a problem which would not exist today had not the Federal government induced the parties to undertake this joint venture.

With one hand, it had promoted commercialization of the nuclear fuel cycle and approved a scheme for care of these wastes which was obviously inadequate -- liquids

which could be toxic into eternity to be maintained forever in tanks designed to last only forty years, all to be cared for with the grand sum of $4,000,000. With the other hand, it regulated its co-venturers out of business.

The caution mandated by the regulatory, fiscal and practical uncertainties of this experiment in high-level waste management was sacrificed by the AEC to short term goals and deadlines.

Obviously none of the parties to the joint venture contemplated what has happened at West Valley. It is we who are here today and in different times who must now develop a program for removing and isolating the waste that remains -- as we have tried to do.

As early as 1976, when the regulatory policy regarding the solidification of high-level waste became clear, New York recognized that only one party to the venture -- the Federal government -- had the vast financial and technical resources required to cope adequately with the problems at West Valley. Indeed, this point was acknowledged in DOE's recent report to Congress on West Valley: "With regard to D & D activities, DOE is the only agency (State or Federal) with readily available technical and management expertise in nuclear technology. (Both the NRC and EPA have substantial nuclear expertise. Their function, however, is primarily regulatory in nature.)"

Finally, the elements of a program for West Valley to dispose of the wastes and facilities which New York believes are necessary to meet appropriate Federal responsibilities are as follows:

-- Removal of the high-level wastes (liquid and sludge) from the tanks.

-- Solidification of the high-level wastes.

-- Transfer of the solidified wastes to a Federal repository.

-- Decontamination and decommissioning of the tanks and remaining facilities, including the reprocessing plant and ancillary facilities.

-- Analyses by the DOE and NFS to determine what material, if any, must be exhumed from the NRC licensed burial area in order to place the burial area in a condition requiring only passive management.

-- Exhumation of buried material as determined by the NRC based on above analysis.

-- A program for decommissioning of the low-level waste burial area.

I am attaching to this testimony for the record a fuller history of the West Valley Nuclear Fuel Reprocessing Facility.

[redacted]

Facility

With passage of the Atomic Energy Act of 1954 the federal government began the transformation from a statutory government monopoly in atomic energy to a regulated civilian nuclear power industry. The remainder of the 50's saw continual attempts by the AEC and the Congress to en ourage private industry to enter a heavily regulated arena.

During 1955 and 1956, the AEC made available to industry previously classified information, and encouraged, in various ways, private companies to enter the high technology field of nuclear power. Of particular importance was the Nuclear Power Reactor Demonstration Program in which the AEC developed advanced technology at government expense and tried to encourage other groups to undertake development and demonstration power projects with private financing. Despite a number of regulatory uncertainties, the AEC, in late 1955, successfully concluded the first set of negotiated agreements with various utilities for the construction of the first few demonstration nuclear power reactors.

The AEC was also promoting the extension of commercialization to other areas of the fuel cycle. On January 5, 1956, Lewis Strauss, then Chairman of the AEC, announced that the AEC had embarked upon a program to encourage the entry of private industry into chemical reprocessing of spent fuel elements. The AEC, he said, would make available Commission technology and limited amounts of certain irradiated fuel materials for commercial processing to firms submitting acceptable proposals. Classified information was to be made available to all interested and qualified parties. In this first announcement, Chairman Strauss said:

> It is the policy of the Commission to encourage industry to build its own plants for these purposes. The goal is to have commercial [re]processing plants in operation as it becomes necessary to [re]process fuel elements from privately owned power reactors.

To make available to private industry the information required to reasonably estimate price and cost, a seminar on chemical reprocessing of nuclear fuel was held at Idaho Falls, Idaho. Dr. W. Kenneth Davis, Director of the AEC's Division of Reactor Development, issued a comprehensive statement of the AEC policy on reactor fuel reprocessing. The AEC's policy of encouraging industry to build and operate plants for the chemical reprocessing of the irradiated fuel elements was, Dr. Davis said, a reflection of the AEC's recognition that:

> . . . a truly competitive nuclear power industry, free from major dependence on government assistance, will not come into being until all facets of the nuclear reactor cycle — including power reactor operation, fuel element fabrication, feed materials preparation, fuel reprocessing and fission product recovery — are being carried on in privately owned facilities.

Dr. Davis announced that a chemical reprocessing plant would be a production facility under the AEC regulations, and would require a facility license based on the guidelines issued on January 18, 1956. He stated:

> The AEC will invite proposals from industry to be submitted at an appropriate time for the design, construction, and operation of chemical [re]processing plants, capable of [re]processing one or more of the fuel types which will be employed in projected licensed power reactors, plus limited quantities of AEC irradiated materials. Industry would be advised to include in these proposals a description of their plans for research and development facilities, staff, and program. It is estimated that proposals should be called for about 12 to 18 months from now . . . . The intent of [the AEC in supplying fuels] is to provide a base load for economical operation of one or more commercial chemical [re]processing plants until such time as the load from private power reactors is sufficient to support the [re]processing operation.

During 1956 and 1957, the AEC continued developing licensing and regulatory procedures, and examining methods by which a fully independent and commercial atomic industry could be created. In September 1956, Representative Melvin Price, Chairman of the Subcommittee on Research and Development of the Joint Committee on Atomic Energy, commented on the Atomic Energy Act, saying that the national interest and international prestige required acceleration of our reactor development program. He also announced that he planned to introduce a bill early in the following year providing for government indemnity against private reactor hazards in order to further industry participation.

On December 7, 1956, Dr. Davis, speaking in Memphis, Tennessee, discussed the general philosophy of the AEC's power reactor program, and announced that many companies had expressed interest in the AEC's proposal to encourage industrial entry into the program. He stated that:

> The Commission has assumed the larger portion of the burden of developing nuclear power technology through the pilot plant stage because of the enormous costs involved. We believe that private industry should not be expected to undertake this work on a large scale.
>
> Once the feasibility and the technology of a concept have been developed and demonstrated on a pilot plant scale, then the problem is larely one of applying this technology to large scale plants in order to find out as much as possible about costs of construction, operation and maintenance. It is our earnest belief that work in this stage can best be done by industry under conditions where there is a real incentive to cut costs.
>
> However, there is the problem that nuclear power costs cannot be expected to be competitive for some time in the United States. For some of the concepts we have been working on in this early period, they may never be competitive. It is necessary, then, that someone make up the difference if we are to have these first prototype plants which are themselves necessary to the later improved plants.

The AEC was determined that prototypes should be built and was willing to underwrite the costs.

Addressing the idea of industrial reprocessing of spent fuel elements, Dr. Davis stated that predicting either the reprocessing volume, or characterizing the fuel elements to be reprocessed would be equally difficult. However, he did state that he believed that some enterprising companies would enter the chemical reprocessing field and that the AEC would try to make it easy for them to do so.

On January 30, 1957, the AEC announced that the construction of the first few experimental power reactors was progressing, and that the first commercially fabricated reactor fuel had been delivered to the AEC in July of the previous year.

By the beginning of 1957, the AEC staff and the Joint Committee on Atomic Energy (JCAE) were already examining the possible separation of the AEC into "regulatory" and "operating" halves to eliminate the potential conflict between the promotional and regulatory functions of the AEC. In testimony before the JCAE, the AEC staff reported that their conclusion was "that it would be a mistake to separate these functions among two different groups of men."

Private industry did not respond to the AEC's inducements to commercialize the reprocessing of spent fuels. On October 28, 1957, the AEC announced that it would reprocess spent fuel from private research and power reactors, since industry was not yet ready to undertake the task. The AEC reaffirmed its objective of having private

industry build and operate such plants. Therefore, the AEC intended to perform reprocessing services only for an interim period and provided for cancellation of its reprocessing services on 12 months' notice when commercial services became available at competitive prices.

By the end of 1957, despite the ambitious power reactor demonstration program and the passage of the Price-Anderson Act, commercialization was not moving as rapidly as the AEC and Congress had hoped. Furthermore, the first attempt by the AEC to transfer reprocessing of spent fuel and disposal of nuclear waste to private industry had proved fraught with too much uncertainty for private industry to undertake the risks involved.

Industry remained reluctant despite AEC encouragement. At the Atomic Industrial Forum meeting in October of 1957, Charles G. Manly, Chief of the Commercial Development Branch, Division of Civilian Application, in a speech suggesting possible alternative reprocessing methods, concluded his remarks with the statement:

> One fact stands out: The year 1961, when spent fuel must be (re)processed for domestic reactors, will soon be upon us. That leaves about 3-4 years in which to develop, design and build packaged reprocessing plants. There is no time for delay in tackling the problem.

In confirmation of this necessity, the AEC expressed its intent to withdraw from providing nuclear reprocessing services for spent fuel in accordance with its Federal Register Notice of March 22, 1957. Even so, industry exhibited no interest.

It was not until 1959 that Davison Chemical Company now known as Nuclear Fuel Services (NFS) was sufficiently encouraged by the statements of the AEC to seriously consider becoming the first commercial operator of the nuclear/reprocessing plant. Davison undertook extensive discussions with the AEC to determine whether private industrial reprocessing was commercially feasible, and whether the AEC was ready to support the private industrial venture with an adequate and reasonable base load contract. At a briefing conducted by the New York Office of Atomic Development in 1961 NY announced its plan to establish the Western New York Nuclear Services Center on a 3,345 acre site in Cattaraugus County, about 30 miles south of Buffalo. The center was intended to provide for the temporary and long-term storage of atomic energy fuels, byproducts and wastes, and to be available for related industrial development. On June 2, 1961, A. R. Luedecke, the General Manager of the AEC, sent a telegram to Chairman of the office noting his pleasure:

> ...that the State of New York would shortly announce its plan to acquire a site for the storage of radioactive waste products, and that this site, the Western New York Nuclear Services Center, will be available for lease to private industry for waste storage and accommodation of related industrial activities. In congratulate you and your State and wish you every success in this venture.

A great deal of mutual gratitude surrounded the interest of NFS in the construction of a reprocessing plant. The State of New York, which had expressed concern that it was being bypassed in the expected growth of nuclear power, was grateful to have found a company to begin operations at what was intended to be one of the major nuclear centers in the

United States. The Cattaraugus site was to be the keystone to the development of a complete commercial nuclear industry, including reprocessing and waste storage and disposal, in the Northeast. The AEC was grateful that at last its plan to commercialize reprocessing was being realized.

A complex series of negotiations took place during the years 1961 and following, among NFS, the AEC and the OAD and later, the successor to the OAD, the New York Atomic Research and Development Authority ("NYARDA"), which was established on April 1, 1962. The AEC was indispensable in the negotiations, because it was the only entity with sufficient knowledge and experience in chemical reprocessing and waste management.

In order to determine costs for the services to be rendered by NFS to both the AEC and commercial power companies, the AEC made its own experience in operating nuclear reprocessing facilities available to NFS. In addition, the AEC commissioned its Oak Ridge Laboratory to design a conceptual reprocessing plant to help determine the costs which NFS would incur in construcitng and operating its commercial facility including cost associate with maintaining the waste. Costs were a difficult factor, both in planning and in the negotiation of the Base Load Agreement since the nature of the fuel to be reprocessed was uncertain.

Clearly, the NFS plant was to be operating before there was an adequate supply of commercial fuel available to sustain the operations of the plant at a profitable level. The existence of a guaranteed base load was an unconditional part of the NFS proposal. However, negotiations for the base load contract were complicated by the fact that the type of fuel to be reprocessed by NFS could not be readily specified; nor was it clear which of the various AEC fuels would actually be supplied under the Base Load Agreement. Therefore, the plant had to be designed as a multipurpose facility, flexible and able to reprocess quite different types of nuclear fuel.

Another factor complicating the negotiations of the Base Load Agreement was the AEC's regulatory policy that a commercial reprocessor's charges to the industry be no greater than the charges to the AEC under the Base Load Agreement.

The negotiations surrounding waste management were equally complex. Though the AEC did not appear to have modified its intention, announced by Dr. Davis in 1957 to have the private reprocessor responsible for long-term waste storage, NFS, early on, indicated to the AEC that it did not consider it proper for a private corporation to take on the responsibility for the care of nuclear wastes in perpetuity. The initial NFS position was that the AEC should take over the wastes.

On April 4, 1962 NFS wrote to the AEC Savannah River Operations Office that NFS understood the AEC's position to be:

> The nuclear industry should carry the complete cost of both short-term and long-term waste disposal so as to avoid a direct or indirect subsidy to nuclear power...The AEC is willing to accept title to the waste after some period of time providing such costs are reasonable enough.

On May 7, 1962, NFS wrote the AEC's Assistant General Manager for Plans and Production that NFS had submitted a proposal for waste management to Savannah River for the consideration of the AEC, stating:

> We hope that this will provide a basis for arriving at an agreement that satisfies the necessity for cost reimbursement to AEC, relieves NFS of being the vehicle for radioactive waste storage in perpetuity, and yet makes the continued development of economic nuclear power feasible.

In an attachment to a letter of June 18, 1962, to R. C. Blair, Manager of the AEC Savannah River Operations Office, NFS included the latest modification of the proposal that had been made to Savannah River earlier in the year. The NFS position on wastes was clearly put in this attachment:

> As was recognized at the March 28th meeting, it is not feasible for a private corporation to assume physical responsibility for high-level wastes from a chemical (re)processing plant for the extended and possibly indefinite period of time necessary to assure adequate protection for public health and safety. To undertake such responsibility would require management to commit the continuance of corporate activities well beyond the life of the plant. It would be wholly inappropriate for management of a private corporation to make such commitments for the physical maintenance of high-level radioactive wastes for even one lifetime of the waste tanks. The Commission has given recognition to this fact in determining that private persons are not in a position to assume the responsibility necessary for the maintenance of burial grounds even for low-level radioactive wastes.

NFS, in its proposal, indicated its willingness to maintain and provide storage and maintenance for some finite period of time, thereafter turning the tanks and wastes over to the AEC. NFS also said it was willing to collect and turn over to the AEC a charge calculated to provide the estimated full costs for a perpetual storage at the point of turnover, thus countering the potential charges that the nuclear industry was being subsidized by the Federal Government. In the face of the AEC resistance to perpetual care responsibility, NFS was simultaneously negotiating for NYARDA to become the vehicle for perpetual care of the nuclear wastes. On July 3, 1962, the AEC wrote to NFS that they understood that the waste management agreement in perpetuity was being negotiated with the State of New York and asking NFS to advise in what respects the proposal should be amended.

Towards the end of July, 1963, NFS wrote to the Manager of the AEC Savannah River Operations Office that, in principle, a basis for perpetual care of radioactive wastes had been negotiated with NYARDA. Both NFS and NYARDA requested the guidance of the AEC in arriving at a final agreement and indicated a desire to see the AEC set a policy relative to the matter. In order to confirm the costs of perpetual care, NYARDA requested Sidney M. Stoller Associates to prepare an estimate of the fund that should be set up for perpetual care of radioactive wastes. The results of the Stoller study, which was based on AEC experience with existing government wastes, were made available to NYARDA in October, and forwarded to the AEC at the end of December, 1962. The Stoller conclusion was that a perpetual care fund of

$4 million would be sufficient for perpetual care of each filled storage tank, including replacement at the end of the expected tank life. Under the negotiated arrangements it was planned that as each tank was filled with liquid waste it would be turned over to NYARDA, together with the $4 million fund. The fund was to be obtained through annual payments by NFS to NYARDA under the provisions of the Waste Storage Agreement.

The AEC approved the perpetual care fund as negotiated. However, as a condition of issuing the construction permit for the facility, the AEC requested further indications of NYARDA's ability as a state entity to assure perpetual care for the wastes. In satisfaction of the AEC's requirement, NYARDA furnished the Commission with an agreement between NYARDA and the OAD, under which the OAD promised to become responsible, "subject to the availability of funds," in the event NYARDA could not meet its obligations.

In 1963, with most of the negotiations completed, the AEC regulator conducted a comprehensive review of the detailed plans developed jointly by the AEC Production Group, NFS and NYARDA and submitted by NFS and NYARDA, including the questions of price, base loading, waste management and indemnification, and issued a construction permit authorizing the construction of the reprocessing plant and the waste management facilities.

In 1966, the AEC Licensing Board granted an operating permit and the first commercial spent fuel reprocessing in the United States began.

The arrangements between NFS and NYARDA were set out in a series of agreements consisting, among other things, of a Lease covering the

site, and a Waste Storage Agreement providing for the conditions under which NFS would maintain the wastes until such time as they were turned over to NYARDA. The Waste Storage Agreement contemplated that NFS would be responsible for each tank as it was being filled during reprocessing operations and NYARDA would accept filled tanks, requiring minimal maintenance, for "dead storage". However, NFS could delay surrender of filled tanks if it wished to exercise its mining rights in the wastes to recover substances of value. The initial term of the lease was for seventeen years, until December 31, 1980, with provision made for ten successive ten year renewal options.

By 1966, when construction of the plant was completed, the AEC issued a provisional operating license to NFS and to the renamed NYARDA, which had in 1964 become the New York Atomic and Space Development Authority ("NYASDA"). NFS was licensed as the operator of the facility and NYASDA as the owner and lessor.

The amount of commercial fuel actually available to NFS during the first few years of its operation was extremely limited. The number of commercial power reactors which actually received their operating licenses by the 1966 date when the NFS license was issued was very small: Dresden (boiling water reactor) licensed in 1960 at 200 megawatts electric; Yankee Rowe (pressurized water reactor) licensed in 1961 at 175 megawatts electric; Indian Point (pressurized water reactor) licensed in 1962 at 265 megawatts electric; two far smaller plants, the 63 megawatt Humbolt plant and the 71 megawatt Big Rock Point plant were also licensed, in 1963 and 1965, respectively. A total of less than 800 megawatts electric was completed and licensed by 1966.

Indeed, over the next several years the only other reactor to be completed which put electricity onto a power grid was not a privately owned reactor. It was the "N" reactor, the national production reactor (NPR) at Hanford, which puts 860 megawatts electric on to the Washington Public Power Service grid. This reactor went on line in 1966. Though the AEC has listed it together with commercial reactors in the United States, it is, in fact, USERDA owned and operated primarily for the production of plutonium for the military weapons program. It is not allowed to operate as a competitor to commercial power otherwise and it is exempt from ordinary licensing requirements.

The next commercial reactors to go on line were San Onofre in 1968 and Haddam in 1968, followed by Oyster Creek and Nine Mile Point in 1969. Therefore, during the first years of NFS operations, only the Dresden, Yankee Rowe and Indian Point reactors had substantial amounts of commercial spent fuel available to be reprocessed. Fifty metric tons of Dresden fuel were reprocessed by NFS in 1966 and another 21-1/2 metric tons in 1969. Approximately 50 metric tons from Yankee Rowe were reprocessed in 1967, 20 in 1969 and about 9 metric tons in 1970. The first core of Indian Point, the experimental thoria core, was reprocessed in 1968, and 23 metric tons of non-thoria fuels were reprocessed in 1969 and 1971.

But the overwhelming bulk of the reprocessing load at the West Valley site was from the NPR. In fact, during the years 1966 to 1971, about 380 metric tons of fuel from the NPR were reprocessed: 61% of the total reprocessing load at NFS and 63% of the non-thoria fuel.

This fuel had a somewhat high burn for plutonium production reactors, averaging about 2800 megawatt-days (thermal) per metric ton, but very low burn by commercial standards. Commercial oxide fuels are typically 10,000 to 20,000 megawatt-days (thermal) per metric ton.

NFS was unable, in the later years of operation, to negotiate contracts for commercial reactors then coming on line. The proposed NRC licensing of larger and, presumably, more cost-efficient reprocessing plants, the GE plant at Morris Illinois and the proposed Allied-General plant at Barnwell, South Carolina, put NFS at a disadvantage in a competitive market. By 1971 they were reprocessing very small batches of fuel from a variety of sources. In 1972, recognizing its poor competitive position in the future reprocessing market, NFS shut its plant down for enlargement and modification. Capacity was to be raised from 250 to roughly 800 metric tons per year.

The West Valley Facility, 1972-1977

However, substantial changes in Federal policy had taken place during the six years in which Nuclear Fuel Services had operated compared to that under which the original agreements were negotiated.

On June 3, 1969, the AEC published in the Federal Register, and invited public comment on, a proposed statement of policy in the form of an appendix to Code of Federal Regulations, Title 10, Part 50. The amendment concerned the siting of fuel reprocessing plants and the related waste management facilities. As described in its amended policy statement of November 14, 1970 in the Federal Register, the Commission stated that:

> The Commission does not now regard storage of liquid high-level wastes in tanks as constituting an acceptable method of long-term storage. Commission experience with its tank storage of liquid high-level wastes is extensive and while tank design, construction and maintenance have improved, the fact remains that tanks can deteriorate and leak and that wastes in liquid form offer a much more serious potential for dispersal in the environment in the event of an accident, no matter how unlikely such an accident may be, and present far more difficulty for recovery and decontamination than solidified wastes. Tank storage requires extensive surveillance and often requires mechanical cooling apparatus to be functioning continuously. Over periods of centuries one cannot assure the continuity of surveillance and care which tank storage requires.

Compare the new policy with the Safety Evaluation for West Valley issued by the AEC in 1965 during the licensing proceedings. Citing assistance from the U.S. Weather Bureau (meteorology), the U.S. Geological Survey (geology and hydrology), the U.S. Coast and Geodetic Survey (seismicity) and the U.S. Fish and Wildlife Service (environmental effects), the AEC staff stated in the Safety Evaluation summary:

> Inadvertent criticality, chemical explosion, waste tank rupture, and failure of the iodine removal equipment are accidents which have been postulated and analyzed to test the adequacy of the safeguards provided in this facility. We have found that even if one of these unlikely accidents were to occur it would not present an undue risk to the health and safety of the public.

The 1970 policy statement also indicated that it was not the AEC's position that high-level radioactive wastes should be disposed of only at federally owned and managed repositories. The AEC stated:

> Interest has been expressed regarding that aspect of the policy which provides that disposal of high-level radioactive fission product wastes would not be permitted on any land other than that owned and controlled by the Federal Government. It has been urged that the Commission permit the establishment of repositories for such wastes on state-owned land with operation under AEC licenses. The Commission has considered these suggestions but believes at this time that high-level waste repositories should be under federal ownership and responsibility. The Commission wishes to emphasize, however, that adoption of this policy will not preclude consideration of state participation in federally owned reposi-

tories or in high-level waste management activities at some time in the future.

According to the requirements of 10 CFR 50, Appendix F:

> A fuel reprocessing plant's inventory of high-level liquid radioactive wastes will be limited to that produced in the prior five years . . . High-level liquid radioactive wastes shall be converted to a dry solid as required to comply with this inventory limitation and placed in a sealed container prior to transfer to a federal repository in a shipping cask meeting the requirements of 10 CFR, Part 71 . . . All of these high-level radioactive wastes shall be transferred to a federal repository no later than 10 years following separation of fission products from the irradiated fuel.

In recognition of responses to its first proposal of Appendix F in June of 1969, and realizing that the West Valley plant would be in violation of the new Federal regulations, the AEC modified Appendix F in the November, 1970 re-announcement. Paragraph 6 was added:

> With respect to fuel reprocessing plants already licensed, the licenses will be appropriately conditioned to carry out the purposes of the policy stated above.

Appendix F became effective on February 12, 1971. However, there was still some concern over its applicability to West Valley. Accordingly, the AEC announced a further amendment to Appendix F on March 9, 1971, effective March 23, 1971. In announcing the amendment, the AEC stated:

> The matter of ultimate disposal of existing high-level liquid wastes at the West Valley facility presents complex technical problems which may require considerable time for study and resolution. Pending ultimate disposal, the present storage method will continue to provide reasonable assurance that the health and safety of the public will be protected.

The following language was added at the end of the first sentence of paragraph 6, to read, in full:

> With respect to fuel reprocessing plants already licensed, the licenses will be appropriately conditioned to carry out the purposes of the policy stated above with respect to high-level radioactive fission products generated after installation of new equipment for interim storage of liquid wastes, or after installation of equipment for solidification without interim liquid storage.

Such equipment was required to be installed as soon as practicable. The amended paragraph now concluded:

> The application of the policy stated in this appendix to existing wastes and to wastes generated prior to the installation of such equipment will be the subject of a further rule-making proceeding.

Clearly, the entire issue of waste management had undergone a radical re-thinking by the AEC during the years of NFS operation.

In March of 1972, NFS shut down reprocessing operations for the purpose of completing the physical expansion of the plant. In May of 1972, NFS was advised by the AEC that the expansion could not be completed without a new AEC construction permit. The required documents were submitted to the AEC in October of 1973. But over the next several years, while the review procedure was underway, numerous new requirements for the reprocessing plant and the waste storage facilities were developed.

The entire procedure was altered following the passage of the Energy Reorganization Act of 1974. The AEC, which had formerly maintained regulatory, promotional, operational and military functions in a single agency, was split by an act of Congress into a regulatory agency, the U.S. Nuclear Regulatory Commission ("NRC") and the U.S. Energy Research and Development Administration ("USERDA"). USERDA inherited the promotional, operational and military, as well as R & D, aspects of the old AEC. The responsibility for reviewing, evaluating, and ultimately issuing the operating license to the expanded NFS plant was transferred to the NRC. In response to growing public concern over nuclear power in general and specific concerns over safety and public health, the NRC was to develop new requirements.

Changes were required at West Valley by these developments. The primary purpose of the new license was to shift the plant from its somewhat experimental multi-purpose role to one that was designed specifically for commercial oxide fuels at expanded capacity. However, the adoption of 10 CFR 50, Appendix F, was now held to require the installation of new waste handling and solidification equipment if NFS were to resume operation. Moreover, during the early part of 1976 the NRC staff indicated that the plant as constructed at the West Valley site might no longer meet new seismic requirements.

These changes in regulatory policy -- first between the 1966 license issuance and the 1972 shutdown, and then between the 1972 application for an expansion and 1976 -- imposed upon NFS a set of requirements which could be met only at costs NFS estimated to be prohibitively high. When the expansion project was first undertaken, it was estimated that it would cost $15 million. By 1976, NFS indicated that over $600 million might be required.

In the fall of 1976, NFS informed the NRC that, as a result of growing concern with the uncertainties of the regulatory procedure, West Valley had become commercially impracticable and NFS had suspended its plans to expand and reopen the plant and was withdrawing from the reprocessing business.

BIOGRAPHY

JAMES L. LAROCCA, COMMISSIONER OF THE NEW YORK STATE ENERGY OFFICE
CHAIRMAN OF THE NEW YORK STATE ENERGY RESEARCH AND
DEVELOPMENT AUTHORITY

JAMES L. LAROCCA, A NATIVE OF BROOKLYN, WAS APPOINTED NEW YORK STATE'S FIRST COMMISSIONER OF ENERGY BY GOVERNOR HUGH L. CAREY ON AUGUST 18, 1977.

MR. LAROCCA, IN HIS CAPACITY AS COMMISSIONER OF ENERGY, ALSO SERVES AS THE CHAIRMAN OF THE NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY, (NYSERDA).

PRIOR TO HIS APPOINTMENT TO THE STATE ENERGY POSTS, COMMISSIONER LAROCCA SERVED AS DEPUTY SECRETARY TO THE GOVERNOR AND DIRECTOR OF THE NEW YORK STATE OFFICE OF FEDERAL AFFAIRS IN WASHINGTON, D.C. FOR TWO YEARS. MR. LAROCCA ALSO SERVED AS COUNSEL TO THE NATIONAL COMMISSION ON WATER QUALITY AND IN A VARIETY OF POSITIONS IN CONGRESSIONAL OFFICES IN WASHINGTON.

AS THE STATE COMMISSIONER OF ENERGY AND THE CHAIRMAN OF NYSERDA, MR. LAROCCA COORDINATES THE STATE'S ENERGY ACTIVITIES WITH THOSE OF THE COALITION OF NORTHEAST GOVERNORS AND WITH THE FEDERAL GOVERNMENT.

COMMISSIONER LAROCCA ATTENDED NIAGARA UNIVERSITY, AND IS A GRADUATE OF HOFSTRA UNIVERSITY WITH A DEGREE IN POLITICAL SCIENCE. HE RECEIVED HIS LAW DEGREE FROM CATHOLIC UNIVERSITY LAW SCHOOL IN WASHINGTON, D.C. AND IS AN ATTORNEY.

COMMISSIONER LAROCCA, HIS WIFE AND TWO CHILDREN RESIDE IN ALBANY, N.Y.

Testimony Before the Subcommittee on Energy and the Environment

Committee on Interior and Insular Affairs

Presented by

William J. Dircks, Director

Office of Nuclear Material Safety and Safeguards

U. S. Nuclear Regulatory Commission

May 31, 1979

We are pleased to have this opportunity to discuss issues relating to Federal participation in decommissioning the Nuclear Fuel Services, Inc., (NFS) facility located in West Valley New York.

As we understand the amendment to the U.S. Department of Energy (DOE) Authorization for Fiscal Year 1980 recommended by the House Committee on Science and Technology, DOE would be authorized five million dollars in FY-80 to initiate a program for the solidification of liquid high-level waste currently stored at NFS. The project is to be completed within 10 years. The principal activities to be initiated in 1980 include the engineering, safety and environmental analyses necessary to design a waste solidification facility and remove the high-level waste from the storage tanks.

The Nuclear Regulatory Commission (NRC) regulatory control of the NFS West Valley site is administered through a single facility license, CSF-1. There are two co-licensees: the site owner, the New York State Energy Research and Development Authority (NYSERDA) and the site operator, Nuclear Fuel Services, Inc., a subsidiary of Getty Oil Company.

In addition to the NRC license, the State of New York exercises regulatory authority as an Agreement State over the commercial burial ground for low-level waste located at the West Valley site. The New York State authority is exercised under an agreement with the Commission pursuant to Section 274 of the Atomic Energy Act of 1954, as amended.

Facility License CSF-1 was issued in 1966 for operation of the reprocessing plant at the site. In 1972, NFS ceased operation of the plant. In 1976 NFS decided to withdraw from the reprocessing business altogether. Current NRC activities with respect to License CSF-1 are related primarily to: (a) investigations of the storage tanks to assure their continuing safety until such time as the waste can be removed from the tanks, (b) compilation of information concerning plant status and past performance which will be useful for construction of a solidification process as well as eventual decontamination and decommissioning, and (c) those surveillance activities necessary to assure that the plant is maintained in a safe condition while in its shutdown mode. Under the existing license, both co-licensees, NYSERDA and NFS, have certain complementary responsibilities for the care of the high-level waste and the plant.

With this as background, there are three issues I will address briefly over the next several minutes; licensing considerations for the proposed project, broad technical issues associated with that licensing, and the benefits to be derived from undertaking the project.

We note that the proposed amendment to the DOE Authorization Bill would authorize the Secretary to enter into contracts and agreements with the State of New York and others to carry out the project. The Secretary would also take title to the liquid high-level waste. It is not clear at this time whether the project would be carried out by private contactors, such as NFS, which are subject to licensing. It is also not clear at what point in the

system the Secretary would take title to the liquid high-level waste nor who would act on behalf of the Secretary to assure its safe management.

Facility License CSF-1 contains conditions called "technical specifications" which define limits of activities that are permitted under the license as well as operational safety parameters. As they now stand, these technical specifications essentially cover the operation of the reprocessing plant as it was contemplated in 1966. They do not permit NFS to transfer the high-level waste from the tanks in order to operate a waste solidification plant. Such activities involve safety and environmental questions which were not reviewed prior to issuance of the existing license. Before such operations could be initiated under the license, a safety and environmental evaluation would have to be completed and the license amended through appropriate changes in the technical specifications or a new license issued.

If DOE were to construct and operate a waste solidification plant on the West Valley site, while that site continues to be subject to regulatory control under License CSF-1, an NRC license evaluation and amendment would also be necessary. The safety and environmental interactions between those activities presently covered under the NFS license, such as the storage or transfer of the liquid high-level waste, and any new operations such as waste solidification are not separable. Also, any private contractor other than NFS which carried out the solidification process for DOE might itself be subject to licensing.

If DOE were to assume complete responsibility for that portion of the site now covered by CSF-1, the storage of commercial high-level liquid waste in the tanks, the on-site storage of that waste following solidification and the continued storage of commercial irradiated fuel in the storage pool would be subject to NRC regulatory control under the provisions of the Energy Reorganization Act of 1974, as amended. It would also be necessary to terminate the existing NFS license. Any action to terminate that license would, in itself, require the consequences of that step to be analyzed. Therefore, we anticipate that no matter how DOE proposes to implement their program, the NRC would be required to conduct substantial safety and environmental analyses and make appropriate amendments to License CSF-1 and issue new licenses to NFS, other private contactors or DOE.

There are a number of technical problems that will need to be resolved in the course of designing a solidification process. We visualize the design and construction of a solidification process to be a chemical engineering problem which would not be abnormally difficult to evaluate from a health, safety and environmental standpoint. The difficult task will be the engineering and process work necessary to remove the waste from the high-level waste tanks and to transfer it to the solidification operation. We believe that the engineering work and safety and environmental analyses should be initiated now. The work being undertaken by the staff to assess the continuing safety of the tanks will provide useful data for the waste removal task.

Another technical issue is the selection of the solidification process. Although decisions on solid waste form have not been made, we believe that work on the project can proceed for several years prior to reaching a final decision on the exact waste form. We believe there is no point in delaying this undertaking at West Valley pending future decisions on waste form.

There are a number of benefits to be derived by proceeding now with those activities leading to eventual solidification of the high-level waste stored at the site, transferring those wastes to a Federal repository, decontamination of the plant and decommissioning those parts of the plant to an extent which is compatible with whatever future use of the facility and the site is contemplated. If the wastes were to be solidified, packaged and shipped off site, it is possible that arrangements could be entered into between DOE and the co-licensees so that the co-licensees could be relieved of their respective responsibilities for care of the liquid high-level wastes.

There are obvious benefits from demonstrating solidification technology and decontamination on a pilot scale as would be the case for the NFS situation. There have been and continue to be many studies about the selection of appropriate solid waste forms and solidification technology. These studies are useful but seem to lead to extensive debate by those sponsoring competing processes. A carefully planned and well-engineered program at NFS could provide a framework in which decisions must be made. We believe also that the project would provide useful information about the

feasibility of undertaking decontamination and decommissioning at major nuclear facilities, both in the commercial sector and in operations conducted by the Federal Government. All such facilities must eventually be decommissioned in a way which minimizes the impact on future generations. The technical data and cost information the NFS project will yield could bear importantly on the future course of the nuclear energy programs.

The most important benefit, however, is neither direct benefits to the licensees nor the demonstration of a new technology. Rather, it is improved safety. While our studies of the tanks thus far indicate that storage of the liquid high-level wastes are safe and will continue to be safe over the next several decades, liquid wastes are more mobile and difficult to control than are solid wastes. There is more opportunity for something to go wrong in the system. We therefore view the DOE program principally as a remedial action with its most important benefit being improved margins of safety.

In summary, we know that as a minimum the NFS license will need to be amended and other licenses issued to private contractors or DOE, depending on how the project is carried out. We recommend that the entire West Valley project contemplated under the proposed amendment to the DOE Authorization be subject to license control. No matter who undertakes this activity, DOE or otherwise, it is particularly important that the total project be subject to an open review which permits public participation in the decision-making process. This can best be accomplished

under the existing regulatory procedures which the NRC now has in place. This open process will allow the public to participate in many of the types of policy decisions which we as a Nation must make in deciding our nuclear future.

Although specific details of the proposed DOE program will require careful safety and environmental evaluation before NRC can make a licensing decision, the NRC supports the concept of solidifying the high-level liquid wastes and shipping it off site. It leads to improved safety at the NFS site. It provides the impetus to move us from the mode of performing studies to one of taking more substantive action in solving the waste management problem. The program at NFS should provide information which can be useful in other nuclear energy programs.

NUCLEAR REGULATORY COMMISSION RESPONSES TO COMMITTEE QUESTIONS

Question

What is the current status of licenses at the NFS site? How, if at all, is that situation expected to change during what is expected to be the ten-year lifetime of the proposed project?

Question

What, if any, impact would the proposed program have on existing licenses at the site?

Response

Federal regulatory control of the West Valley site is administered through a single facility license, CSF-1. There are two co-licensees: the site owner, the New York State Energy Research and Development Authority (NYSERDA) and the site operator, Nuclear Fuel Services, Inc. (NFS), a subsidiary of Getty Oil Company.

In addition to Federal licensing, the State of New York has regulatory authority over the commercial burial ground for low-level waste. This authority is derived from Section 274 of the Atomic Energy Act.

Facility License CSF-1 was issued in 1966 for operation of the reprocessing plant at the site. In 1972, NFS ceased operation of the plant. In 1976 NFS decided to withdraw from the reprocessing business altogether. Current NRC activities with respect to License CSF-1 are related primarily to: (a) investigations of the storage tanks to assure their continuing safety until such time as the waste can be removed from the tanks, (b) compilation of information concerning plant status and past performance which will be useful for construction of a solidification process as well as eventual decontamination and decommissioning, and (c) the surveillance activities necessary to assure that the plant is maintained in a safe condition while in its shutdown mode. Under the existing license, both co-licensees, NYSERDA and NFS, have certain complementing responsibilities for the care of the high-level waste and the plant.

Facility License CSF-1 contains conditions called "technical specifications" which define limits of activities that are permitted under the license as well as operational safety parameters. As they now stand, these technical specifications essentially cover the operation of the reprocessing plant as it was contemplated in 1966. They do not permit NFS to transfer the high-level waste from the tanks in order to operate a waste solidification plant. Such activities involve safety and environmental questions which were not reviewed prior to issuance of the existing license. Before such operations could be initiated under the

license, a safety and environmental evaluation would have to be completed and the license amended through appropriate changes in the technical specifications or a new license issued.

If DOE were to construct and operate a waste solidification plant on the West Valley site, while that site continues to be subject to regulatory control under License CSF-1, an NRC license evaluation and amendment would also be necessary. The safety and environmental interactions between those activities presently covered under the NFS license, such as the storage or transfer of the liquid high-level waste, and any new operations such as waste solidification are not separable. Also, any private contractor other than NFS which carried out the solidification process for DOE might itself be subject to licensing.

If DOE were to assume complete responsibility for that portion of the site now covered by CSF-1, the storage of commercial high-level liquid waste in the tanks, the on-site storage of that waste following solidification and the continued storage of commercial irradiated fuel in the storage pool would be subject to NRC regulatory control and to the provisions of the Energy Reorganization Act of 1974, as amended. It would also be necessary to terminate the existing NFS license. Any action to terminate that license would, in itself, require the consequences of that step to be analyzed.

Question

What party or parties would be considered to the direct recipient of the proposed remedial activities at the site, in terms of any activities affecting responsibilities under existing license?

Response

There are a number of benefits to be derived by proceeding now with those activities leading to eventual solidification of the high-level waste stored at the site, transferring those wastes to a Federal repository, decontamination of the plant and decommissioning those parts of the plant to an extent which is compatible with whatever future use of the facility and the site is contemplated. If the wastes were to be solidified, packaged and shipped off-site, it is possible that arrangements could be entered into between DOE and the co-licensees so that the co-licensees could be relieved of their respective responsibilites for care of the liquid high-level wastes.

There are obvious benefits from demonstrating solidification technology and decontamination on a pilot scale as would be the case for the NFS situation. There have been and continue to be many studies about the selection of appropriate solid forms and solidification technology. These studies are useful but seem to lead to extensive debate by those sponsoring competing processes. A carefully planned and well engineered program at NFS could provide a framework in which decisions must be made. We believe also that the project would provide useful information about the feasibility of undertaking decontamination and decommissioning at major nuclear facilities, both in the commercial sector and in operations conducted by the Federal Government. All such facilities must eventually be

decommissioned in a way which minimizes the impact on future generations. The technical data and cost information the NFS project will yield could bear importantly on the future course of the nuclear energy programs.

The most important benefit, however, is neither direct benefits to the licensees nor the demonstration of a new technology. Rather, it is improved safety. While our studies of the tanks thus far indicate that storage of the liquid high-level wastes are safe and will continue to be safe over the next several decades, liquid wastes are more mobile and difficult to control than are solid wastes. There is more opportunity for something to go wrong in the system. We therefore view the DOE program principally as a remedial action with its most important benefit being improved margins of safety.

Question

What activities included in the proposed program would be subject to licensing by the Commission? What activities would not be subject to license or other NRC regulatory control? What, if any, recommendations would the Commission make regarding regulatory control of the proposed DOE activities?

Response

If the solidification process were to be conducted by NFS under its existing license, an amendment would be necessary. If the site were to continue to be subject to regulatory control under NFS License CSF-1 and the solidification process conducted by DOE, an amendment of the NFS license with associated safety and environmental analyses would be necessary since transfer of the liquid waste to the solidification operation would require a license amendment. If the solidification process were conducted on behalf of DOE by a private contractor which is not license exempt, that contractor would be required to have a license. If DOE were to take over the entire site now covered by License CSF-1, that license would need to be terminated. While subsequent activities by DOE at the site might not all be subject to NRC regulatory control, storage of the liquid and solid high-level waste on the site as well as the commercial irradiated fuel in the storage pool would be subject to NRC regulatory control under the provisions of the Energy Reorganization Act of 1974, as amended.

We recommend that the entire West Valley project contemplated under the proposed amendment to the DOE authorization be subject to license control. No matter who undertakes this activity, DOE or otherwise, it is

particularly important that the total project be subject to an open review which permits public participation in the decisionmaking process. This can best be accomplished under the existing regulatory procedures which the NRC now has in place. This open process will allow the public to participate in many of the types of policy decisions which we as a nation must make in deciding our nuclear future.

Question

What is the licensing status of technologies proposed to be implemented at NFS under the program, or which would presume to be part of the necessary processes for remedial action?

Response

There are three principal technologies associated with the proposed remedial action: (a) removal of the high-level liquid waste from the storage tanks and the transferring of it to the solidification process, (b) the installation of the solidification process in a contaminated chemical processing cell, if advantage can be taken of the already existing heavily shielded structure, and (c) the solidification process itself.

The most difficult technology from an engineering standpoint, as well as a health, safety and environmental standpoint, is the removal of the waste from the tanks, transferring it to the solidification operation and decontamination and decommissioning of the storage tanks. This will require careful evaluation. We have little experience in this area. A considerable amount of data will need to be gathered, tests conducted and perhaps some supporting research undertaken before this operation can be approved.

If advantage is to be taken of an existing chemical process cell for location of the solidification process in order to save cost, some plant decontamination will be necessary and a considerable design effort will be required to locate and size the new equipment for remote installation in the plant cells. Among other things, this is a radiological safety problem which will require careful evaluation for protection of workers. It will also be necessary to evaluate the

suitability of the cell structure for matters such as protection against natural phenomena, as well as the suitability of support systems such as the off-gas treatment systems.

A complete solidification process such as that contemplated in the proposed program has not previously been subject to licensing. However, candidate processes appear to consist of rather straightforward chemical engineering which should not be abnormally difficult to evaluate from a health, safety and environmental standpoint. An important step in most candidate processes is calcining. Here, there is considerable experience at the national laboratories in conducting such operations and performance data should readily be available. Other stages of candidate processes, such as vitrification, have been carried out on a laboratory scale in this country. Vitrification has been carried out on a pilot plant scale in other countries. A considerable amount of performance data should be available.

NRC RESPONSES TO QUESTIONS FROM REPRESENTATIVE VENTO

Question One (Principally by Mr. Vento)

What changes in liability would be incurred by the Federal Government if the Department of Energy were to undertake the work proposed by Mr. Lundine's amendment to the DOE authorization for FY 1980?

Response

Nuclear Fuels Services, Inc. is presently indemnified under the provisions of the Price-Anderson Act(Public Law 85-256, as amended). They are required to maintain financial protection in the amount of $20 million for which they purchase a nuclear liability insurance policy. Above this, the Government would indemnify them for public liability claims arising out of a nuclear incident for up to $500 million.

At this point, because we do not know what, if any, work will be undertaken by the Department of Energy directly or through contractual arrangements at West Valley, we are not able to ascertain the impact this work will have on the present Price-Anderson arrangement.

Question Two (Again by Mr. Vento)

In what respect, if any, did AEC-Regulation participate in the contract negotiations between the State of New York and Nuclear Fuel Services, Inc.?

Response

As indicated in Dr. Bateman's and Mr. LaRocca's testimony, three contracts were entered into by New York State and Nuclear Fuel Services, Inc., (1) a lease, (2) a waste storage agreement, and (3) a facilities contract.

The three contracts between New York State and NFS were bilateral agreements between those two parties. The AEC was aware of these agreements, having been formally informed of them in writing, but was not a party to the negotiations.

By letter on February 13, 1963, the AEC did request that the State of New York provide written evidence that "the State will be responsible for the proper maintenance of the storage tanks and the burial site in perpetuity..." On April 8, 1963, the predecessor to the New York State Energy Research and Development Authority, the Atomic Research and Development Authority, provided satisfactory assurance to the AEC that the requirement for perpetual care would be met. These two letters committing the State of New York to perpetual care of the waste are attached to this enclosure.

(ENCLOSURE 1)

FEB 13 1963

Mr. Oliver Townsend, Chairman
New York State Atomic Research and
Development Authority
230 Park Avenue
New York 17, New York

Dear Mr. Townsend:

The New York State Atomic Research and Development Authority and Nuclear Fuel Services, Inc., have filed applications for a construction permit and license to construct and operate facilities for the chemical reprocessing of irradiated nuclear reactor fuel. These facilities are to be located in the Western New York Nuclear Services Center in Cattaraugus County. As a part of this facility, Nuclear Fuel Services, Inc., will construct for the Authority tanks and related equipment for the storage of high-level radioactive wastes and facilities for the burial of radioactive wastes. The proper maintenance and monitoring of the storage tanks and burial facilities may be required in perpetuity to protect the public health and safety from radiation hazards.

It would appear that only the Federal Government or a State Government is in a position to provide reasonable assurance of perpetual care for facilities such as the high-level waste storage tanks and the land burial site proposed in the applications. For this reason, as I have heretofore advised you and Nuclear Fuel Services, Inc., it will be the staff's position at the forthcoming hearing that the State of New York should furnish assurance in satisfactory form that the State will be responsible for the proper maintenance of the storage tanks and the burial site in perpetuity in accordance with the Atomic Energy Act of 1954, as amended, and the Atomic Energy Commission's regulations in the event that any of the following situations occur:

1. The Authority fails to perform its obligations pursuant to the AEC license,

2. Nuclear Fuel Services, Inc., fails to perform its obligations pursuant to the AEC license and, in default thereof,

FEB 13 1963

the Authority fails to perform such obligations, or

3. The existence of the Authority is terminated.

If such assurance has not been furnished before the end of the hearing presently scheduled to commence March 4, 1963, the staff will recommend that any construction permit to be issued following the hearing contain a condition that such assurance must be furnished before an operating license is issued.

Sincerely yours,

Robert Lowenstein, Director
Division of Licensing and
Regulation

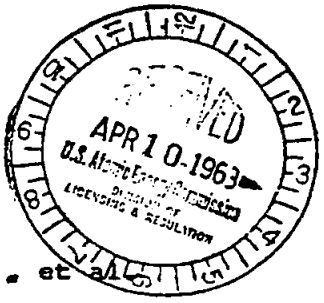
cc: Nuclear Fuel Services, Inc.
Room 212, Barr Building
912 17th Street NW
Washington, D. C.

NEW YORK STATE
ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY

(ENCLOSURE 2)

230 PARK AVENUE
NEW YORK 17, N.Y.

April 8, 1963



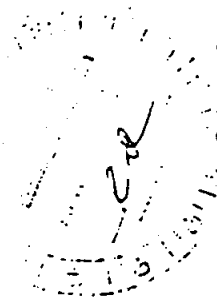
Mr. Robert Lowenstein
Director
Division of Licensing
and Regulation
Atomic Energy Commission
Washington 25, D. C.

In re: Nuclear Fuel Services, Inc., et al.
Applications for Licenses
AEC Docket No. 50-201

Dear Mr. Lowenstein:

This will refer to your letter of February 13, 1963, relating to the above proceeding, in which you express the position of the AEC staff "that the State of New York should furnish assurance in satisfactory form that the State will be responsible for the proper maintenance of the storage tanks and the burial site in perpetuity in accordance with the Atomic Energy Act of 1954, as amended, and the Atomic Energy Commission's regulations" in the event certain situations arise.

Since the receipt of your letter, my staff and counsel have discussed with you and your counsel the most appropriate way in which the requested assurance might be evidenced. In accordance with those conversations, an agreement, dated March 21, 1963, has been entered into between the New York State Office of Atomic Development and this Authority. A copy of this agreement, as executed by the parties, is enclosed herewith. Also enclosed is a copy of a letter from the Governor of the State of New York evidencing his approval of the minutes of the Authority authorizing the execution of this agreement.



ACKNOWLEDGED

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As you will note, the agreement not only recognizes and accepts the responsibility of the State of New York for the perpetual maintenance and monitoring of the site in question and the wastes stored at the site, but, in addition, it provides a mechanism for discharging this basic responsibility of the State.

Contemporaneously with this letter to you, the Authority is amending its application for licenses in the above proceeding to submit, as a part of the formal record, a copy of the agreement in question, as executed.

In view of this formal assurance as to the State's responsibility, we believe that the position of the AEC Staff has been fully satisfied and, accordingly, that it will not be necessary nor desirable to impose any condition in the construction permit to be issued in the above proceeding requiring such assurance prior to the grant of an operating license.

Very truly yours,

/s/

Chairman

OT:rs
Encs.

(ENCLOSURE 3)

BEFORE THE UNITED STATES ATOMIC ENERGY COMMISSION

WASHINGTON, D. C.

In the Matter of NUCLEAR FUEL SERVICES, INC. and NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY	DOCKET NO. 50-201

L&R File Copy

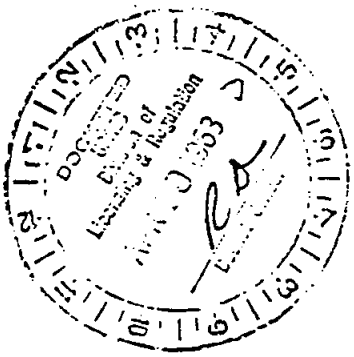
AMENDMENT NO. 1

To the Application for Licenses

of the

New York State Atomic Research and Development Authority

April 8, 1963



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Before the
United States Atomic Energy Commission
Washington, D. C.

In the Matter of NUCLEAR FUEL SERVICES, INC. and NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY	DOCKET NO. 50-201

AMENDMENT NO. 1

To the Application for Licenses

of the

New York State Atomic Research and Development Authority

The New York State Atomic Research and Development Authority ("ARDA"), one of the applicants in this proceeding, herewith submits its Amendment No. 1 to its Application for Licenses filed on January 30, 1963.

The purpose of this amendment is to provide evidence of the responsibility of the State of New York for the proper maintenance of the Western New York Nuclear Service Center ("Site"), and for the wastes to be stored at the Site, in perpetuity in accordance with all applicable federal, state or local laws, regulations or licenses.

As evidence of the recognition and acceptance of this responsibility by the State of New York, there is attached hereto, and made a part of ARDA's Application for Licenses:

Appendix B - an agreement, dated March 21, 1963, between the New York State Office of Atomic Development and ARDA in the form in which it has been executed with the approval of the Governor of the State of New York;

Appendix C - a certified copy of Resolution 43, duly adopted by ARDA, at a meeting duly held on March 15, 1963, authorizing the execution of said agreement;

Appendix D - a copy of a letter, dated April 4, 1963, from the Governor of the State of New York, to the Chairman of ARDA, setting forth the Governor's approval of the resolutions adopted by ARDA at the meeting of March 15, 1963; and

Appendix E - a letter, dated April 8, 1963, from the Chairman of ARDA transmitting said agreement to the Director of the AEC

Division of Licensing and Regulation in response to his letter of request dated February 13, 1963 (AEC Exhibit No. 2).

Respectfully submitted,

NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY

By: Oliver Townsend
Chairman

Dated: April 8, 1963

STATE OF NEW YORK)
: ss.:
COUNTY OF NEW YORK)

On the 8th day of April, 1963, before me personally came OLIVER TOWNSEND, to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

Mary Pesenhofer
Notary Public

MARY PESENHOFER
Notary Public, State of New York
No. 03-8337315 - Qual. in Bronx Co.
Certificate filed in New York County
Commission Expires March 30, 1964

COMPTROLLER'S CONTRACT No. C16972 — L&R File Co... 50-201

(ENCLOSURE 4)

MEMORANDUM OF AGREEMENT, this 21st day of March 1963, between the New York State Office of Atomic Development ("Office") and the New York State Atomic Research and Development Authority ("ARDA").

WHEREAS, the Office was created in 1959 and authorized, among other things, to coordinate the atomic energy activities of all agencies of the State and to locate and acquire within the State a site for concentrating and storing radioactive by-products; and

WHEREAS, the Legislature of the State then declared it to be one of the policies of the State to adapt its laws and procedures from time to time to meet new conditions in ways that will encourage the development of atomic energy, and private participation therein, while fully protecting the interest, health, and safety of the public; and

WHEREAS, in furtherance of this policy, ARDA was created in 1962 and authorized, among other things, to establish, develop, and manage facilities both for research and development in the production and use of atomic energy and for the provision of services not otherwise available within the State for the development

and use of atomic energy by public and private, non-profit and commercial organizations; and

WHEREAS, the economic development and use of atomic energy for the production of electric power requires the development and operation of a facility for the processing of the "spent" nuclear fuel so as (i) to recover the valuable, usable fissionable materials remaining in such spent fuel and (ii) to separate from the spent fuel the radioactive waste fission products with which the fissionable materials in the fuel are associated; and

WHEREAS, no such facility has yet been established in the United States to process on a regular commercial basis the spent fuels now being, and to be, removed from the increasing number of nuclear reactors producing electric power in the United States and abroad; and

WHEREAS, such a facility, if it is to be economically feasible and if it is to reduce to the minimum the health and safety risks involved in transportation of radioactive materials, should be located not only in reasonable proximity to the nuclear reactors from which

the spent fuel is taken, but also in close proximity to facilities for the storage and management of waste fission products; and

WHEREAS, the industrial northeastern portion of the United States, with its relatively high costs of conventional power, has been and will continue to be one of the primary areas in the United States for the development of nuclear reactors for electric power; and

WHEREAS, no site has yet been developed north of Tennessee and east of Idaho for the storage, retention and use of high level radioactive (and potentially valuable) waste fission products; and

WHEREAS, it is necessary to the development and use of atomic energy, and desirable for the economic growth of the State, that such a site be established and put into operation at an early date at an optimum location in the State; and

WHEREAS, it is the policy of the United States Atomic Energy Commission ("AEC") (reflected, for example, in Section 20.302 of the AEC's Regulations) that sites for the storage of high level waste fission products may not be privately owned but must be owned either by a

state or by the Federal Government; and

WHEREAS, the Office has acquired, in the name of the State, a site of some 3300 acres in Cattaraugus County ("Site") which the Office and ARDA and the AEC Regulatory Staff all deem suitable for such a spent fuel processing facility and the associated storage of waste fission products without undue hazard to the public, and ARDA is authorized, by § 1856 of Title 9, Article 8, of the Public Authorities Law of the State of New York (the "Authority's Act"), to assume jurisdiction over and hold such Site in the name of the State; and

WHEREAS, ARDA proposes (i) to establish and develop the Site to provide facilities for receiving and holding spent nuclear fuel, for the storage of waste fission products and for the storage of radioactive by-products ("Facilities"), (ii) to lease such portion of the Site as may be required to accommodate a privately operated spent fuel processing plant with access to the Facilities, and thus (iii) to provide essential services required for the further development and use of atomic energy in the State and throughout the nation; and

WHEREAS, the AEC staff has requested reasonable

assurance that the State will be responsible for the perpetual care of the Facilities; and

WHEREAS, the Office and ARDA desire to coordinate their respective responsibilities for the development of atomic energy and the protection of the public health and safety from radiation hazards;

NOW, THEREFORE, the Office and ARDA do agree:

1. ARDA shall, pursuant to the authority conferred upon it by the Authority's Act, and in compliance with the terms of all applicable laws, regulations and licenses (federal, state and local) for the protection of the public health and safety from radiation hazards,

(a) assume jurisdiction over the Site, by appropriate resolution, and hold such Site in the name of the State, pursuant to § 1856 of the Authority's act;

(b) proceed with the development of the Site so as to establish at the Site the Facilities to receive and hold spent nuclear fuels, waste fission products, and radioactive by-products;

(c) make the Site and Facilities available, on reasonable compensatory terms, both to an

operator of a spent fuel processing plant and to other industrial, commercial, medical, scientific, educational and governmental organizations within the State for atomic research, atomic development and other authorized atomic uses (it being understood that the use of the nuclear fuel receiving and high level waste storage facilities by others must be consistent with the operation of a spent fuel processing plant at the Site);

(d) maintain and monitor the Site, the Facilities and the related improvements and care for, manage, use and dispose of the waste products stored at the Site so as to protect the public health and safety from radiation hazards; and

(e) arrange for the establishment of maintenance, surveillance, liability protection and replacement funds in amounts deemed sufficient by ARDA to make available the sums which ARDA estimates may reasonably be required to provide perpetual care, maintenance, protection and replacement for the high and low level waste storage facilities at the Site.

2. The Office shall, subject to the availability

of funds,

(a) to the extent required by the terms of any applicable laws, regulations or licenses for the protection of the public health and safety from radiation hazards, take such action or render such assistance through the appropriate offices and agencies of the State as may be necessary for such protection of the public; and

(b) upon termination of the existence of ARDA, (i) reassume jurisdiction over and hold in the name of the State both the Site and all improvements thereon owned by the State, (ii) maintain and monitor the Site and the Facilities, and (iii) care for, manage, use and dispose of the radioactive wastes stored at the Site, all in accordance with applicable laws, regulations and licenses and so as to protect in perpetuity the public health and safety from any radiation hazards arising at the Site or resulting from the uses made of it.

3. The State, pursuant to its declared policy as expressed in its laws, has a paramount concern with the protection of the public health and safety from any radiation hazards arising at the Site or resulting

from its use. The State, also, by reason of its ownership of the Site, has a responsibility for the maintenance and monitoring of the Site, the Facilities and the related improvements, and for the maintenance and care of the stored wastes, all in accordance with applicable laws, regulations and licenses and so as to protect the public health and safety from radiation hazards arising at the Site or resulting from its use.

4. The Office at any time upon a failure by ARDA, after notice, to take such action as may be required by the terms of any applicable laws, regulations and licenses (federal, state or local) to protect the public health and safety from radiation hazards arising at the Site or resulting from its use, shall on behalf of the State, subject to the availability of funds, take such action itself through the appropriate agencies and offices of the State as it may deem proper.

5. In the event that either (i) the existence of ARDA is terminated or (ii) ARDA fails, after notice, to take the action required by any such applicable laws, regulations and licenses for the protection of the public health and safety from radiation hazards, and the State takes such action itself, then in either

case there shall be automatically transferred to the Office on behalf of the State the full management and disposition of the funds established by ARDA for maintenance, surveillance, liability protection and replacement in connection with the high and low level storage facilities at the Site and ARDA shall thereupon be released from any further responsibility with respect to the management and disposition of such funds.

6. This agreement does not, and shall not be deemed to, restrict or limit the powers and authority heretofore conferred by law on the Office and ARDA, respectively.

7. This agreement shall not be effective until ratified by a resolution adopted by ARDA (and approved by the Governor of the State of New York in accordance with § 1853 of the Authority's Act). Thereafter, this agreement shall be binding upon the parties hereto and upon their successors.

IN WITNESS WHEREOF, the Office and ARDA

have hereunto signed this agreement this 21st day of March, 1963.

NEW YORK STATE OFFICE
OF ATOMIC DEVELOPMENT

By: Laurence Townsend.
Director

Attest:

NEW YORK STATE ATOMIC RESEARCH
AND DEVELOPMENT AUTHORITY

By: Whitworth Ferguson
Vice Chairman

Attest:

Maurice Ahlstad
Secretary

APPROVED AS TO FORM
DATE 3/27/63
LOUIS J. LEFKOWITZ
ATTORNEY GENERAL

APPROVED APR - 1 1963 19
FOR THE STATE COMPTROLLER

So. 201
Suff.

(ENCLOSURE 5)

STATE OF NEW YORK
EXECUTIVE CHAMBER
ALBANY

NELSON A. ROCKEFELLER
GOVERNOR

April 4, 1963

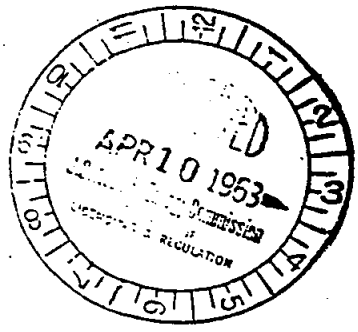
Dear Mr. Townsend:

The minutes of the meeting of the New York State Atomic Research and Development Authority held on March 15, 1963, are herewith approved.

Sincerely,

Nelson A. Rockefeller

Mr. Oliver J. Townsend
Chairman
New York State Atomic Research
and Development Authority
230 Park Avenue
New York 17, New York



SIERRA CLUB 530 Bush Street San Francisco, California 94108 (415) 981-8634

STATEMENT OF DR. MARVIN RESNIKOFF
SIERRA CLUB
before the
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
May 31, 1979

Good morning. My name is Marvin Resnikoff. I am Chair of the Nuclear Subcommittee of the Energy Policy Committee of the national Sierra Club and co-director of the Sierra Club Radioactive Waste Campaign in New York State. The Sierra Club is a national environmental and conservation organization, with 180,000 members nationwide and 500 members throughout the Western New York area. The Radioactive Waste Campaign is a national educational effort by the Sierra Club on the hazards of radioactive waste, beginning in New York State as a pilot project. With me today is David Pyles who is the media person for the Radioactive Waste Campaign and former employee at the Nuclear Fuel Services facility at West Valley, and Drew Diehl, the Sierra Club Washington staff person focussing primarily on the radioactive waste issue. We greatly appreciate the opportunity to present our views on the Lundine amendment to the 1980 DOE Authorization.

We strongly support efforts to clean up the West Valley site and to resolve this very dangerous high level waste situation. We commend Congressman Lundine for his efforts in this regard. However, there are two aspects of the Lundine amendment with which we are in disagreement: (1) the amendment calls for DOE to "consult" with the NRC and other Federal agencies. We believe this should be changed to NRC "licensing authority". (2)for a variety of reasons, technical, environmental, economic, and concerning the future use of the site, we believe that the high level waste solidification technology should not be specified at this time. The Lundine amendment calls for "vitrification" or most effective technology available at the time of implementation, but this should be changed to read simply "solidification".

We believe that we speak for the predominant opinion in Western New York in stating that no further spent fuel and radioactive waste should be brought to the West Valley site and that all operations should lead to a phase-out. We are very concerned that the Larocca/Schlesinger deal of bringing more spent fuel to the site, coupled with the Lundine proposal to build a major vitrification facility, will lead inexorably to a build-up, rather than a clean-up, of nuclear activities on the West Valley site.

Finally, in this statement, we have some comments concerning cost-sharing between the State and Federal Governments, and Getty Oil, Grace & Co. and the private utilities.

Nuclear Fuel Services is located 35 miles south of Buffalo. As seen by this map (Fig.1), the plant is in the Cattaraugus Creek watershed which drains into Lake Erie. The water supply of the City of Buffalo and surrounding towns, with a population of 2 million, is in Lake Erie, downstream of the Cattaraugus Creek outflow. While the reprocessing plant operated, from 1966 to 1972, high levels of radioactivity were recorded by the State of New York in Cattaraugus Creek. As late as March, 1978, trace amounts of radioactivity were reported, though the plant ceased operations in 1972. The plant has had a very unfavorable operating history. The radiation exposures to workers were the highest in the world, much higher than predicted in the original Preliminary Safety Analysis Report. The radiation releases were over a 1,000 times greater than predicted, sometimes over 3,000 times.

NRC SHOULD HAVE "LICENSING AUTHORITY"

In view of this operating experience, the citizens of Western New York consider it very important that we be able to legally protect ourselves. For this reason, and others, we believe it is necessary to change the wording of the Lundine amendment, from NRC "consultation" to NRC "Licensing authority". With NRC "licensing authority", WNY residents could intervene in the process on matters of safety. However, as the legislation now reads, the DOE need only prepare Environmental Impact and Safety Analyses and "consult" with the NRC. The only protection we would have is NEPA, i.e., that the DOE prepare an adequate Environmental Impact Statement.

Indications of what can happen without NRC regulation have already become evident in the DOE West Valley Study. One of the DOE subcontractors has pointed out all the cost-saving steps that would occur without NRC regulation. E.R. Johnson & Associates (Final Report 3, p.1-5) has shown that it would cost only $3 million to remodel the NFS reprocessing plant if it were labelled an R&D facility, compared to $600 million estimated by NFS for commercial operation.

> "...if the operations are to be conducted entirely in accordance with NRC regulations, the following additions and alterations would have to be made:...
>
> ...
>
> (4) structural changes to improve resistance to natural phenomena;
>
> ...
>
> (8) several general safety and environmental modifications.
>
> ...
>
> Notwithstanding the...alteration to existing facilities that would be required in order to place the West Valley Plant into commercial operation under NRC regulations, the existing plant represents an extremely versatile facility for conducting research, development and demonstration activities..."

Clearly we are not looking for shortcuts which compromise the health and safety of the public and believe that NRC regulation is an absolute prerequisite.

This lack of NRC regulation is an erosion of NRC powers, contrary to the IRG Report, and a dangerous precedent. The IRG Report has advocated a systems approach to waste management, tailoring the waste form, containment, and geologic medium to provide a combined deterrent to leakage of this radioactive material to the environment. Thus, if the NRC were to regulate the Federal Repository, it would also have to regulate the waste form and containment as well.

Furthermore, not placing the West Valley wastes under the jurisdiction of the NRC means leaving grave decisions that will impact on thousands of generations to an agency, the DOE, that has shown itself to be more interested in continued promotion of the nuclear industry than in the health & safety of citizens.

PREMATURE TO SPECIFY CHOICE OF SOLIDIFICATION TECHNOLOGY

The Lundine amendment also calls for vitrification or "the most effective technology for solidification available at the time of implementation". We believe that this should be changed to "solidification", as the Senate version of the Lundine amendment reads. There is considerable scientific opinion against placing vitrified wastes in a Federal Repository located in a salt medium. Salt is a corrosive medium and under the pressure and temperature conditions which would exist in a waste repository, the radioactivity would leach from the glass in less than a decade. We have attached a Sierra Club Fact Sheet titled "Salt Will Not Work", which discusses this recent scientific opinion.

Many of us in the local area believe that the liquid high level waste should be removed from the tank, a very difficult task as Mr. Pyles will describe, and calcined, that is, sprayed in a hot oven to form a powdery ash. This process is an intermediate step to making a glass. Calcination has been done successfully for 15 years at the Idaho National Laboratory. It is a lower temperature process than making a glass, 500°C v. 1100°C, and therefore less of the radioactive material would be vaporized. Therefore, the opportunity is lessened for radioactivity to enter the environment. It is also a less expensive process. The National Academy of Sciences ("Solidification of High-Level Radioactive Wastes", Panel on Waste Solidification, NAS, in press) has recommended a supercalcine, fabricated in the same way as a calcine, except with the addition of nitrates of calcium and aluminum (NAS, p.82). Supercalcine has a solubility 5 to 6 orders of magnitude less than calcine (NAS, p.69). According to the NAS, this supercalcine could be incorporated into cement and have leach resistance comparable to glass.

IMPLICATIONS OF VITRIFICATION

Aside from health and safet matters, many of us are concerned about the implications of a major "demonstration" vitrification facility on the West Valley site. The estimated cost of the "demonstration" runs to $200 million. This is to be compared to the original price of the NFS reprocessing building in 1963, $32 million. If this major vitrification facility is coupled to the Larocca/Schlesinger scheme to bring more spent fuel to West Valley, we have the makings of a major build-up of reprocessing activities on the West Valley site. All that is needed is a major reprocessing plant in-between. We think instead that the capital investment to clean up the West Valley site should be limited to the minimum necessary to do the job safely. Then there is no financial commitment to future operations.

The concept of bringing more wastes to Western New York is totally unacceptable to taxpayers, church groups, inner-city residents and just about any constituency you could mention. We have attached a Letter of Concern signed by a large number of clergy in the Western New York area.

There is no need for a quid pro quo arrangement. The high level waste tank contains a large amount of radioactivity, 39 million curies accord-

ing to DOE, enough to cause billions of cancers unless it is isolated. The tank contains 70 or more pounds of plutonium. There is general agreement that the HLW should be removed from the tank as soon as possible and solidified. Just as with the abandoned uranium mill tailings, we believe that the Federal Government has a "compassionate responsibility" to begin this clean-up work to prevent a major catastrophe from occurring. Was Colorado required to take more radioactive waste as a precondition for remedial action on contaminated buildings in Grand Junction? No. Do communities suffering from a flood disaster have to accept radioactive waste before Federal disaster funds are made available? No.

However, we do believe that the Federal Government, which really is all the taxpayers, should not pay the entire bill. Provisions should be made for the Attorney General to recover costs. Both the Senate and House versions allow this. We believe that this provisions should be exercised. Perhaps a line item should be inserted in the budget of the Justice Department to pursue proper compensation. We believe that the costs for waste management must be shared. The Federal Government has a responsibility because 3/5 of the waste materials came from the Hanford N Production reactor. Further, the AEC licensed the facility and approved the high level waste set-up. The AEC, now the NRC, cannot issue licenses like a piece of paper. Proper findings which protect the public health and safety must be made. We believe that New York State also has a responsibility. In a certain state of euphoria, and without full knowledge, they signed agreements with Grace & Co., later Getty Oil which were very unfavorable to the State. New York State is also a co-licensee. On the other hand, we do not believe that the State of New York has exhausted its legal remedies. In the attached letter to Larocca, the State Energy Office Commissioner, we asked that the State more vigorously pursue Getty Oil under the contract conditions. That letter is attached to this testimony. He has still not responded to our letter, though he appears to be pursuing some of the points. In spite of the contract conditions, we believe that Getty Oil and Grace & Co., the polluters, have an ethical responsibility to pay part of the clean-up costs. After all, they created the problem by disposing of the wastes in this unsatisfactory manner. Finally, we believe that the utilities also have a role to play. They paid, on the average, about $30/kg to reprocess spent fuel at NFS, yet the HLW solidification and decommissioning may run as high as $1,000/kg. They did not pay their share.

In closing I would like to say that we in Western New York are not looking for another nuclear experiment like the last one. To those Federal officials, and even some Congressmen, who are looking to vitrification as the salvation of the reprocessing program in the United States, I would like to quote the Governor of the State of Lower Saxony in West Germany in his rejection of reprocessing (Declaration of the State Government by Minister-President, Dr. Ernst Albrecht, May 16, 1979):

> "In spite of it being legally possible, the State Government does not consider it right to build a reprocessing plant as long as it has not been possible to convince large parts of the population of the necessity and safety-technological acceptability of the plant. In contrast to many other decisions, this is not a question of competing interests; it is a question of judging health risks. Therefore, the opinion of the immediately concerned population carries particular weight."

In Western New York, we are not looking for a vitrification experiment, and we want no more of radioactive wastes. It will be difficult to convince us otherwise.

SIERRA CLUB 530 Bush Street San Francisco, California 94108 (415) 981-8634

STATEMENT OF DAVID PYLES
SIERRA CLUB
before the
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
May 31, 1979

Good morning. My name is David Pyles. I am media person on the Sierra Club Radioactive Waste Campaign and a former employee at Nuclear Fuel Services reprocessing plant as a lab supervisor. My statement concerns the difficulties involved in removing the high level wastes (HLW) from the tank, and using the present reprocessing building for the solidification effort. In order to minimize occupational exposures, I believe it will be necessary to build an entire structure about the high level waste tanks, a hot cell, within which all operations on the high level waste tank can be done remotely.

The West Valley site presently contains a reprocessing plant with very high levels of radioactivity in certain cells, up to as much as 1,800 R/h (NRC Interim Safety Evaluation, 1977). In order to perform high level waste solidification within the present reprocessing building, cells will have to be decontaminated by contact means. In the past, exposures at NFS were the highest in the world, rising to an average of 7.2 rems/yr whole body exposure in 1972. These exposures would have been higher yet had the company not resorted to the practice of hiring temporary workers, 18 years and over, to do this manual decontamination work. Oftimes, these transient workers were brought in for 5 to 10 minutes of decontamination work and received a 3 month radiation dose. This decontamination work would again be necessary if the reprocessing building were used for HLW solidification work.

Even if the building were decontaminated and reconstructed for solidification work, the inadequate design of the building must still be contended with. For example, the ventilation equipment is inadequate. The laboratory fume hoods never could draw well, and the building still does not have remote decontamination equipment. Further, in government plants, there is extensive use of mock-up equipment so that residence time in "hot" areas can be shortened. NFS has none of this. Radiation shielding was inadequate in certain areas of the plant. During the plant's operation, NFS was cited 3600 times for personnel overexposures, and this was one reason for the plant's shutdown in 1972, to modify the plant so as to reduce these exposures.

Construction of the facility began in 1963 when less attention was paid to health and safety matters. The facility was never designed to meet the seismic criteria which exist today. The Preliminary Safety Analysis Report contains ten sentences on seismology of the region. It states that"the nearest fault to the site is at a distance of 35 to 40 miles"*. As can be seen

* Preliminary Safety Analysis Report, Nuclear Fuel Services, July, 1962, para.2.46-2.48, NRC Docket No. 50-201.

from Fig.1, the nearest fault is a mere 23 miles from the site, the Clarendon-Linden fault. A major earthquake (modified Mercalli scale VIII) occurred along this fault in 1929 and affected a 100,000 square mile area. More recent faults occurred in 1965 and 1966 (MM IV). Analysis by NFS has shown that the reprocessing building would sustain considerable damage under the maximum earthquake which could occur on the site.

Similarly, recent analysis by the NRC has shown that the spent fuel pool at NFS would crack in the event of an earthquake greater than 0.16 g. The seismic criteria for the site are greater, 0.20g. The NRC report also concludes that "any presently used shipping cask dropped from the maximum crane hook height will puncture the cask unloading cell floor". Both events, cask drop or earthquake greater than 0.16g acceleration, would cause water to leak from the pool. If spent fuel were brought to West Valley, if the pool were reracked with high density storage spaces, a serious accident could result from loss of coolant. A separate independent spent fuel storage pool would have to be built. These recent findings by the NRC should preclude any use of the present storage pool for an away-from-reactor storage pool.

I might also add that a bill has passed the Senate of the State Legislature, and is under consideration in the Assembly, by Senator Dale Volker, to ban an away-from-reactor storage pool at West Valley. The State Legislature therefore disagrees with Governor Carey and State Energy Commissioner Larocca on the desirability of using West Valley for spent fuel storage.

The high level waste tanks may also not withstand an earthquake of acceleration 0.2g. It is therefore of prime importance to remove the high level wastes from the tank as soon as possible. The site contains two high level waste tanks and two stand-by tanks. As figure 2 shows, the high level waste tanks sit within a saucer within a concrete vault 8' below the surface. The material in the tank has separated into a sludge and liquid. The sludge has mixed with the lattice work and it will be difficult to remove. Before a solidification process is designed for the NFS wastes, the physical and chemical condition of the wastes must be known. A sample of the sludge at the bottom of the tank has never been taken. The status of the technology for dealing with the material in tank 8D-2 is demonstrated by the method used for establishing the approximate volume of the sludge. A bottle was lowered into the tank on a string. When the bottle hit a solid surface, the string went slack and its length was noted. The assumption was made that the bottle had hit the sludge and the volume of the sludge was calculated. This procedure has come to be known as the "calibrated string method of nuclear waste management". It is still not known whether the sludge is hard as concrete, or flocculent, like thick soup.

Because of the numerous internal obstructions, it will be difficult to remove all the sludge material. There are 45 internal columns which support the roof of the tank, 6 internal support columns, 4 feet in diameter, which support the weight of the roof of the concrete vault, and 8 air bubblers. The bottom of the tank has an elaborate gridwork of I-beams which are intermixed with the sludge. Clearly no consideration was given to emptying the tank when it was built. Mock-up equipment will have to be designed and pene-

[illegible] in a separate facility so that the work can be done remotely.

DOE has claimed that using methods just employed at Savannah River, it is possible to remove up to 99% of the sludge from the tank. We believe that the is optimistic. But even if 1% remained, this would mean 3/4 lb of plutonium and hundreds of thousands of curies of radioactive material.

The urgency of removing this material is underlined by the fact that one of the safety systems, the pan underneath the vault, now has a hole in it and will not contain material which leaks from the tank. Any leaking material would immediately go into the vault. The problem of decommissioning waste impregnated concrete would be extremely difficult. The tank is made of carbon steel and is corroding. Over 10% of the high level waste tanks at Hanford and Savannah River have leaked due to pitting and stress corrosion.

In conclusion, we believe that the material should be removed from the high level waste tank as soon as possible and be solidified. The present reprocessing building, at least the "hot" cells should not be used for this work; a separate building should be constructed. No additional spent fuel assemblies should be brought to the West Valley site

Box 64, Sta.G, Buffalo, New York 14213
January 13, 1979

James LaRocca, Chair
New York State Energy Research and Development Authority
Agency Building #2
Empire State Plaza
Albany, New York 12223

Dear Mr. LaRocca:

It has been almost 3 years since Getty Oil announced its intention to leave the West Valley radioactive wastes and the tremendous financial burden entailed, possibly over $1 billion in clean-up costs, to the State of New York. It is our assessment that the New York State Energy Research and Development Authority (NYSERDA) has not vigorously pursued Getty Oil for additional money to the Perpetual Maintenance Fund and has not clarified its intentions for the decommissioning and future use of the site. For the reasons cited below, we believe that Getty Oil has a substantial financial obligation to decommission the West Valley radioactive waste site. We ask NYSERDA to study the points raised here and to state what specific actions NYSERDA will be taking.

As you are aware, the site contains two solid waste burial grounds, two high level waste (HLW) tanks (plus two alternate tanks) and a contaminated reprocessing building.

REPROCESSING BUILDING

The financial responsibility for decommissioning the reprocessing building is governed by the Lease between NFS and NYSERDA. A simple reading of the Lease shows that Getty Oil has a major, if not complete, responsibility for clean-up of the reprocessing building. Section 26.01 of the Lease requires NFS to surrender the premises in such condition as to be no danger to the public health and safety. With radiation levels as high as 2,000 R/h in the General Purpose Cell*, it is obvious that NFS cannot walk off the site without endangering the public health and safety. As the DOE "Companion Report" shows (Sect.4), in order to protect the public health and safety, the building may either be entombed and guarded (for hundreds of thousands of years) or dismantled. It is the latter option we consider acceptable, but, in either case, a substantial capital outlay by Getty Oil will be required.

We have strong disagreements with the DOE analysis (Sect.7, Companion Report) which would absolve Getty Oil of financial responsibility in decommissioning the reprocessing building. For some reason, DOE seems to be in the position of defending Getty Oil. Further, the DOE analysis was not performed by a crack legal firm, but rather a gaggle of engineers-turned-lawyers from Argonne Labs.

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*"Interim Safety Evaluation", Nuclear Regulatory Commission, Docket No.50-201, August, 1977.

SOLID WASTE BURIAL GROUND

Financial responsibility for the solid waste burial grounds and high level waste tanks is governed by the Waste Storage Agreement between NFS and NYSERDA. The New York State-licensed burial groundshas leaked in the past, but remedial measures requested by NYSERDA have been taken by NFS, Summer, 1978. The remedial measures included adding silty till, reseeded top soil and an "impervious plastic sheet", covered with a layer of crushed stone, to the steeper slopes. Batelle states* "only time will tell if the infiltration problem reoccurs." What if the burial ground leaks again? In that eventuality, the burial ground was not left in "good condition". The State should take transfer only when it is completely assured that the burial ground will not leak. Obviously this leaves Getty Oil under perpetual obligation. On the other hand, if the burial ground were transferred and did leak again, the New York State taxpayers would have to pay for further remedial action or in increased health costs. We believe the risk should remain with Getty Oil and not be transferred to New York State taxpayers. From our perspective and, we would hope, Getty Oil's, measures should be taken to guarantee that no further leakage will occur and this probably will involve exhuming the burial grounds. One Love Canal in Western New York is enough.

HIGH-LEVEL WASTE FACILITIES

The high level waste (HLW) tank facilities are also governed by the "good condition" provisions of the Waste Storage Sgreement. Before the HLW facilities can be transferred to the State of New York (Sect.3.05), they must be shown to be in "good condition", all payments to the Perpetual Maintenance Fund shall have been made, and all necessary licenses obtained. If the tanks fail to be in "good condition", NFS is required to make additional payments to the Perpetual Maintenance Fund equal to the increased costs to the Authority resulting from such failure. The definition of "good condition" is spelled out in Sect. 3.06.

For two reasons, we believe that the "good condition" provisions have not been fulfilled and that additional payments from Getty Oil are required. First, the steel pan underlying the tank has a hole in it. The NRC discovered this "defect" Dec.7th. The steel pan isaaprotective barrier designed to catch tank leakage before the radioactive liquid reached the cement vault. Thus, one of the safety systems is now lost. Since the panwas tested when it was installed and found to be sound, this hole has occurred more recently. Any leakage into the cement would make decommissioning of the vaults much more difficult and expensive. A steel pan with a hole is not a HLW facility in "good condition".

A second aspect of "good condition" pertains to the sludge which has settled to the bottom of the tank 8D-2, which makes removal of the tank contents that much more difficult and expensive. Section 3.06(e) applies to this sludge condition. According to Sect. 3.06(e), "all Storage Paramteres applicable to all High Level Storage Facilities shall have been observed..."

In particular, as the Club has pointed out, in testimony before the Environment and the Atmosphere Subcommittee of the House Science and Technology Committee, Schedule 3A of the Waste Storage Agreement requires that the HLW tanks

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*"Preliminary Environmental Implications of Alternatives for Decommissioning and Future Use of the WNYNSC", [illegible]

"shall contain appropriate means for the prevention of sludge from settling by agitation with compressed air..." NFS has contested the use of Schedule 3A, stating that it applied to some undefined future tanks. NFS has stated that Schedule 1 applies instead. We have examined Schedule 1 and consider our statement still valid, that the HLW tanks are not in "good condition" because the sludge has settled.

Schedule 1 refers to specific design drawings in the original Safety Analysis Report (SAR) These drawings show air spargers and the text in the SAR describes the purpose of the air spargers. "The particular design as shown is required to allow for agitation of the tank contents at the bottom of the tank" (Sect. 5.52). "The solution in waste storage tanks (8D-1 and 8D-2) is kept agitated with four air agitators in each tank" (Sect.5.54). There is no discussion of a sludge in the tank. Since the agitation has not taken place "at the bottom of the tank" to the "tank contents", NFS has not fulfilled the Storage Parameters. Getty Oil should pay for the increased costs.

Further, NFS has used the HLW facilities in ways which have accelerated the corrosion of the tank. Because of the faulty condition of the low level waste evaporator within the NFS plant, it was necessary to boil off excess liquid by means of a heat exchanger placed inside the tank. Over 9,000,000 gallons of HLW material have been evaporated down to 560,000 gallons within the HLW tank itself. That is, NFS operated the HLW tank as an evaporator, in effect. We can find no discussion of such design or operating practice in the original SAR. In what ways, if at all, this practice led to a reduced lifetime of the tank will have to be investigated by NYSERDA.

In sum, we believe Getty Oil has major financial responsibility for decommissioning the reprocessing building, has continuing responsibility for the solid waste burial grounds unless it can be guaranteed they will not leak, and, because of the failure to meet "good condition" and observe the Storage Parameters for the High Level Storage Facilities, has an obligation to make additional payments to the Perpetual Maintenance Fund equal to the increased costs to the Authority. Do you agree or disagree with the specific points raised relating to increased liability for Getty Oil? We would appreciate a timely response to this letter indicating what actions you will be taking.

We believe that you are obliged to ~~rigorously~~ pursue vigorously these matters on behalf of the people of the State of New York. However, we are also mailing copies of this letter to the chief legal officer of the State, Attorney General Robert Abrams, and the chief fiscal officer of the State, Comptroller Ned Regan, because those offices also have responsibility for protecting the people of the State of New York.

We are also calling on WNS to clarify your position concerning the decommissioning and future use of the site. At the DOE meeting March 18, NYSERDA chief counsel Richard Wolf promised a position paper by March 29, 1978. We have not seen that paper. Specifically, are you in favor of decommissioning the site? Or, are you in favor of bringing more wastes to the site? If decommissioning, whatyou in favor of dismantling and removing the reprocessing building, the HLW tanks, and exhuming the solid waste burial grounds? If more wastes to the site, are you in favor of more spent fuel from in-state, out-of-state, or foreign, of reactivating the reprocessing building, or more solid wastes? We believe that you owe it to the people of Western New York and the entire State to deal with these questions forthrightly.

Sincerely yours,

Marvin Resnikoff

Mina Hamilton

SIERRA CLUB 530 Bush Street San Francisco, California 94108 (415) 981-8634

6
May 17, 1979

Charles J. Haughney
Reprocessing and Recycle Branch
Division of Fuel Cycle and Material Safety
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Haughney:

Thank you for sending the NRC "Evaluation of the Safety Associated With the Defect in the Tan 8D-2 at West Valley, New York" dated March 29, 1979. We find the document entirely inadequate in assessing the safety of the present condition of tank 8D-2. Several statements in the "evaluation" have not yet been substantiated and therefore assurance cannot be provided that the high level waste facility is safe. No seismic analysis provided to the public has shown that the tank can withstand a 0.2g earthquake. No credible scenario has been laid out in the event the tank does leak.

Concerning seismic competence of the high level waste tank, there is reason to believe that the tank cannot withstand a 0.2g earthquake. As you are aware, the tank is free-standing on perlite blocks; the entire vault sits on a concrete slab on mud, without piles to bedrock. It is expected that the entire facility would shake severely under a 0.2g earthquake. The vault is already cracked since the flotation incident. We expect that the tank would shift around on the perlite blocks until it struck one of the internal vault support columns. It seems unlikely to us that this movement would not split the tank. Your report alludes to a report, not yet published, which shows that the facility can withstand a 0.2g earthquake. We eagerly await your analysis which was due this Spring.

In the event of a tank leak, it cannot be presumed that the leak would be small simply because leaks at Savannah River have been small. The conditions are not identical. At Savannah River, the space between the vault and the tank is ventilated, allowing the high level waste to dry to a salt cake, and each hole to self-heal. At Nuclear Fuel Services, this space is humid. Were a leak to occur, the supernate could be pumped to tank 8D-1 within a two week time period. But then, what would happen to the remaining sludge in tank 8D-2? As you know, this sludge contains the bulk of the radioactivity in a much smaller volume. We believe that it would heat up, possibly to 400°C, drive off the remaining water and degrade the tank and concrete vault. We have seen no analysis by the NRC staff of the detailed scenario, including decommissioning, for the case of a leaking tank.

We have thought for some time now that this high level waste situation is bordering on the edge of a major catastrophe. Properly based findings concerning the safety of the high level waste facility were not made by the AEC when the

construction permit and license were issued, and are not being made now by the NRC. There is a difference between providing, with words, "added assurance regarding the safety" (your memo of Jan. 23, 1979), and actually providing that safety.

We believe that a proper regulatory body would require NFS to remove and solidify the material from the high level waste tank as soon as possible. Since NFS, the AEC and the State of New York, have set up this potential hazard, the costs to remedy this situation ought to be shared.

If the points raised in this letter concerning the safety of the high level waste situation are without merit, we expect a careful analysis showing why this is so. Otherwise, we expect that your analysis will take these points into account. If the situation is hazardous, we expect you to take immediate action to protect the health and safety of the public.

cc: Lundine
Nowak
Kemp
LaFalce
Ambro

Sincerely,

Marvin Resnikoff
Sierra Club
Box 61, Station G
Buffalo, N.Y. 14213

LETTER OF CONCERN

The U.S. Department of Energy study of West Valley was mandated by the U.S. Congress to present options for the decommissioning and decontaminating of the radioactive waste dump. We are deeply concerned to note that one of the options presented by the Department of Energy in the study released November 16, 1978 is the re-opening of the site in order to receive additional radioactive waste materials from the entire northeast region, and possibly the Mid-West and foreign countries. [Editors note: Since the Letter of Concern was initially circulated in late 1978 and Spring 1979, the plan to re-open the West Valley site is still under consideration. Governor Carey of New York State is still considering re-opening the site for the receipt of BOTH low-level radioactive waste for burial and high-level radioactive waste in the form of spent fuel rods for holding in the spent fuel pool.]

We are opposed to the re-opening of the West Valley site. The re-opening of the site would subject residents of the Western New York region to long-term health and safety risks associated with the transport of radioactive materials through our cities and communities. These communities are in no way prepared for the severe problems that can be associated with spillage of radioactive materials.

We are concerned by the long-term risks associated with the migration of radioactive materials off of the West Valley site and into nearby streams and creeks. We have already had one such leak in 1975 when radioactive materials spilled into nearby Buttermilk Creek which feeds into Cattaraugus Creek. This creek, in turn, dumps into Lake Erie upstream of the drinking water intakes of the City of Buffalo.

We are concerned about the ethical issue of bequeathing to future generations the task of perpetual care of radioactive materials - - for literally thousands and thousands of years. Whether any person has the right to make this kind of decision on behalf of unborn generations is a question of serious concern.

We are concerned about increasing the tax burden of New Yorkers already suffering from the social and economic impacts of rising inflation and unemployment. Bringing in more wastes to the West Valley site will only increase the eventual clean-up bill. A bill which is currently estimated at an enormous $1 billion.

We support local citizens and organizations who feel that residents of New York State should have the opportunity to participate fully in the decision making process as regards the disposition of the West Valley site. It is extremely important that decisions regarding this site not be made behind closed doors of bureaucracies in Washington and be made with full support and involvement of local constituencies and elected bodies.

Some of the signators include: Rev. Amos Acree - University Christian Church, Buffalo/ Rev. Donald Armstrong - Minister of Metropolitan Mission, United Church of Christ, Buffalo/ Rev. A. Joseph Bissonette - St. Brigid's Catholic Church, Buffalo/ Rev. Donald S. Brown, Executive Presbyter, Presbytery of Western New York, Buffalo/ Rev. Elijah J. Echols - First Shiloh Baptist Church, Buffalo/ Rev. Daniel E. Eddy - Area Minister, Western N.Y. Association, Buffalo/ Rabbi Milton Elefant, Rabbinical Council of Syracuse/ Rev. Robert E. Grimm - Executive Director, Buffalo Area Council of Churches, Buffalo/ Rev. Frederick M. Hinton - Episcopal Vicar, Central City, Catholic Diocese of Buffalo, Buffalo/ Rev. Francis Koessel, Emmanuel Lutheran Church, Otto/ Rev. Arnold E. Kromphardt, D.D. - President, Eastern District, Lutheran Church, Buffalo/ Rev. Charles F. Lamb - Minister Northeastern Area,

Disciples of Christ, Buffalo/ Rabbi Theodore S. Levy, Temple Society of Concord, Syracuse/ Rev. Felix D. Lion - Amherst Unitarian-Universalist Church, Williamsville/ Rev. Dr. Ralph W. Loew - Emeritus Holy Trinity Lutheran Church and Director of Religious Programs, Chautauqua Institution, Buffalo/ Rev. Paul Moore - Presbyterian Church, Lewiston/ Rev. James Morrison - Brighton Community (Baptist) Church, Tonawanda/ Rev. Douglas Passage, First Baptist Church, Penn Yan/ Rev. David Persons - Wayside Presbyterian Church, Hamburg/ Rev. Harry Phillips - United Presbyterian Church, N.Y.C./ Rev. Jon Regier - New York State Council on Churches, Syracuse/ Rt. Rev. Harold B. Robinson - Bishop, Episcopal Diocese of Western New York, Buffalo/ Rev. Russell Scheel - St. Paul Lutheran Church, Penn Yan/ Rev. William D. Scott - Executive Minister, American Baptist Churches of the Niagara Frontier, Buffalo/ Rev. Leslie Simonson - Ridgeview United Church of Christ, White Plains/ Very Rev. Elton O. Smith - Dean, St. Paul's Episcopal Cathedral, Buffalo/ Rev. Eugene Turner - Synod of the Northeast, Syracuse/ Rev. Paul P. Walenta - Kenmore Presbyterian Church, Kenmore/ Rev. E. Werner Weinreich - Dean, Niagara Frontier District, Lutheran Church in America, Grace Lutheran Church, North Tonawanda/ Rev. John R. Whiteford - Trinity Episcopal Church, Lancaster/ Rev. Willard A. Williams - Superintendent Buffalo District, United Methodist Church, Snyder/

Please circulate to members of your religious community.

Signatures	Name of Church	Address

Please return to Mina Hamilton, Sierra Club, Station G, Box 64, Buffalo, N.Y. 14213

SIERRA CLUB

radioactive waste campaign
fact sheet

salt will not work

salt is the wrong geologic medium for a waste repository

The United States Department of Energy has proposed that radioactive wastes be placed 1000 feet below the ground in a salt formation in the Finger Lakes region of New York State. The underground area of the waste repository would be 2,000 acres, and would hold 66,000 to 106,000 tons of radioactive waste. Spent fuel from operating U.S. and some foreign nuclear reactors would be trucked to and through New York State to be buried in upstate New York. The amount of radioactivity is truly prodigious (assuming a five-year decay period, 11 to 18 billion curies of Cs and Sr), corresponding to the cancer potential of trillions of bone, muscle and thyroid cancers and genetic effects to future generations. These wastes will stay toxic and pose a threat to New York State for millions of years.

One measure of the toxicity of this material is the amount of water needed to dilute radioactive wastes to what the Federal agencies consider a safe level. (In fact, there is no safe level of radioactivity; each amount of radioactivity increases the chances that a cancer or genetic effect will occur.) The amount of dilution water required is almost double that of the fresh water in global storage in lakes, rivers, ground waters and glaciers, or about 4% of the oceanic volume (USGS, p. 2). It follows that mistakes must not happen. The geologic medium must be perfect.

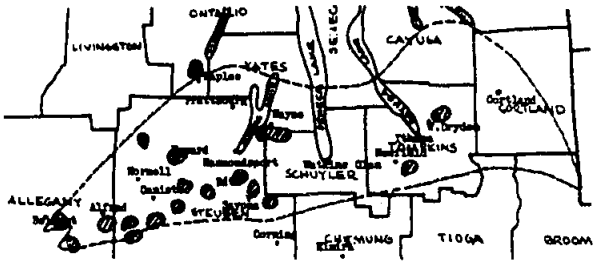
salt will not work

Salt should not be considered the preferred medium. Salt is extremely water soluble, is highly corrosive, and does not hold the radionuclides effectively. When salt is heated, water is attracted to the heat sources, such as canisters of radioactive waste. Water moving through the salt becomes brine. When this brine reaches the radioactive waste materials, the glass or ceramic waste forms will break down and the radioactive materials will leach out. It has only recently been recognized that this leaching can occur in months, rather than thousands of years, as had been previously assumed.

salt and valuable mineral deposits

1. Salt frequently occurs near valuable mineral deposits, e.g. potash near the WIPP facility in southwestern New Mexico, natural gas in the Louisiana Salt Domes and the Finger Lakes region of upstate New York. Extensive drilling has taken place in these formations in the past; there are numerous uncapped and recorded wells in upstate New York. All drill holes are an avenue for both surface and underground water to enter the salt formation (USGS, p. 5). Even if all the drill holes could be located, which is problematical, the technology for plugging these holes to prevent water intrusion over the time periods required, millions of years, is not available.

Further, drilling is likely to occur in the future in any region where there are resources perceived as economically valuable. Location of a repository in such a geological medium would be contrary to the proposed EPA criteria on radio-active waste which state that "institutional controls should not be relied on for greater than 100 years." Without institutional controls, such as fences and guards, drilling would occur near any salt formation in the future just as it has in the past.



Possible locations for test drilling within the Salina salt formation in New York State (Map produced by Stone and Webster under contract with DOE).

Shaded areas represent potential drill sites.

drill holes and water in-migration

2. If water were to enter a salt repository (through shafts, bore holes, or other means), the integrity of the salt formation would be undermined. Salt has a high solubility compared to other materials such as granite. Further, scientists have a limited ability to predict future changes in groundwater flow regimes, climate or possible accidental flooding. For example, according to the EPA (p. 18), in a proposed salt repository in Lyons, Kansas, "considerable volumes of water migrated in an unpredicted manner...as a consequence of dissolution of salt by ground water seeping into the repository. Seepage was along an abandoned drill hole that, like most, had not been cased and plugged. This puts a premium on picking a site where precise locations of all abandoned drill holes or old underground workings are known."

Until it is known how to plug such drill holes, the act of exploratory drilling itself, in order to determine the extent of the salt formation, may be sufficient to render a repository useless for high level waste burial.

3. In addition to in-migration of water, salt crystals themselves contain significant amounts of water as brine pockets and along intergranular boundaries. According to the EPA (p. 8), the contained water may be in excess of 1% of the salt. As the USGS (p. 5) has indicated, water may be present in "brine pockets such as those that were found (unexpectedly) in one salt deposit."

hot brine moves toward hot waste

4. The temperature within the repository may reach 300°C. Water, in the form of liquid and vapor is drawn towards the heat source in a salt repository, as opposed to other geologic medium where water moves away from the heat source. This hot brine solution is acidic and very corrosive. According to the EPA (p. 7), the canisters would be breached in a decade or less. Under these conditions, only the geologic medium can be relied on to effect any significant retardation for times longer than a decade. Surprisingly, no corrosion tests have yet been undertaken of containers exposed for decades to salt solutions, at temperatures up to 300°C, (EPA, p. 20).

salt is corrosive

5. Two high level waste forms would be placed within a geologic repository, spent fuel or the high level waste from reprocessing. If spent fuel is reprocessed, the favored waste form would be glass. In the presence of steam, salt and acid, the glass would "deteriorate rather completely...in a matter of days." (NAS, p. 116) The spent fuel may be disposed directly after placing them in a container. Little R&D has been devoted to spent fuel within a salt formation, under the temperature and pressure conditions which would exist within a salt repository. The exact chemical composition of spent fuel, and the type of container for the spent fuel have not yet been defined. Studies of leachability and interaction between spent fuel and salt have not been carried out (NAS, p. 161).

Rock Salt Deposits in the United States (After Pierce and Rich, USGS. Bull. 1148)

salt will not "fix" radioactivity

6. Once the containment is breached, and the radioactive materials leach into the salt formation, the salt itself will not "fix" the radionuclides. This is a major disadvantage of salt. According to USGS (p. 5), "the capacity of salt to 'fix' or absorb the nuclides from the waste in insoluble form is apparently low." This is to be contrasted with shale and other formations where the waste material attaches itself to the geologic medium. (These media, however, have not been studied sufficiently.)

repository will weaken

7. The presence of brine and increased temperatures would undermine the structural integrity of the salt repository. According to the USGS (p. 6), "Increased temperatures in salt would further decrease mechanical strength of the salt-brine mixture and would increase the creep rate of dry salt."

difficult to retrieve wastes

8. The movement of salt under increased temperatures means that it would be almost impossible to keep the repository open for extended periods of time. According to the EPA (p. 3), it is unlikely that spent fuel rods could be safely recovered from a salt repository "more than a few tens of years after emplacement and backfilling, for by then the salt would have completely sealed the openings." Thus salt is not the medium if retrievability is desired.

hot wastes will sink

9. As the salt is heated and becomes more plastic, it is expected that the canisters would begin to sink (USGS, P. 17). Simultaneously, the canisters will corrode and leach. As the canisters move downward, the canisters would also move laterally towards the center of the repository where the temperatures are greater compared to the outer extent of the repository. As the canisters moved towards each other, the center would become still hotter and the salt more plastic. As the salt becomes more plastic, the structural integrity of the repository would be further reduced. Most salt formations overlie permeable limestone formations. The canisters could thereby move downward to the limestone formation and enter the ground water movement.

radioactivity may enter groundwater

10. The wastes could be moved to the biosphere either by some process that transports the wastes to the biosphere such as water movement, or the wastes could be directly exposed to the biosphere through some geologic process such as earth movement (earthquake), or erosion. Another process may be glaciation. Glaciers scoured upstate New York and produced the Finger Lakes about 10,000 years ago, scratching a

depth of 2000 feet in places. Since upstate New York is subject to earthquakes, and in the longer period, to glaciers, containment cannot be guaranteed over the hazardous lifetime of the radioactive materials, which extends to millions of years.

new york state is populous area with large rainfall

11. Upstate New York is a heavily populated region of the country (55% of the country's population is within 400 miles of Steuben County). Because of its population, this region fails EPA criteria for radioactive waste, which states that "locations for radioactive waste disposal should be chosen so as to avoid adverse environmental and human health impacts". Obviously, placing radioactive wastes in a populous area does not avoid adverse human health impacts, but encourages them.

Further, because of the large annual rainfall, this region of the country has plentiful ground water which could contact the radioactive wastes.

transportation is risky

12. Transportation of radioactive wastes into the populous northeast from all parts of the U.S. and foreign countries maximizes the risk to the population. During transportation, the wastes are closer to larger numbers of people and "risks of accidental dispersal of radioactive material are greater...than during either processing or emplacement" (NAS, p. 30).

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