Appendix B: Public Comment Summary

READER'S GUIDE

This Public Comment Summary Appendix of the *Final Environmental Assessment for the Acceptance and Disposition of Spent Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany* (Final EA) consists of three sections:

- **Section B.1 – Overview of the Public Comment Process**

  This section describes the public comment process for the *Draft Environmental Assessment for the Acceptance and Disposition of Spent Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic Of Germany* (Draft EA); the format used in the public meeting on the Draft EA; the organization of this appendix; how to use the document; and the changes made by the U.S. Department of Energy (DOE) to the Final EA in response to the public comments and recent developments that occurred since publication of the Draft EA.

- **Section B.2 – Comment Response Topics**

  This section presents DOE's responses to the public comments received on the Draft EA. Similar comments have been collected into topic areas for which a single response is provided.

- **Section B.3 – Public Comments**

  This section provides an alphabetical list of the commentors by last name (Table B-1); as well as a list of commentors by name, a numerical identifier for each comment, and the corresponding section or sections of this appendix where DOE's response to each comment can be found (Table B-2). This section also includes the comment documents received by DOE on the Draft EA, with associated comments identified with unique identifying numbers (comment number). These comment numbers provide the mechanism to track the corresponding DOE response to each comment. Comment documents received by fax, email, U.S. mail and as public meeting hand-ins are identified by a "PC-" comment number prefix. Oral statements presented at the public meeting on the Draft EA are identified by a "PCT-" comment number prefix.

To Find a Specific Comment and DOE Response

Refer to Table B-1, Alphabetical List of Commentors, at the beginning of Section B.3.1. This table is organized alphabetically by commentor name and shows the corresponding page number(s) where commentors can find their comment document(s). Comments within comment documents are identified by a unique comment number, with which the comment can be tracked to the applicable response in Section B.2. Table B-2 provides a list of comment numbers and the corresponding response numbers within Section B.2 of this appendix.

DOE has made a good faith effort to interpret the spelling of names that were either hand-written on comment forms and letters, or transcribed from oral statements made during the public meeting.

Table of Contents – Appendix B

B.1: OVERVIEW OF THE PUBLIC COMMENT PROCESS

This section of this Public Comment Summary describes the public comment process for the *Draft Environmental Assessment for the Acceptance and Disposition of Spent Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany* (Draft EA), as well as the procedures used to respond to those comments.

Section B.1.1 describes the public comment process and the means through which comments on the Draft EA were received. It also identifies the comment period and the location and date of the public meeting on the Draft EA. Section B.1.2 addresses the public meeting format. Section B.1.3 addresses changes made to the *Final Environmental Assessment for the Acceptance and Disposition of Spent Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany* (Final EA) that resulted from the public comment process.

Comment Document – Written version of comments submitted by a commentor (e.g., a letter, postcard, e- mail, or transcript of oral comments at a public meeting or in a telephone message). A comment document can contain any number of comments.

Comment – A distinct statement or question regarding the draft EA.

B.1.1 PUBLIC COMMENT PROCESS

DOE prepared the Draft EA in accordance with the National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality (CEQ) and DOE NEPA regulations (Title 40 of the *Code of Federal Regulations* [CFR] Parts 1500 – 1508 and 10 CFR Part 1021, respectively).

On January 25, 2016, DOE published a notice in the *Federal Register* (FR), announcing the availability of the Draft EA (81 FR 4023). A 45-day comment period, from January 25 to March 11, 2016, was announced in notices published in the Aiken Standard and Augusta Chronicle, and the Savannah River Site Environmental Bulletin (http://sro.srs.gov/docs/GermanProject/bulletin March.pdf), on DOE webpages, and through email notifications sent to stakeholders to provide time for interested parties to review and comment on the Draft EA. In response to public request, the public comment period was extended to March 25, 2016.

DOE actively solicited public comments on the Draft EA and considered those comments in preparing a Final EA. DOE distributed copies of the Draft EA to those Federal agencies, state and local governmental entities, American Indian tribal governments, and members of the public most likely to be interested in or affected by the EA alternatives, as well as those organizations and individuals who requested a copy. Copies also were made available on the Internet and in regional DOE public document reading rooms and public libraries.

During the public comment period, DOE held a public meeting to provide interested members of the public with opportunities to learn more about the content of the Draft EA from exhibits, factsheets, and other materials; to hear DOE representatives present the results of the Draft EA analyses; to ask questions; and to provide oral or written comments. The public meeting was held on February 4, 2016, at the North Augusta Community Center, 495 Brookside Drive, North Augusta, South Carolina.

In addition, Federal agencies, state and local governmental entities, American Indian tribal governments, and members of the public were encouraged to submit comments via the U.S. mail, email, and a toll-free fax line.

Upon receipt, comment documents were assigned a document number for tracking during the comment response process. The transcript from the public meeting also was assigned a document number. Ninety comment documents containing 245 comments were received during the public comment period. DOE considered all comments received in preparing the Final EA.

Each comment document was reviewed to identify individual comments, which were numbered sequentially within each document. The combination of comment document number and individual comment number provides a unique identifier for each comment (e.g., comment number 14–4 corresponds to comment document 14, comment number 4). Comments that DOE determined to be outside the scope of this Final EA are acknowledged as such in this appendix. The remaining comments were then reviewed and responded to by DOE.

Figure B–1 illustrates the process used for collecting, tracking, and responding to the comments. Section B.2 presents DOE's responses to the comments. Section B.3 presents the delineated comment documents, including copies of campaign letters[1], and the public meeting transcript.

[1] A letter was considered to be part of a campaign if multiple letters were received with the same text in the body of the letter. In this case, eleven comment documents were identified as part of a campaign, several of which included petitions. Only the initial received form letter was delineated. Subsequently received form letters were assigned comment document numbers, and are presented in Section B.3 of this appendix, although these subsequently received letters were not delineated.

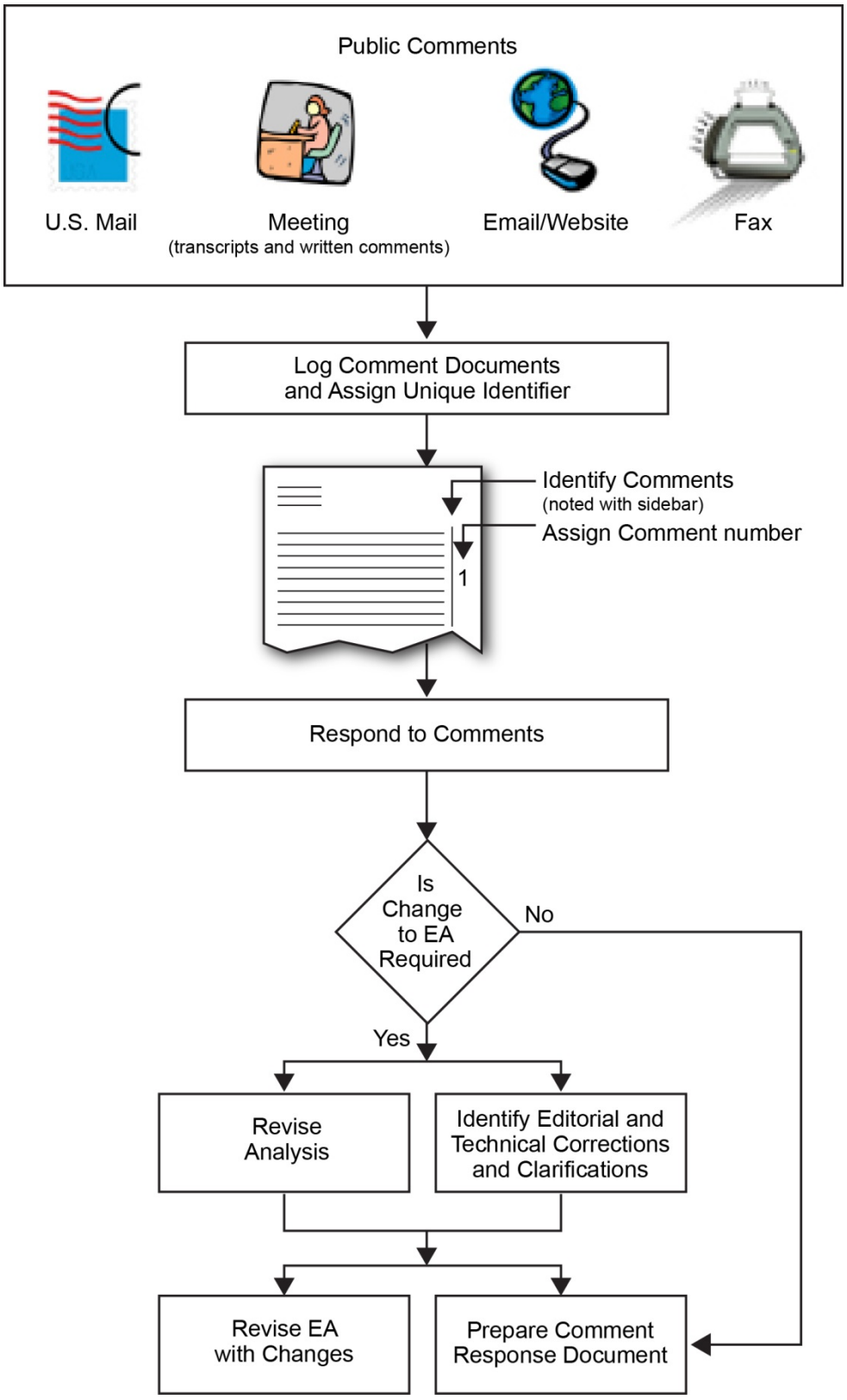

Figure B-1 Comment Response Process

Comments received on the Draft EA provided the basis for revising and finalizing the EA. The comments assisted in determining whether the alternatives and analyses presented in the Draft EA should be modified or augmented; whether information presented in the Draft EA needed to be corrected or updated; and whether additional clarification was necessary to facilitate better understanding of certain issues. Change bars are presented alongside the text in the Final EA to indicate where substantive changes were made and where text was added or deleted. Editorial changes in the Final EA are not marked.

B.1.2 PUBLIC MEETING FORMAT

The public meeting was organized to encourage public comments on the Draft EA and to provide members of the public with information about the NEPA process and the proposed action. A court reporter was present to record and prepare a transcript of the comments spoken publicly at the meeting. This transcript is included in Section B.3.3 of this appendix. Written comments were also collected at the meeting. Comment forms were available at the meeting for anyone wishing to use them.

At the public meeting, poster displays were staffed by DOE and DOE contractor subject matter experts. Members of the public were invited to view the displays and ask questions of the subject matter experts before the formal meeting was conducted. The displays addressed the NEPA process and the facilities, alternatives, and impacts evaluated in the Draft EA.

The DOE-SRS Deputy Site Manager opened the meeting with welcoming remarks. The DOE NEPA Document Manager then provided an overview of the Draft EA and the NEPA process. Following DOE's presentation, the meeting facilitator opened the public comment session. To ensure that everyone interested in speaking had the opportunity, a time limit was established based on the number of people who had indicated a desire to speak. As part of the comment response process, the transcripts and written comments collected at the meeting were reviewed for comments on the Draft EA, as described in Section B.1.1 of this appendix.

B.1.3 CHANGES FROM THE DRAFT EA

In preparing this Final EA, DOE made revisions to the Draft EA in response to comments received from other Federal agencies, state and local government entities, American Indian tribes, and the public. Vertical change bars appear alongside such changes in this Final EA. Editorial changes are not marked. Chapter 1, Section 1.6, of the Final EA summarizes the more important changes that were made.

B.2: COMMENT RESPONSE TOPICS

The following pages present comments received on the Draft EA. These comments are aggregated by topic, followed by a response. Each delineated comment is associated with a summary comment and response.

B.2.1 NEPA PROCESS

Commentors provided their opinions about the appropriate level of NEPA documentation for the Proposed Action. Other commentors took issue with or asked questions about public involvement for this project. Finally, commentors were concerned that additional studies are

needed before an informed decision can be made. Responses for these comments follow in this section.

B.2.1.1 LEVEL OF NEPA DOCUMENTATION

Comment: Some commentors were of the opinion that an EA is not the appropriate level of NEPA documentation and that an environmental impact statement (EIS) should be prepared. Another commentor was of the opinion that the EA is appropriate to support the proposed action. A commentor was concerned that categorically excluding research and development activities may be a form of segmentation under NEPA regulations. Two commentors stated that an amended EA was required based on an assertion that not all actions were addressed in the draft EA. Finally, a commentor was concerned that additional NEPA documentation may be needed for disposal of any low-level radioactive waste (LLW) from the proposed action at the Nevada National Security Site (NNSS).

Response: DOE has prepared the EA in accordance with CEQ regulations and DOE NEPA implementing procedures at 40 CFR Parts 1500 through 1508 and 10 CFR Part 1021, respectively. This EA analyzes a range of alternatives for processing and disposition of the spent nuclear fuel (SNF) from the Federal Republic of Germany (Germany). Sufficient information exists to enable adequate evaluation and comparison of the environmental impacts of the alternatives, and the range of alternatives appropriately bounds the impacts of these activities. As the analyses presented in Chapter 4 of this EA demonstrate, the potential environmental impacts associated with the transport, storage and processing of SNF from Germany using any of the proposed alternatives, options, or technologies evaluated in this EA entail minor impacts and low risks.

With respect to the concern about segmentation, DOE's categorical exclusions allow for small-scale research and development projects and small-scale pilot projects to verify a concept prior to proposing a larger project and performing NEPA analysis for the proposed project. Appendices A and B to DOE's NEPA Implementing Procedures provide categorical exclusions, categories of actions for which neither an EA nor an EIS is normally required. DOE initially evaluated research activities associated with development of this technology under Categorical Exclusion B3.6 (small-scale research and development, laboratory operations, and pilot projects) and B1.30 (transfer actions) and documented that evaluation in a series of Categorical Exclusion Determinations prepared by the Savannah River Site (SRS) NEPA Compliance Officer (DOE 2013a, 2013b, 2014, 2015a, 2015b, 2017). These research activities have also been considered in this EA in conjunction with the proposed processing activities (see, in particular, Section 4.1 of this EA).

DOE has identified and analyzed all connected actions related to disposition of SNF from Germany. Two commentors identified "other missions" and graphite "burning" as further issues that were not addressed in the EA, and require an amended EA. The technical aspects of these comments are discussed in Sections B.2.9 and B.2.10, respectively. Additionally, DOE believes that no additional NEPA analysis is required for disposal of LLW addressed in this EA at NNSS. For any changes that result as technology maturation proceeds or as new actions not known at this time are identified, DOE would prepare any required NEPA documentation at that time.

B.2.1.2 PUBLIC INVOLVEMENT

Comment: A commentor suggested that DOE ensure its strategy and plans are subject to public involvement and acceptance. A commentor was concerned that they were not notified of this project and asked if there is a protocol for alerting the public about projects SRS is considering and where they might obtain information on upcoming projects. Another commentor was concerned about how scoping comments were considered by DOE in developing the Draft EA, and that DOE had not provided adequate information about persons providing scoping comments. A commentor asked how public comments on the Draft EA would be considered by DOE in making a decision. A commentor was concerned about the availability of reference documents for the Draft EA. Finally, a commentor invited DOE to share information at an environmental justice outreach meeting.

Response: DOE provides numerous methods for the public to learn about its proposed projects and participate in DOE's decision making processes. One method for a member of the public to receive information on the activities at SRS is to attend the Citizen Advisory Board meetings. These meetings are publicized in the Federal Register as well as local newspapers. In addition, information can be obtained at http://cab.srs.gov/srs-cab.html. DOE also posts the status and schedules for SRS NEPA documents at http://www.srs.gov/general/pubs/envbul/nepa1.htm.

Public involvement opportunities for scoping on the Draft EA were described in Section 1.5 of the Draft EA. DOE invited Federal agencies, state and local governments, Native American tribes, industry, other organizations, and members of the public to submit comments on the proposed scope of the EA during a public scoping period that closed on July 21, 2014. A public Scoping Meeting was held on June 24, 2014, at the North Augusta Community Center in North Augusta, South Carolina. Approximately 227 public comment documents, including those in two letter campaigns, were received during the scoping period. Section 1.5.1 of the Draft EA provides a summary of those comments. All scoping comments were considered in developing the Draft EA, and in particular resulted in DOE adding the L-Area Alternative as an alternative to processing in H-Canyon and, as discussed in Section 2.3.6 of this EA, eliminating an option (blending down highly enriched uranium (HEU) to low-enriched uranium (LEU) for reuse as reactor fuel) included in the Notice of Intent.

Section 1.5 of this EA explains how the scoping comments were considered in preparing the Draft EA. It should be noted that NEPA regulations do not require public scoping for an EA. As is normal practice, neither the names of the commentors nor their affiliations were included in the Draft EA.

As described in this EA, DOE solicited public comments on the Draft EA and considered those comments in preparing the Final EA. A 45-day comment period, from January 25 to March 11, 2016, was announced to provide time for interested parties to review and comment on the Draft EA. In response to public request, the public comment period was extended to March 25, 2016. During the public comment period, DOE held a meeting to receive public comments on the Draft EA at the North Augusta Community Center. All comments received on the Draft EA were considered in developing the Final EA. Section B.3.1 of this appendix provides a list of commentors including their agency affiliations. All submitted comment documents (e.g., letters,

emails, faxes and meeting hand-ins) are presented in Section B.3.2. Petitions include the names of all persons signing the petition. It is not DOE practice to provide information on commentors beyond basic identifying information, including, when appropriate, affiliations.

As described in the Notice of Availability for the Draft EA (81 FR 4023), the Draft EA is available on the DOE NEPA Web site at http://nepa.energy.gov/ and on the SRS website at http://www.srs.gov/general/pubs/envbul/nepa1.htm. All publicly- releasable references have been made available on the SRS website at http://www.srs.gov/sro/germanheuproj.html to support public comment. In some cases, copies of references were provided by disk upon request (e.g., people with slow or no internet connectivity).

The DOE-SR Environmental Justice Coordinator will add a presentation on this EA and the project to the next meeting agenda following the issuance of the Final EA.

B.2.1.3 INFORMED DECISION

Comment: Commentors were concerned that additional studies are needed before an informed decision can be made to move forward with the project to receive, store, and process for disposition the SNF from Germany.

Response: DOE would continue to conduct research and development and maturation studies, paid for by Germany, to further refine the carbon digestion process and the engineering and safety requirements for implementation of the action alternatives, including modification of existing facilities and installation of new capabilities that may be required (see Section B.2.5, "Processing Technologies," for more information). As these studies proceed, DOE will provide updates at the Citizens Advisory Board meetings about the progress of technology development and any decisions on acceptance of the material.

This EA evaluates the potential environmental impacts of acceptance and disposition of SNF containing U.S.-origin HEU from Germany. No decision to receive this SNF would be made until the technology maturation work is complete. In this regard, Figures 2-5, 2-6, and 2-8 of this EA have been revised. As stated in the Statement of Intent, any decision to proceed with the project will depend upon the ability to comply with all applicable requirements of U.S. law and DOE requirements, and resolution of any technical, financial, and legal issues that may be identified.

B.2.2 PURPOSE AND NEED

Comment: Many commentors expressed their opposition to bringing the SNF from Germany to the United States in general, or South Carolina specifically, for processing and disposition. Some commentors provided reasons for their opposition, indicating that Germany is able and capable of safely managing the SNF, the SNF is not of U.S. origin, the risks of transporting and processing the SNF outweigh the benefit or are just not acceptable, and Germany (or any other country) should be responsible for taking care of its own waste. One commentor suggested the EA should evaluate refusal of the import of this SNF until existing stockpiles have been reduced by the same amount (no net increase). Some commentors are of the understanding that DOE is proposing this activity as a nuclear nonproliferation initiative and either support the effort on that basis or are opposed to the Proposed Action being considered a nonproliferation initiative. A

commentor was concerned that processing would be against nonproliferation goals and that a nonproliferation assessment should be performed. A commentor questioned DOE Headquarters' role on this project.

Other commentors expressed support for the proposal to return this SNF containing U.S.-origin HEU as the responsibility of the U.S. under the Atoms for Peace Program and/or the U.S. objective to reduce, and eventually eliminate, HEU from civil commerce. Many of those in favor also cited Savannah River Site facilities, operational capabilities, and staff expertise.

Response: As discussed in Sections 1.2 and 1.4 of this EA, DOE proposes to receive, store, process, and dispose of certain SNF from Germany that contains U.S.-origin HEU that was provided to Germany between 1965 and 1988 under the Atoms for Peace program. This U.S.-origin HEU was made into fuel that was irradiated for research and development purposes in experimental and demonstration reactors in Germany (see Section B.2.3, "Reactors Operated for Research and Development Purposes"). Returning this material to the U.S. would meet DOE's purpose and need stated in Section 1.3 of this EA: to support the U.S. policy objective to reduce, and eventually eliminate, HEU from civil commerce; and to further the U.S. HEU minimization objective by returning U.S.-origin HEU from Germany to the United States for safe storage and disposition. Repatriating the SNF containing U.S.-origin HEU from Germany is consistent with U.S. nonproliferation policy. If the technology is successful, the HEU, thorium, and fission products would be processed through the SRS HLW system, thus putting most of these materials in a demonstrated waste form for a repository (i.e., HLW glass canisters).

This would not be a nonproliferation action and a nonproliferation assessment[2] would not be required for this project. The National Nuclear Security Administration (NNSA) in a memorandum dated August 1, 2013 (DOE/NNSA 2013), documenting the results of a technical evaluation of the SNF from Germany, concluded that the SNF is not a proliferation concern because: it is not attractive to sub-state/terrorist entities in its current state and is stored in a secure environment in a politically stable country.

In addition, processing this SNF from Germany at SRS would not create a greater security or nonproliferation concern than that posed by the existing SRS SNF inventory. See Section B.2.6.3,"Savannah River Site – Security," for more information.

The Atoms for Peace program was first announced in a speech by President Eisenhower to the United Nations in 1953 (Eisenhower 1953). The Atoms for Peace program provided the basis for the lease, or sale, of moderate quantities of fissionable material for peacetime reactors to other nations (NSC 1954). The Atoms for Peace program was further described in a National Security Council (NSC) Statement of Policy on Peaceful Uses of Atomic Energy (NSC 5431/1) (NSC 1954). In this policy statement, the NSC advanced a program to make available moderate quantities of fissionable material for peacetime reactors to other nations. The NSC specifically

[2] A nonproliferation impact assessment examines the alternatives (same alternatives examined to determine environmental impacts) based on their potential impacts on the risks of nuclear proliferation and the ability to advance U.S. nonproliferation goals.

recognized that the sharing of this material was a prerequisite to the development of a foreign "nation's capability to utilize nuclear power when it becomes economically attractive."

Section 1.2 of this EA was revised to describe the program under which the U.S.-origin HEU was provided to Germany, the Atoms for Peace Program.

The DOE Headquarters role in general is to provide direction and guidance to the sites. As for this project, DOE Headquarters has the lead for negotiations with the German Ministry and will make the final determination whether to proceed with the project. DOE will not make a final decision until the technology maturation is completed and following resolution of any technical, financial, and legal issues. DOE Headquarters first received the request from the German Ministry and asked DOE-EM at SRS to look into the request. DOE Headquarters has been an integral team member on this project with the site and its contractor.

B.2.3 REACTORS OPERATED FOR RESEARCH AND DEVELOPMENT PURPOSES

Comment: Commentors were concerned that the SNF from Germany was used in commercial nuclear power reactors and therefore should not or cannot legally be returned to the United States.

Response: As noted in the Statement of Intent, the SNF from Germany containing U.S.-origin HEU has been determined to have been irradiated in Germany for research and development purposes. Further, in a letter dated May 8, 2015 (Kraus 2015), the German Ministry for Education and Research, citing the Report of the Federal Government of Germany for the Fifth Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management submitted to the depository of the Joint Convention in October 2014 (BMUB 2014), stated that the Arbeitsgemeinschaft Versuchsreaktor (AVR) and the Thorium High Temperature Reactor-300 (THTR) were operated as experimental and demonstration reactors for the purpose of demonstrating the viability of the graphite pebble bed reactor technology, and that accordingly, these reactors are not classified as commercial nuclear reactors. In addition, U.S. law subjects proposed imports of foreign SNF irradiated in power reactors to certain statutory requirements. These requirements do not apply to imports of SNF irradiated in foreign research reactors. If a decision is made to accept fuel, DOE's acceptance of the fuel will be in accordance with all applicable legal requirements.

B.2.4 DESCRIPTION OF THE SPENT NUCLEAR FUEL

Comment: Commentors requested more information on the composition of the SNF, including the amount of U.S.-origin HEU in the fuel, and the amount of HEU, LEU, and thorium remaining in the fuel after irradiation and decay.

Response: Section 2.1.2 of this EA describes the composition of the SNF from Germany. The SNF is in the form of small graphite (carbon) spheres, referred to as pebbles. As depicted in Figure 2-2, each pebble is approximately 60 millimeters (2.4 inches) in diameter and is composed of approximately 200 grams of graphite surrounding the 0.5 millimeter diameter fuel kernels. Each sphere contains from 10,000 to 35,000 fuel kernels, which comprise about

2 percent of the volume of the fuel pebbles. The nuclear material is contained only in the fuel kernels.

As explained in Section 2.1.2 of this EA, there are approximately one million pebbles currently in storage in 455 CASTOR casks. The pebbles contain varying quantities of uranium and thorium, with uranium-235 enrichments up to 81 percent. Prior to irradiation, the fuel contained approximately 900 kilograms (1,980 pounds) of HEU provided by the United States. As a result of irradiation and decay, the SNF also contains actinides, fission products, and other radioactive isotopes. As indicated in Section 4.2.1.3 of this EA, a typical CASTOR cask with SNF from Germany is expected to contain about 4,500 curies of radionuclides (SRNL 2014b).

If one were to average the fissile content of all the AVR pebbles, it would be about 15 percent of the total mass of the spheres, with over 80 percent of the AVR pebbles containing HEU. Some LEU fuel pebbles are mixed in with the HEU fuel pebbles (~56,000 pebbles out of ~290,000 AVR pebbles are LEU). Because the HEU and LEU pebbles are intermixed and indistinguishable from one another, and the process can handle both HEU and LEU pebbles in the same manner, separation of the HEU from the LEU pebbles is not reasonable. All of the approximately 630,000 THTR fuel pebbles contain HEU. Therefore, only approximately 6 percent of all pebbles (both AVR and THTR) are LEU.

B.2.5 PROCESSING TECHNOLOGIES

A number of comments were submitted related to the technologies being considered for processing the SNF from Germany including comments related to Technology Risk, Waste Generation, Supporting Technical Report, and Thorium Sludge. These topics are discussed below.

B.2.5.1 TECHNOLOGY RISK

Comment: Commentors were concerned that the technologies proposed to be used for processing of the SNF are not proven technologies and therefore there is a high risk that the program may fail, possibly resulting in long-term storage of the received casks of SNF. A commentor was concerned that a portion of the SNF from Germany was damaged, and could affect processing. Another commentor was concerned that expected emissions of carbon-14 (C-14) from the carbon digestion process would be much higher than from commercial light-water reactors or from the Sellafield reprocessing plant.

Response: As described in Section 1.2 of this EA, DOE is conducting studies and reviews required to determine whether to proceed with acceptance of the SNF for processing and disposition, including preparation of this EA and certain technical and engineering work. Development efforts to date have demonstrated the feasibility of a salt digestion technology and vapor-digestion technology, extended the technology to the concurrent digestion of multiple unirradiated pebbles, and reached the operation of an engineering-scale (one-fifteenth scale) system. The next steps include a scale-up maturation process, a development program to address technical considerations related to the processing of the SNF from Germany. The maturation approach reviews the progress of development efforts to date, identifies technology needs and risks, prioritizes a plan for addressing those technology needs while mitigating risks, and

considers available technology to accelerate technology development and deployment. Future development activities to advance the technology include remote opening and handling of the CASTOR casks, design of a fully-integrated prototypical digestion system, operation of prototypical equipment in a remote-handle configuration, and obtaining critical process data using irradiated fuel kernels and individual pebbles. The maturation approach will also address essential safety, security, and facility interface issues which include facility permitting, waste disposal, and final fuel disposition.

The research being developed only addresses removal of the graphite from the fuel kernels (i.e., carbon digestion). Proven technologies for processing the fuel kernels are currently available at H-Canyon at SRS. DOE will not enter into an agreement with Germany to accept the SNF until the carbon digestion technologies have been demonstrated capable of performing at full scale operation. As these studies proceed, DOE will provide updates at the Citizens Advisory Board meetings about the progress of technology development and any decisions on acceptance of the material.

Although the period for storage of the casks could be longer than planned by DOE, the risk of extended storage would be minimized by DOE's intent to defer an agreement to accept the SNF until the carbon digestion technologies had been demonstrated to be capable of performing at full scale. A demonstration of full-scale performance would depend on the results of the technology maturation program discussed above. Acceptance would also be dependent on a determination at the end of the technology determination process on the continued availability of H-Canyon to process the SNF as discussed in Section B.2.6.1. If processing operations were to be delayed for a period of time, there are two possible considerations. Shipments of SNF from Germany could be delayed to minimize the number of casks in storage pending resumption of operations. Alternatively, due to the robust character of the CASTOR casks, additional storage time could be safely recommended.

Carbon digestion processing would not be adversely affected by the damaged condition of some of the AVR pebbles. Both the molten salt and vapor digestion processes evaluated in this EA can handle the material, regardless of condition. Processing the damaged fuel would not generate additional waste. This is discussed in Section 2.1.3.3 of this EA.

DOE Order 458.1, *Radiation Protection of the Public and the Environment* (DOE 2011), establishes 100 millirem (1 milliSievert) as the annual dose limit to a member of the public from all pathways and 10 millirem in a year from airborne pathways. The annual airborne release guides are further administratively limited for as low as reasonably achievable (ALARA) considerations to less than 0.2 millirem/year at SRS. The expected average annual release of C-14 from the proposed project would be a small fraction of the ALARA guide administrative limit and within the SRS overall-site regulatory limit. Available technology for removal of radioactive gases from airborne emissions includes filtration and scrubbers, and are proven to be effective to meet regulatory limits. Further removal and sequestration of C-14 is not feasible. Operation of a commercial light-water reactor or the Sellafield Plant located in England, would be expected to release less C-14 because graphite (carbon) based fuels are not used at these facilities.

B.2.5.2 WASTE GENERATION

Comment: Commentors were concerned about the amount of waste generated by the various alternatives and options for processing and disposition of the SNF from Germany, including differences in waste generation for the molten salt digestion and vapor digestion options for carbon digestion, waste generated from down-blending, disposition of the CASTOR casks and inner liners, and secondary waste generation.

Response: The quantities and proposed disposition of the different kinds of wastes that would be generated under all evaluated alternatives and options are addressed in Section 4.2.3.4 of this EA and summarized in Table 4-23. DOE does not expect that secondary waste would be generated above that evaluated in the EA because conservative analyses have been used for evaluation purposes.

The vapor digestion process for the bulk pebbles would result in much less waste than molten salt digestion since much less salt is used in the process. Section 2.1.3.3.2 of this EA states the "quantity of salt used for digestion of the residual carbon on the kernels would be much smaller than that used in the molten salt digestion process." The amount of waste from either of the carbon digestion processes evaluated in this EA (Table 4-23) is bounding because it is based on the molten salt digestion process. Downblended uranium/thorium waste would be generated under two options under the H-Area Alternative (LEU Waste and LEU/Thorium Waste Options) by mixing the uranium and/or thorium with depleted uranium and incorporating the mixture into a grouted waste form (see Sections 2.1.4.3.2 and 2.1.4.3.3 of this EA). As reported in these sections, the estimated waste volumes are 3,600 cubic feet of grouted LEU LLW and 10,100 cubic feet of grouted LEU/thorium LLW.

As described in Section 2.1.6 of this EA, DOE does not expect that reuse of the inner canisters would be feasible, because they would have been cut open to obtain access to the SNF pebbles. The canisters would be disposed of as low-level radioactive waste, either nested inside the CASTOR casks (if the CASTOR casks are not used to dispose of a generated waste form) or separate from the casks, depending on the alternative and option considered. Under the H-Area Alternative, LEU and LEU/thorium options, the CASTOR casks would be used as containers for disposal of the grouted LLW waste form. Under the H-Area Vitrification option or L-Area Alternative, the empty canisters would be placed into the empty CASTOR casks for disposal. Should DOE identify an alternate use for the CASTOR casks such as reuse as shipping containers for other materials, the total volume of the low-level radioactive waste generated under the evaluated alternatives and options would be reduced accordingly.

B.2.5.3 SUPPORTING TECHNICAL REPORT

Comment: Comments were provided on three Savannah River National Laboratory (SRNL) reports used as a reference in this EA. Nearly all comments were on *Feasibility and Alternatives for Receipt, Storage, and Processing of HTGR (High Temperature Gas-Cooled Reactor) Pebble Fuel at SRS* (*F&A Report*) (SRNL 2014a), with a few comments provided on *Scale-Up Maturation Plan for Digestion of Graphite Fuel Pebbles* (*Scale-up Plan*) and *Preliminary Scoping-Level Hazardous Analysis for the Processing of HTGR Pebble Fuel at SRS* (SRNL 2015). The *Scale-up Plan* is an appendix to the *F&A Report.*

The comments included nontechnical and technical concerns. Nontechnical concerns can be grouped into those addressing DOE's need to transport the SNF to the United States, DOE's basis for a decision on whether to accept the SNF, the availability of H-Canyon, the potential for indefinite storage of the SNF at SRS, and funding. Technical concerns can be grouped into those addressing CASTOR cask storage at SRS, safety and safeguards, potential delivery of fuel pebbles to SRS as part of process research and development, airborne emissions during processing operations, the isotopic composition of the fuel, separation of LEU or damaged pebbles from HEU pebbles, and waste management.

Response: As discussed in Section 2.3.1 of this EA, SRNL prepared the *F&A Report* to evaluate the potential alternatives and technologies for receipt, storage and processing the SNF from Germany. DOE reviewed these and other documents for information that would inform DOE's analysis of potential environmental impacts in this EA.

With respect to the nontechnical concerns raised by the commentor, DOE's need for transport of the SNF to the United States is addressed in Section 1.3 of this EA and Section B.2.2 of this appendix, which is to support the U.S. policy objective to reduce, and eventually eliminate, HEU from civil commerce by returning U.S.-origin HEU from Germany to the United States for safe storage and disposition. As stated in Section 1.4 of this EA, DOE's decision on whether to accept the SNF will be made on the basis of compliance with all applicable requirements of United States law and DOE requirements, including NEPA, and resolution of any technical, financial, and legal issues that may be identified during consideration of the feasibility of the project and development of an appropriate legal framework. The availability of H-Canyon for the proposed project is addressed in Section B.2.6.1; DOE would not implement the proposed project without an assurance that the necessary capabilities were available at SRS. Regarding the concern about storage of the SNF at SRS for an indefinite period, DOE's intent as discussed in Section B.2.5.1 is to defer a decision on whether to accept the SNF until the carbon digestion technologies have been demonstrated to be capable of performing at full-scale operations. If a decision is made to proceed and for some reason processing operations were to be suspended for a period of time, shipments of SNF from Germany could also be suspended to minimize the number of casks that would require storage until processing operations were resumed. Funding is addressed in Section B.2.8.

With respect to technical concerns, the commentor was concerned about the safety of storing CASTOR casks on concrete or gravel storage pads rather than within a seismically qualified building. The CASTOR casks containing the fuel are Type B casks that would be designed, constructed, and certified by independent regulatory agencies in Germany and the United States to withstand normal and potential severe accident conditions without significant release of materials. If a severe earthquake occurred as postulated by the commentor, then an outside storage configuration would avoid the potential for damage to the casks from falling debris that could occur in a building. In any event, DOE is conducting a technology maturation process as discussed in Section B.2.5.1 to address technical considerations such as safety, security, and facility interface issues; and the cask storage configuration will be addressed as part of that

process. If, through development of the safety basis for cask storage, additional measures were required to ensure safety, those additional measures would be implemented.

DOE believes it to be unnecessary to complete the safety and safeguards-related activities that were envisioned in the *F&A Report*, such as preparation of safety-related analyses, material control and accountability provisions, and technical readiness reviews, before preparation of a final EA. The technology maturation process discussed in Section B.2.5.1 will address a variety of issues including the concerns noted by the commentor. DOE had sufficient information to prepare a meaningful analysis of potential environmental impacts in this EA; additional NEPA analysis would be performed if the need was recognized during the technology maturation process.

Regarding potential accidents during processing operations at H-Canyon, the impacts of potential accidents associated with processing the fuel are evaluated in Section 4.2.3.2.2 of this EA and summarized in Section B.2.11.2. As informed by the technology maturation process discussed in Section B.2.5.1, safety basis documentation would be prepared or updated, and approved, before commencement of processing operations.

DOE acknowledges that there is a potential for delivery of a few irradiated fuel pebbles to SRS as part of process research and development. Shipments, if made, would comply with all national and international regulations for transport of radioactive material. As discussed in Section B.2.1.1, shipment of a small amount of irradiated and unirradiated spheres and kernels to facilitate further R&D efforts is categorically excluded under Categorical Exclusion B1.30 (transfer actions) and has also been considered in this EA in conjunction with the proposed processing activities (see Section 4.1).

With respect to treatment of airborne emissions from processing operations, a prototype air treatment system for carbon digestion was assumed for analysis. The technology maturation process discussed above will include further development of the air treatment system, including control of emissions of C-14 as necessary. In any event, all activities associated with the storage and processing of the German fuel at SRS would be conducted in compliance with all requirements for public and environmental protection, including compliance with EPA regulations for emissions of pollutants to the air.

Information about the isotopic composition of the SNF is available in *Process Description for Processing of HTGR Pebble Fuel at SRS, SRNL-TR-2014-0209, Revision 0* (SRNL 2014b).

DOE has no plans to separate LEU or damaged pebbles from HEU pebbles and return the separated pebbles to Germany. The high radiation environment associated with the SNF would, in any event, make it impractical to try to separate the HEU pebbles from the LEU pebbles. As discussed in Section B.2.5.1, carbon digestion processing would not be adversely affected by the damaged condition of some of the pebbles. Both the molten salt and vapor digestion processes evaluated in this EA can handle the material, regardless of condition.

Potential waste management impacts would be one of the issues considered by DOE when making a decision about whether to accept the fuel from Germany. Refer to Sections 4.2.3.4 and

4.4.2.6 of this EA for an analysis of impacts associated with management of the waste that would be generated from the proposed project. The waste that would be generated from the proposed project would be covered by existing waste handling capabilities at SRS.. Except for high-level radioactive waste (HLW), all waste that would be generated has an identified disposal pathway. Because no geologic repository is available at this time for HLW, all HLW from the proposed project would be safely stored at SRS pending its disposition. The proposed project is not expected to generate transuranic (TRU) waste. Regarding the commentor's concern about safeguards for special nuclear material that may be separated from the German fuel, any separated uranium or thorium will be down-blended to a minimum attractiveness level and appropriately disposed.

B.2.5.4 THORIUM SLUDGE

Comment: Commentors were concerned that thorium in the sludge from processing the SNF would put a strain on SRS waste tanks or other disposal methods.

Response: Thorium sludge waste, if generated under the Vitrification (Section 2.1.4.3.1) or LEU Waste (Section 2.1.4.3.2) options, would go to the H-Area Tank Farm/Liquid Nuclear Waste Facilities for processing. SRS first processed fuel containing thorium in the 1960s, and more recently, Sodium Reactor Experiment (SRE) fuel containing thorium was processed in H-Canyon from 2012 through 2014. While processing the SNF from Germany may result in a sludge-like material containing thorium, H-Canyon and subsequently H-Tank Farm have successfully handled similar solutions since the 1960s.

B.2.6 SAVANNAH RIVER SITE

Commentors asked questions about facilities and capabilities at SRS including H-Canyon and SRS Liquid Nuclear Waste Facilities, waste management capabilities, and security features. These topics are discussed below.

B.2.6.1 H-CANYON AND SRS LIQUID NUCLEAR WASTE FACILITIES

Comment: A commentor was concerned that H-Canyon is aging and its lifespan is limited. In addition, a commentor questioned if the SRS Liquid Nuclear Waste Facilities would be fully operational and in regulatory compliance in time to receive waste from processing the SNF from Germany.

Response: DOE evaluates H-Canyon and its supporting infrastructure on a frequent basis to ensure its ability to safely perform operations in compliance with regulations and DOE requirements. For example, the current evaluations of the H-Canyon ventilation system are not expected to have long-term impacts. The current H-Canyon mission planning proposes the facility operating through 2024 and DOE is assessing the expected operational life of the facility. SWPF is expected to begin operations in December 2018, well before technology maturation is complete.

As indicated in the public meetings on the Spent Nuclear Fuel from Germany EA, the technology to process the SNF must first be proven and demonstrated. This will take approximately three to four years and then the project would have to be authorized, modifications to the facility for inclusion of the technology process completed, and readiness assessments conducted. That being

the case, the additional minor increase in waste sent to the HLW system from this project would not be expected for at least 5 years. At that time, the Salt Waste Processing Facility should be fully operational and the HLW system should be at maximum treatment capacity. Future decisions would consider H-Canyon's processing mission schedule integrated with other nuclear materials in the queue. Consequently, at the time that DOE might initiate processing of SNF from Germany, it is anticipated that overall HLW system risks would be low as many of them would be mitigated.

B.2.6.2 WASTE MANAGEMENT

Comment: Commentors were concerned that SRS has become a "dumping ground," and that the State of South Carolina is storing more than its fair share of nuclear materials and waste. Commentors want a clear path out of South Carolina for nuclear materials and waste currently in storage and do not want more nuclear materials or waste entering the State until a clear path out exists. A commentor asked that DOE describe the criteria to be used to determine whether LLW would be disposed of onsite, at commercial disposal facilities, or at NNSS. Commentors were opposed to the Proposed Action of bringing the SNF from Germany to SRS for processing on the basis that there is no permanent solution to the disposal of HLW and SNF, which they then interpret to mean that the SNF or any HLW generated by its processing would remain at SRS indefinitely. A commentor was concerned there are "leaking barrels of spent nuclear waste" at SRS.

Response: DOE does not view SRS as a "dumping ground." Processing nuclear materials at SRS results in the generation of radioactive wastes, some of which are disposed of in onsite facilities such as the LLW vaults and trenches, and the Saltstone Disposal Facility. LLW is also sent to other DOE facilities or commercial LLW disposal facilities. Processing the SNF from Germany under any of the H-Area Alternative options would result in production of liquid HLW. The low-activity fraction would be processed into saltstone and disposed onsite in vaults in the Z-Area Saltstone Disposal Facility. The waste generated from this project for disposal at the Saltstone Disposal Facility would be similar to those generated by any processing activities and would be in accordance with Section 3116 of the 2005 National Defense Authorization Act (SRR 2015). The high-activity fraction would be vitrified in HLW glass in the Defense Waste Processing Facility (DWPF) and stored along with other HLW glass canisters until a disposition path is identified and implemented. Treatment under the L-Area Alternative would produce similar quantities of waste as those of H-Area Alternatives up through digestion of graphite. However, since the kernels would not be further processed under the L-Area Alternative, there would be no liquid HLW generated. Kernels would be blended with other uranium and aluminum metal, loaded into multi-canister overpacks, and stored pending disposition. Section 3.3.4 of this EA describes SRS waste generation, facilities, and capacities.

DOE-generated radioactive wastes would be managed in accordance with DOE Order 435.1, *Radioactive Waste Management*. In determining the disposal location for radioactive wastes, DOE would consider the disposal facility waste acceptance criteria, any required treatment before disposal, disposal facility capacity, timing, transportation costs, and disposal costs. Any decision would reflect DOE's preference for use of onsite radioactive waste disposal where feasible, or use of other DOE disposal facilities.

As discussed in Sections 2.1.4 and 2.1.5 of this EA, DWPF canisters containing vitrified HLW resulting from processing SNF under the Proposed Action would be managed in the same manner as other DWPF canisters containing HLW. Depending on the alternative and option selected, between 15 and 101 HLW canisters (H-Area Alternative), or 82 multi-canister overpacks (L-Area Alternative) would be generated and remain in storage until a disposition path becomes available. This would be in addition to the 4,155 canisters poured through the end of fiscal year 2017, and the total of about 8,170 HLW canisters projected to be generated at DWPF (DOE 2016; SRR 2016) without the proposed action. If the maximum number of 101 HLW canisters were generated by the Proposed Action, this would result in a 1.2 percent increase in the number of canisters that would need to be stored at SRS pending the availability of a disposition path for HLW.

This project anticipates that the resulting HLW would be sent to a repository for HLW, but DOE cannot at this time specify any time requirements regarding the removal of the HLW from SRS. Please see Section B.2.12, "Repository for Spent Nuclear Fuel and High-Level Radioactive Waste," for more information.

SNF from other SRS missions is currently stored in L-Basin and is routinely monitored to ensure safe storage of the material. Some HLW tanks have a history of previous leaks (only tens of gallons were found to have leaked to the environment) but the tanks are not currently leaking. The liquid waste in each of those tanks has been lowered below the leak sites and the leak sites are routinely monitored. In addition, both SCDHEC and EPA are involved with the decisions regarding treatment of HLW and closure of the HLW tanks at SRS. No difficulty is expected with use of the SRS liquid waste system for the proposed project.

B.2.6.3 SECURITY

Comment: Commentors were concerned that SRS facilities to be used for storage and processing of the SNF from Germany are not secure and do not meet strict security standards.

Response: As described in Section 3.3 of this EA, SRS is a controlled area, with limited public access through security checkpoints. H-Area is located near the center of SRS, 6.8 miles (11 kilometers) from the site boundary, and has additionally restricted access. L-Area is located in the south-central part of SRS, approximately 5.7 miles (9.2 kilometers) from the site boundary. SRS is monitored and patrolled by a highly trained security force.

As described in Section 2.1.1 of this EA, the form and composition of the nuclear material would require storage in a Property Protection Area where security would be provided, in part, by fencing, locks, and lighting. The H-Area and L-Area candidate facilities considered for processing have robust structural features and established perimeter security zones. Further, as Section 2.1.3.2 states, the storage locations would be within Property Protection Areas, with the necessary infrastructure (lighting, fencing, locks) to meet security requirements.

As a matter of security, the specific scenarios that a terrorist might use to steal or cause releases of radioactive materials are classified. Although the information from classified analyses cannot

be made available to the public, these data are available to and considered by the DOE decision maker. DOE believes this SNF would not be an attractive target for terrorist attack.

As described in Section 4.2.3.2.3 of this EA, the SNF at SRS would be protected and processed such that an intentional destructive act that would threaten the public or workers would be extremely unlikely. The SNF would be stored in heavily shielded casks in a property protection area while awaiting processing. Processing of the graphite spheres through a highly secure, shielded facility places the material in a solution that would be extremely difficult to obtain for use in a radiological dispersion device. Due to the radiological properties of any material being processed through the facility (including HTGR pebbles), all operations are performed remotely and personnel access to radioactive materials is not possible. For most of the process, the fuel would be within the hot cells of heavily reinforced buildings. The digestion of the pebbles and dissolution of the kernels places the material into solution that remains within the shielded facility until either transferred through shielded piping to the H-Area Tank Farm or converted to LLW and packaged.

B.2.6.4 L-AREA FACILITIES

Comment: A commentor asked about the current status of L-Area and whether DOE is considering restarting the L-Reactor.

Response: L-Reactor was shut down in 1968, and there are no plans to restart it. L-Area facilities are now used for SNF and material storage. Section 3.3 of this EA describes the mission at L-Area.

B.2.7 GERMANY'S PLANS

Comment: Commentors requested more information regarding coordination between the United States and Germany, and Germany's plans for disposition of the SNF in particular, SNF from THTR.

Response: In a February 2012, letter, a State Secretary of the Federal Ministry of Education and Research of the Federal Republic of Germany requested DOE's Under Secretary for Nuclear Security to consider accepting the SNF, and collaboration on the request was initiated in May 2012 (Schütte 2012). In April 2014, DOE, the Federal Ministry of Education and Research of the Federal Republic of Germany, and the Ministry for Innovation, Science and Research of the State of North Rhine-Westphalia on behalf of the North Rhine-Westphalian State Government, Germany, signed a Statement of Intent to cooperate in conducting the preparatory work necessary to support DOE's consideration of the request that it accept the SNF from Germany and to use SRS facilities for processing and disposition[3]. The preparatory work includes conducting studies, technical and engineering work, and preparation of the EA. The EA analysis and the technology maturation work will allow DOE to reach an informed decision on the proposed receipt, acceptance, processing and disposition of the SNF from Germany. No "policy decision" on processing the SNF from Germany has been made, only an agreement to work together to determine a viable disposition path for the material.

[3] A copy of this Statement of Intent is provided in Appendix A to this EA.

The Statement of Intent specifies that Forschungszentrum Jülich, an interdisciplinary research center funded primarily by the German government, will bear the cost of the preparatory phase – feasibility studies and NEPA analysis - and if there is a decision to proceed with the project, would also bear the costs associated with acceptance, processing, and disposition of the SNF. In September 2015, the responsibility for the AVR facility and resulting SNF was transferred to Jülicher-Entsorgungsgesellschaft Für Nuklearanlagen mbH (JEN).

This EA includes both AVR and THTR material that could potentially be processed using this technology. Although the analyses in this EA are based on the total quantity of SNF from both AVR and THTR, the German government has not indicated whether the THTR SNF would be proposed for return to the United States. However, if a decision is made by DOE and Germany to proceed with the project, and the THTR SNF were included, the additional costs would be negotiated with the understanding that costs associated with acceptance, processing, and disposition of the spent AVR and THTR fuel would be the responsibility of the appropriate German entity.

The Jülich facility is a research facility with some testing capability. The Work For Others Agreement (WFO-13-002) signed in December 2012 (SRNS 2012), is referring to testing that Jülich was capable of doing in order to independently confirm the results of tests conducted at SRNL.

B.2.8 FUNDING

Comment: Commentors asked about funding for the Proposed Action. A commentor suggested that DOE should enter into a binding agreement with the State of South Carolina that ensures that the German funds are used to store, process and disposition the German fuel within a time period that South Carolina will support.

A commentor suggested that waste from processing SNF from Germany would cost communities time in getting SRS legacy waste risk reduced and that Germany should pay for the lost time. Other commentors indicated that money should not be spent on this project, but instead used to continue with SRS cleanup efforts.

Response: As discussed in Section 1.1 of this EA, DOE has received funds from Germany for the preparatory phase of this project. The Statement of Intent specifies that Forschungszentrum Julich, an interdisciplinary research center funded primarily by the German government, is bearing the cost of the preparatory phase – feasibility studies and NEPA analysis – and if there is a decision to proceed with the project, would also bear the costs associated with acceptance, processing, and disposition of the SNF. DOE would not continue without assurances, through signed contracts specifying the required continued funding. DOE is evaluating methods of ensuring that any funds received from Germany for this project would be reserved for this project and not be intermingled with funding received for other SRS missions. This would include payment of the portion of costs for shared site services applicable to specifically support this project.

B.2.9 ALTERNATIVES

Comment: Commentors expressed their opinions that storage and processing of the SNF should be performed in Germany under the No Action Alternative and that DOE could provide technical assistance to the Germans. For example, the technologies developed by SRNL could be implemented in Germany instead of SRS. Another commentor was concerned that the No Action Alternative was not adequately described and fails to consider the incremental environmental risks and costs avoided by leaving HEU in Germany.

Commentors were also concerned that the SNF from Germany could be reprocessed at SRS to recover the fissile material for use in nuclear reactors or nuclear weapons or that DOE has plans to process additional materials (e.g., such as from the Fort Saint Vrain or Peach Bottom reactors) using the new technologies and facilities that would be developed to process the SNF from Germany.

Response: DOE could assist Germany in developing a method to dispose of this SNF in their country if requested.

As described in Section 2.2 of this EA, under the No Action Alternative, the SNF containing U.S.-origin HEU from AVR and THTR would not be transported to the United States for management and disposition. The SNF would remain in storage in Germany. As described in Section 4.3 of this EA, because DOE would not undertake any actions involving the global commons, Joint Base Charleston–Weapons Station, or SRS under the No Action Alternative, there would be no incremental impacts from the proposed activities on these areas.

All of the action alternatives proposed in this EA consider processing the SNF from Germany into waste forms for disposal. There are no alternatives or other considerations for processing the SNF from Germany to recover the fissile material for use in nuclear reactors, nuclear submarines, or nuclear weapons. In addition, selection of a single alternative, from the four alternatives identified in this EA, would consider safeguards and security requirements applicable to any activity at SRS, and would include physical protection, material control and accounting, and reducing the potential for theft, sabotage, or diversion of special nuclear materials.

No materials other than the SNF from Germany are being considered for processing in the proposed facilities. The SRNL document *Feasibility and Alternatives for Receipt, Storage, and Processing of HTGR Pebble Fuel at SRS* (SRNL 2014a) is a contractor document developed as part of the Work for Others Agreement with Germany. At this time, DOE is only pursuing technology maturation based on SNF from Germany, and has not determined the proposed technology's validity for application to other materials and does not propose to further assess other uses for the technology. If in the future, another potential mission is identified, then at that time appropriate NEPA documentation would need to be developed to address that mission. See Section B.2.10, "Alternatives Considered but Dismissed from Detailed Analysis," for more information.

B.2.10 ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

Comment: Commentors were concerned about other activities, including carbon burning (i.e. oxidation), direct disposal, down-blending, long-term storage, and processing at other locations, and whether these options should be considered or not considered in this EA.

Response: Section 2.3 of this EA discusses the alternatives and technology options that were initially identified for processing the SNF from Germany, and the reasons they were dismissed from detailed analysis. This section of the EA provides the basis for not evaluating in detail a number of carbon removal technologies, direct disposal of the SNF, down blending to LEU for use as a reactor fuel, and uranium solidification in the H-Canyon Uranium Stabilization Facility. The following information from Section 2.3 is specific to the options mentioned by commentors on the Draft EA.

As discussed in Section 2.3.1 of this EA, the SRNL undertook a feasibility study to evaluate the potential alternatives and technologies for receipt, storage and processing the SNF from Germany (SRNL 2014a). A number of technologies for separating the SNF kernels from the graphite (carbon) pebbles, including oxidation in a fluidized bed, were considered and eliminated from detailed analysis. This technology was dismissed from consideration because historical experience shows that fission product volatilization presents emissions problems and ash residue presents disposition problems that could result in radiation exposures above limits. Therefore, this technology was not considered in the EA. The technologies evaluated in the EA (i.e., vapor digestion and molten salt digestion options) are chemical processes that would not burn the carbon.

As described in Section 2.3.3 of this EA, the direct disposal alternative was dismissed from further consideration because the CASTOR cask is not a qualified disposal container nor is there an existing SNF cask qualified for disposal of this type of SNF. Also, compared to the alternatives and options evaluated in this EA, this alternative would result in a much larger quantity of SNF (about 20 times more SNF canisters than the 101 HLW canisters that would be generated under the Vitrification Option of the H-Area Alternative (maximum number of canisters generated by the Proposed Action)) requiring deep geologic disposal.

As discussed in Section 2.3.6 of this EA, DOE dropped from consideration one of the options identified in the Notice of Intent, down blend of the HEU to LEU for reuse as reactor fuel. As pointed out by commentors during scoping, the nature and isotopic content of the SNF from Germany makes LEU from down blending this HEU unsuitable for use in commercial reactor fuel.

Section 2.3 of this EA has been revised to discuss the reasons that long-term storage (Section 2.3.2), and processing at other locations in the U.S. (Section 2.3.4) were not analyzed in detail. Long-term storage was dismissed from detailed analysis because DOE is in the process of removing radioactive materials from the State of South Carolina to the extent possible and because long-term storage only delays ultimate disposition. Processing at other locations in the U.S. was dismissed because DOE had already evaluated SNF management in the *Programmatic*

Spent Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (DOE/EIS-0203-F) (DOE 1995) and decided that U.S. SNF would be managed at Idaho National Engineering Laboratory (now known as the Idaho National Laboratory) or at SRS (60 FR 28680). In addition, DOE evaluated the potential environmental impacts of the disposition of aluminum-based and TRIGA (Training, Research, Isotope, General Atomics) foreign research reactor (FRR) SNF containing U.S.-origin HEU and target material in the *Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel* (*FRR SNF EIS*) (DOE/EIS-0218) (DOE 1996). In the record of decision for the *FRR SNF EIS* (61 FR 25092), DOE decided to return this SNF to the U.S. to be stored at INL and SRS pending treatment and packaging for transport to a final repository.

Although the analyses in these NEPA documents and decisions announced in the records of decision for the documents are not directly applicable to the SNF from Germany, the effect of these decisions is that U.S. capabilities for management of SNF are concentrated at INL and SRS. Between these two DOE sites, only SRS has the capability in H-Canyon/HB-Line to process the declad (i.e., graphite removed) SNF from Germany.

With respect to processing the SNF at other locations at SRS (see Section 2.3.5), due to the shielding requirements of the material, and the need for remote handling of the CASTOR casks/containers, only H-Canyon and L-Area were considered. K-Area was not considered due to its ongoing plutonium mission. P- and R-reactor areas have been deactivated and decommissioned. F-Canyon has been deactivated and is awaiting decommissioning. C-Reactor has been deactivated; and C-Area is used for training purposes, storage of heavy water, and is under consideration as a historical preservation site. Therefore, H-Canyon and L-Area were considered in this EA, and C-, F-, K-, P-, and R-Areas were not considered further.

B.2.11 ENVIRONMENTAL IMPACTS

Comment: Commentors were concerned that the proposed action could result in adverse human health, environmental, and socioeconomic impacts. Some commentors expressed general concerns; others asked questions or raised concerns about specific impacts.

Response: As described in Chapter 4 of this EA, the proposed receipt of SNF from Germany and any of the proposed alternatives, options, or technologies for storage and processing in the U.S. would result in little or no risk to human health or to the quality of the environment. Activities related to the Proposed Action at SRS would largely occur in existing industrial areas far from offsite areas. In addition, little land would be disturbed, contaminated water would not be discharged, and resource use would be low. Although some jobs may be preserved, noticeable impacts on the existing socioeconomic or demographic characteristics of the region are not expected. New air emissions at SRS may require a permit review but would be a small percentage of Aiken County emissions. The carbon dioxide equivalent emissions that would be generated under the proposed action would be a marginal increase over the No Action Alternative, and would not substantially increase carbon dioxide equivalent emissions or associated climate change impacts. In addition, because of the relatively short timeframe of this

project, the impacts of this project are not expected to be affected by future climate change. No latent cancer fatalities would be expected among the ships' crews, workers unloading containers from the ships, ground transportation personnel, workers at SRS, or the public. Projected waste volumes would be within waste management capacities. Therefore, minimal or no impacts are expected.

B.2.11.1 AIR QUALITY

Comment: A commentor requested additional information regarding the statement in the EA that minor changes in criteria air pollutants may require modification of the SRS Clean Air Act permit.

Response: The Clean Air Act (CAA) requires EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants are found all over the U.S. They are particle pollution (often referred to as particulate matter), photochemical oxidants and ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. In high enough concentrations, these pollutants can harm human health and the environment, and cause property damage. EPA calls these pollutants "criteria" air pollutants because it sets NAAQS (concentration limits for releases) for them based on the human health- and/or environmentally based criteria.

Title V of the CAA requires major sources of air pollutants, and certain other sources, to obtain and operate in compliance with an operating permit. Sources with these "Title V permits" are required to certify compliance with the applicable requirements of their permits at least annually. As stated in Section 3.3.1.2 of this EA, "SRS is required by its Title V Part 70 Operating Permit to demonstrate compliance through air dispersion modeling and submittal of an annual emissions inventory of air pollutant emissions." As stated in Section 4.2.3.1.1 of this EA regarding the Vitrification Option, "Although emissions are expected to be similar to historical levels and within current permitted levels (DOE 2015c), the change in nitrogen dioxide emissions would necessitate a permit review to determine whether revisions to the Title V Air Operating Permit (DOE 2007) would be required." Similarly, Section 4.2.3.1.1 states for the LEU Waste or LEU/Thorium Waste Options, "The increase in nitrogen dioxide emissions would necessitate a permit review to determine whether revisions to the Title V Air Operating Permit would be required (DOE 2007)." Further, for the L-Area Alternative, Section 4.2.3.1.2 states "These would be new emissions for L-Area, therefore the Title V Operating Permit (DOE 2007) may require revision. Any permit revisions would need to be approved by the State of South Carolina, ensuring appropriate emissions control technologies are incorporated and no State or Federal emissions limits are exceeded."

In summary, any time major modifications or new emissions sources are incorporated at a major source such as SRS, the Title V Air Operating Permit must be reviewed and/or updated in order to maintain compliance with the Clean Air Act. This does not mean that there would be major changes in the emissions or significant impacts resulting from implementation of any of the proposed activities, only that the required regulatory process would be followed to account for new emissions and demonstrate that emissions would remain within regulatory limits.

B.2.11.2 HUMAN HEALTH

Comment: Commentors were concerned that the Proposed Action could result in adverse human health impacts on workers and the general public. Other commentors were concerned that the computer models used to estimate impacts are not tested or verified. Finally, commentors were concerned about the lack of emergency response procedures, and how the public would be notified in the case of an accident.

Response: The proposed transportation and processing activities for this SNF from Germany are very similar to actions that have been conducted at SRS for over six decades. The proposed processing of SNF from Germany would incorporate personnel protection and safety practices based on prior experience in SNF and nuclear materials receipts, processing, and facility emissions controls, and no adverse impacts on the workers or the public are anticipated.

Section 4.2.3.2 of this EA indicates that the potential impacts on the public from normal operations are negligible and the annual cancer risk to the hypothetical maximally exposed individual would be much less than 1 in 1 million. For potential accidents, the distances between SRS facilities and the public are large such that radiological releases from even catastrophic events, such as a major earthquake, would be small.

Potential impacts on workers would be larger than those on members of the public due to the proximity of workers handling and processing the radioactive materials. As discussed in Section 4.2.3.2.1 and shown in Table 4-15 of this EA, no latent cancer fatalities are expected among the involved worker population (calculated annual risks of a single latent cancer fatality for all alternatives range from 0.005 to 0.02). This latent cancer fatality risk was stated on a slide for presentation at the Public Meeting on the Draft EA as the annual risk of a single latent cancer fatality in the worker population of one in fifty to one in two hundred. As is the practice across the DOE Complex to ensure worker doses are maintained as low as reasonably achievable, workers would be monitored and their individual radiation doses would be controlled below not only the regulatory limit of 5,000 millirem per year (10 CFR 835), but DOE's more stringent administrative limit of 2,000 millirem per year in DOE-HDBK-1130-98 (DOE 1998).

Section 4.2.3.2.2 of this EA describes the methodology used and results of the accident analysis for processing the SNF from Germany at SRS. The analysis of accident impacts is based on evaluation of previous analyses for processing various types of SNF at SRS over the past six decades. Data from SRS activities and facilities and from other similar activities and facilities have been used in these analyses. The analysis in this EA shows that the impacts identified for previous accident analyses bound the projected impacts from processing the SNF from Germany.

DOE would like to clarify the basis of the analysis for the L-Area Alternative in response to a commentor's concern that accident analyses performed for the University of Missouri Test Reactor were extrapolated to accident analyses for activities proposed in this EA. This is not the case. Rather, the composition of fuel for the University of Missouri Test Reactor was used as input data in accident analyses for the melt and dilute technology that was proposed for implementation in L-Area at SRS in the early 2000s (L-Area Experimental Facility) (WSRC 2001). This study was cited in this EA along with several others in Section 4.2.3.2.2.6

to describe the potential impacts from postulated accidents using the melt and dilute capability under the L-Area Alternative.

Computer codes used to evaluate potential impacts from normal operations and accidents model real world situations through the use of proven mathematical relationships. The mathematical models used in the computer codes are based on sound scientific and engineering principles and studies, and are refined through years of experience. Once developed, computer models are verified by rigorously evaluating test problems and comparing the output with the results of hand calculations. When applied to a particular analysis, parameter selection is done to ensure that the results are conservative, that is, tend to overestimate the potential impacts. Thus, DOE is confident that the potential impacts presented in the EA are conservative estimates of those that could occur.

As a matter of security, the specific scenarios that a terrorist might attempt to disrupt activities or cause releases of radioactive materials are classified. Although the data from classified analyses cannot be made available to the public, these data are available to and considered by DOE decision makers. As indicated in Section 4.2.3.2.3 of this EA, an intentional destructive act that would threaten the public or workers would be unlikely due to the high system effectiveness of the SRS security program.

As discussed in Section 4.2.3.2.5, the SRS has an Emergency Response Program consistent with applicable DOE requirements. This program includes drills with local community emergency responders. Community preparedness calendars are published annually and mailed to residents living around SRS. These calendars provide information about SRS, the potential types of emergencies, types of protective actions that may be recommended in the case of an emergency, where residents can go for emergency and non-emergency information, and contact information in case they have any questions or concerns regarding emergency management in their counties. Accidents or emergencies affecting residents of the surrounding area would immediately be announced through local and social media outlets to alert residents of any necessary protective actions.

B.2.11.3 TRANSPORTATION

Comment: Commentors were concerned about the regulatory framework, impacts, and security of transportation of the SNF from Germany to SRS. Commentors were concerned about who would be responsible for cleaning up an accident and how people would be compensated for damage.

Response: Section 2.1.3.1 of this EA describes the proposed transport of the SNF from Germany to the United States, and applies to both transportation of a single shipment of unirradiated and irradiated fuel expected to support technology maturation, as well as the full transportation activities under the proposed action. Impacts from transportation of unirradiated/irradiated fuel during technology maturation are not expected to be significant, as noted in Section 4.1. The SNF would be transported in the United States under regulations of DOE, the U.S. Department of Transportation (DOT) and the Nuclear Regulatory Commission;

transport in Germany and across the global commons while under German control would be under equivalent agencies within the German Government.

DOE has been accepting U.S.-origin SNF from around the world since the early 1990s. The German government or its contractors would provide physical protection of the shipment in Germany and the global commons and maintain physical protection responsibilities until transferred to the United States. The SNF would be transported in chartered ships certified to carry nuclear materials, and as the vessels approached entry into the United States, communications and protocols would be established for travel to, docking, and unloading the cargo at Joint Base Charleston–Weapons Station. Railcars for transport of the SNF would be staged in advance of the arrival of the ship at the dock. The SNF would be transported the approximately 133 miles (214 kilometers) to SRS by a commercial carrier using a dedicated train. The receipt of these shipments at Joint Base Charleston–Weapons Station and transport to SRS would follow NNSA infrastructure and protocols for receipt of U.S.-origin SNF shipments, including Federal and State coordination protocols, and those for transport, security, and radiation control. These protocols include a well-established safe and reliable mode of transport managed and operated by NNSA and their approved contractors. The SNF from Germany would not traverse federally recognized Indian Reservations.

To estimate potential impacts, the accident analyses for maritime accidents assume catastrophic breaches of cargo that likely would not occur given the robust packaging required for these materials. Severe accidents at sea are unlikely, but the potential impacts of such accidents were evaluated in this EA. Section 4.2.1.3 of this EA describes the accident scenarios evaluated and the potential impacts. Section 4.2.3.5 presents the potential overland transportation risks associated with incident-free and accident conditions, including for shipments between Joint Base Charleston-Weapons Stations and SRS. Transportation risks are evaluated using route characteristics and statistics including accident and fatality rates for both rail and truck shipments.

As described in Section 4.2.1.2 of this EA, under incident-free ocean transport there would be no impacts on the public. As shown in Section 4.2.1.3, the probabilities of an accident at sea resulting in a CASTOR cask being submerged are 2.9×10^{-11} (1 chance in 34 billion) for a damaged cask in coastal waters, 1.5×10^{-8} (1 chance in 67 million) for an undamaged cask in coastal waters, and 1.1×10^{-6} (1 chance in 910,000) for a damaged cask in the deep sea. The overall accident risks in the global commons from ship accidents associated with the transport of SNF from Germany to the United States are about 15 times lower than those projected for the *FRR SNF EIS*.

As shown in Section 4.2.2.3, the risk of an LCF in the population surrounding Joint Base Charleston-Weapons Station due to a hypothetical severe accident (collision with another ship followed by a fire) at the seaport is 9.8×10^{-8} (1 chance in 10 million). As shown in Table 4-28, the risks from a rail transport accident (from Joint Base Charleston-Weapons Station to SRS) are 5×10^{-13} (1 chance in 2 trillion) of an LCF and 9×10^{-4} (1 chance in 1,000) for a nonradiological fatality due entirely to the physical forces of the accident.

As described in Section 4.2.1.4 of this EA, maritime areas where acts of terrorism or piracy are more likely would be avoided or ships passing through these areas would invoke additional security measures as necessary. The locations having the most incidents of piracy included waters near Nigeria, Somalia, and Southeast Asia (ICC 2016). Shipments of SNF from Germany to the United States would not transit waters near these areas.

Security measures are dependent on the material being transported and the mode of transportation. Due to security reasons no specifics can be provided. DOE has a formal agreement in place with the South Carolina Law Enforcement Division to provide security coverage for each shipment including assessment of potential threats and providing security escorts. Communications between DOE and community emergency preparedness and law enforcement personnel along the transportation route from Joint Base Charleston-Weapons Station would follow the DOE Transportation Emergency Preparedness Program. This program was established to ensure its operating contractors and state, tribal, and local emergency responders are prepared to respond promptly, efficiently, and effectively to accidents involving DOE shipments of radioactive material. This program is a component of the overall emergency management system established by DOE Order 151.1C.

In the unlikely event there is a serious accident during transport within the U.S., cleanup and compensation would be handled by responsible governmental entities in accordance with applicable procedures, agreements, and laws.

The movement of other nuclear materials in the U.S., which would include the southeast U.S., was considered in Section 4.4.2.7, "Cumulative Impacts on Transportation." The impacts of transport of the SNF from Germany would be quite small compared with overall cumulative transportation impacts.

Intentional destructive acts on the global commons are described in Section 4.2.1.4 of this EA, at Joint Base Charleston–Weapons Station in Section 4.2.2.4, and at SRS in Section 4.2.3.2.3. DOE believes this SNF from Germany would not be an attractive target for terrorist attack. The risks during transport of the SNF would be minimized to the extent possible within the control of the German entity, DOE and their respective contractors. The U.S. port to be used for these potential shipments (Joint Base Charleston–Weapons Station) is a military port with the increased security associated with this mission. As mentioned earlier in this section, transport by truck or rail to SRS would follow the NNSA infrastructure and protocols for receipt of U.S.-origin SNF shipments. As such, DOE believes that the risk during transport of this material would be minimized to the extent possible.

B.2.11.4 TRANSPORTATION – NEVADA

Comment: A commentor was concerned the transportation risks for NNSS disposal options are greater than other disposal options. The commentor requested additional information on the Nevada transportation route including population characteristics, whether the routes selected are approved LLW shipment routes, and whether the shipments would meet DOT requirements for Highway Route Controlled Quantity (HRCQ) shipments.

Response: The analysis as presented in Table 4-27 of this EA indicates that the transportation risks under the NNSS disposal option are not significantly different from the transportation risks under the offsite commercial disposal facility option.

The transportation analysis for this EA was performed using the Transportation Routing Analysis Geographic Information System (TRAGIS). TRAGIS had been unavailable for an extended period and was brought back online just as the analyses for this EA were started. At that time, TRAGIS did not have full functionality such as allowing the user to select or avoid certain routes. Instead, the shipments were automatically routed by TRAGIS through Las Vegas, which is not an approved route for LLW. Transport through Las Vegas provides conservative results (maximizes risk) because the population density is higher than using approved routes. Any shipments of LLW that may result from the activities proposed in this EA and intended for disposal at NNSS would follow approved shipping routes to the facility.

In order to meet HRCQ requirements, LEU or LEU/thorium waste packaged in CASTOR casks, if intended for disposal at NNSS, would require intermodal transport. The LEU or LEU/thorium waste would be transported by rail to an intermodal facility where the casks would be transferred from the railcars to trucks for transport to NNSS. These truck shipments would use approved shipping routes to NNSS.

B.2.12 REPOSITORY FOR SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

Comment: Commentors were concerned there is currently no disposition path for SNF and HLW that could be generated from processing the SNF at SRS under the Proposed Action.

Response: The SRS is not a disposal location (i.e., a repository) for SNF and HLW. DOE is committed to meeting its obligation to dispose of SNF and HLW in a geologic repository.

B.2.13 OUT-OF-SCOPE ISSUES

Comment: Commentors were concerned about a number of issues not directly affected by or affecting activities proposed and evaluated in this EA. These out-of-scope issues are listed below:

1. Other countries sending SNF and other nuclear materials and wastes to the United States for treatment, storage or disposal
2. Cleanup of DOE sites including SRS
3. Health studies on persons living near SRS
4. Policies related to nuclear weapons, nuclear energy, nuclear medicine, and renewable (“green” or “clean”) energy
5. Human, mineral, and money trafficking and the functionality of indigenous and non-indigenous governments
6. German Policy and Law
7. The applicability of Department of Energy Acquisition Regulation (DEAR)
8. A settlement between the U.S. Government and Indigenous Peoples of the Southeast

9. Operations at the Waste Isolation Pilot Plant
10. Other documents not relevant to this EA

Response: Please see the following general information to assist in understanding or finding more information for some of these issues.

Other countries sending SNF … to the United States for treatment, storage, or disposal. DOE receives SNF and other nuclear materials as part of other authorized programs and activities. These other activities perform their own environmental reviews and provide appropriate and required documentation to the public. However, these other activities are not analyzed in this EA.

Cleanup of DOE sites including SRS. SRS performs a variety of activities directed by Congress and the President, including cleanup and remediation, maintaining a safe and secure nuclear weapons stockpile, and plutonium disposition and nonproliferation. DOE will continue to conduct the environmental restoration programs at SRS (and other DOE sites) in parallel with its other missions. As described in Section 4.4.2.1 of this EA, the maximum delay in SRS site closure is estimated to be 1 year. This includes impacts on closure of the SRS Liquid Nuclear Waste Facilities including the tank farms and DWPF.

Health studies. Section 3.3.2 includes information on the local environment relative to the potential impacts on human health from the activities evaluated in this EA. Requests for health studies on people living near SRS are outside the scope of this EA. The SRS Environmental Report, available at http://www.srs.gov/general/pubs/ERsum/index.html, provides information on site compliance with environmental laws and regulations, environmental monitoring and surveillance, and highlights of community involvement.

German Policy and Law. Consistent with the requirements of Executive Order 12114, *Environmental Effects Abroad of Major Federal Actions*, this EA evaluated potential impacts on the global commons, in other words, on areas not within the sovereignty of any country. Activities occurring within other countries, including Germany, would be addressed by those countries in accordance with their requirements.

Applicability of Department of Energy Acquisition Regulation. The DEAR, specifically DEAR 970.5226-3, is only applicable to contracts when the work is performed using U.S.-appropriated dollars. Since this project is reimbursable work and will be funded by the Germans, DEAR is not applicable to this contract. The reimbursable work will be performed by the site management and operations contractor, whose contract does include the clause and who has a Community Commitment Plan. If DOE accepts the SNF from Germany, the management and operations contractor will follow its Community Commitment Plan, including but not limited to, the Regional Purchasing Program, in the performance of this project.

Settlement between U.S. Government and Indigenous Peoples. As described in Section B.2.2, "Purpose and Need," the scope of this EA is related to the potential return and

processing of SNF from Germany containing U.S.-origin HEU. Unrelated activities, such as providing a response to any settlement regarding the Free Prior and Informed Consent (FPIC) from indigenous peoples' governments, were not considered in this EA.

Operations at the Waste Isolation Pilot Plant. The Waste Isolation Pilot Plant (WIPP) is a repository only for defense TRU waste. This proposed action would not generate TRU waste, therefore no waste generated by proposed activities would be disposed at WIPP. Significant improvements are being implemented to enhance the safety environment at WIPP including enhancements to fire suppression and underground ventilation and improvements in underground stability. DOE provides regular updates and detailed information on the status of recovery activities at WIPP on the WIPP Web site: http://www.wipp.energy.gov/wipprecovery/recovery.html.

B.2.14 REFERENCES

BMUB (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety). 2014. Report of the Federal Republic of Germany for the Fifth Review Meeting in May 2015 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, August, 2014.

DOE (U.S. Department of Energy). 1995. *Programmatic Final Environmental Impact Statement on Spent Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs* (DOE/EIS-0203-F). Washington, D.C. Assistant Secretary for Environmental Management.

DOE (U.S. Department of Energy). 1996. *Final Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel DOE-EIS-0218F*. Assistant Secretary for Environmental Management. Washington, DC. February.

DOE (U.S. Department of Energy). 1998. DOE Handbook. Radiological Worker Training. DOE-HDBK-1130-98. Washington, DC. October.

DOE (U.S. Department of Energy). 2007. *Title V Part 70 Air Quality Permit. United States Department of Energy Washington Savannah River Company, LLC- Savannah River Site Environmental Services Section. Aiken, SC 29808-0001*. As amended December 11, 2007.

DOE (U.S. Department of Energy). 2011. *Order 458.1, Radiation Protection of the Public and the Environment*, February 11, 2011. https://www.directives.doe.gov/directives-documents/400-series/0458.1-Border. Accessed August 18, 2015.

DOE (U.S. Department of Energy). 2013a. *U.S. Department of Energy Categorical Exclusion Determination Form: Thermal-Chemical Decomposition of Graphite.* EEC No. TC-A-2013-0041-0. April 2013.

DOE (U.S. Department of Energy).2013b. *U.S. Department of Energy Categorical Exclusion Determination Form: Thermal-Chemical Decomposition of Graphite.* EEC No. TC-A-2013-0041-1. October 2013.

DOE (U.S. Department of Energy). 2014. *U.S. Department of Energy Categorical Exclusion Determination Form: Thermal-Chemical Decomposition of Graphite.* EEC No. TC-A-2013-0041-2. October 2014.

DOE (U.S. Department of Energy). 2015a. *U.S. Department of Energy Categorical Exclusion Determination Form: Thermal-Chemical Decomposition of Graphite.* EEC No. TC-A-2013-0041-3. April 2015.

DOE (U.S. Department of Energy). 2015b. *U.S. Department of Energy Categorical Exclusion Determination Form: Engineering Development Laboratory (EDL) Testing of Thermal-Chemical Decomposition of Graphite.* EEC No. TC-A-2105-0035. June 2015.

DOE (U.S. Department of Energy). 2015c. *Data Call for German Fuel Environmental Assessment. Savannah River Site, South Carolina.* October 22, 2014. (**Official Use Only**).

DOE (U.S. Department of Energy). 2016. *Melter 2 at Defense Waste Processing Facility Doubles the Waste Turned to Glass Compared to Melter 1*. News from the Savannah River Site. Aiken, South Carolina. April 18.

DOE (U.S. Department of Energy). 2017. *U.S. Department of Energy Categorical Exclusion Determination Form: Thermal-Chemical Decomposition of Graphite.* EEC No. TC-A-2013-0041-4. August 2017.

DOE/NNSA (U.S. Department of Energy/National Nuclear Security Administration). 2013. Proliferation Attractiveness of Jülich Graphite Spheres; Memorandum from Arthur G. Atkins to Kenneth Picha, August 1.

Eisenhower, Dwight D. 1953. *Before the General Assembly of the United Nations on peaceful Uses of Atomic Energy*. December 8, 1953.

ICC (International Chamber of Commerce, Commercial Crime Services). 2016. *IMB: Maritime Piracy Hotspots Persist Worldwide Despite Reductions in Key Areas.* February 2.

Kraus. 2015. Letter from Wilfried Kraus, Deputy Director General for Directorate 72: Sustainability, Climate and Energy, Federal Republic of Germany Ministry of Education and Research (Bundesministerium fur Bildung und Forschung) to John J. MacWilliams, III, Office of the Secretary of Energy, Department of Energy, Washington, D.C., May 8.

NSC (National Security Council). 1954. *Statement of Policy by the National Security Council with Other Nations in the Peaceful Uses of Atomic Energy*. Found in Foreign Relations of the

United States, 1952-1954, Volume II, Part 2, National Security Affairs, Document 237, NSC 5431/1. Declassified.

Schütte. 2012. Letter from Dr. Georg Schütte, State Secretary, Federal Republic of Germany Ministry of Education and Research (Bundesministerium fur Bildung und Forschung) to Thomas P. D'Agostino, Under Secretary for Nuclear Security, Department of Energy, Washington, D.C., February 27.

SRNL (Savannah River National Laboratory). 2014a. *Feasibility and Alternatives for Receipt, Storage, and Processing of HTGR Pebble Fuel at SRS, SRNL-TR-2014-00184 Revision 0.* Aiken, South Carolina. October. (Redacted Version)

SRNL (Savannah River National Laboratory). 2014b. *Process Description for Processing of HTGR Pebble Fuel at SRS, SRNL-TR-2014-0209, Revision 0* [Appendix G of Feasibility and Alternatives for Receipt, Storage, and Processing of HTGR Pebble Fuel at SRS]. Aiken, South Carolina. October. (Redacted Version)

SRNL (Savannah River National Laboratory). 2015. *Preliminary Scoping-Level Hazard Analysis for the Processing of HGTR Pebble Fuel at SRS*. S-CHA-H-00026, Rev. A. Aiken, South Carolina. January. (**Official Use Only**)

SRNS (Savannah River Nuclear Solutions). 2012. *Work For Others Agreement (WFO-13-002) (Research and Development on Graphite Destruction for the Pebble Bed Fuel Elements) Between Savannah River Nuclear Solutions, LLC (SRNS) Operation under the Prime Contract No. DE-AC09-08SR22470 for the U.S. Department of Energy and Forschungszentrum Jülich GmbH*. December 11.

SRR (Savannah River Remediation, LLC). 2016. *Liquid Waste System Plan*, SRR-LWP-2009-00001, Rev. 20. Savannah River Site. Aiken, SC. May.

WSRC (Westinghouse Savanah River Corporation). 2001. *L-Area Experimental Facility Basis for Interim Operation (U) (Addendum to the L-Reactor Facility BIO)*, WSRC-TR-95-0054, Addendum 1, Rev. 1. Aiken, SC. July.

B.3 PUBLIC COMMENTS

B.3.1 LIST OF COMMENTORS

This section lists the individuals and organizations providing comments on the Draft EA. In **Table B-1** commentors are presented alphabetically by last name. Comment documents were numbered according to the sequence in which they were received. Where commentors provided multiple submittals, each comment document was numbered in sequential order and maintained as a separate comment document. Comment documents identified with a "PC-" suffix were received during the public comment period as e-mails, faxes, letters or hand-ins at the public meeting. Comment documents identified with a "PCT-" suffix represent public statements delivered at the public meeting and found within the public meeting transcript. Table B-1 presents the appendix page where the comment document can be found, identified as Bsup-XXX.

Table B-1: Alphabetical List of Commentors

Last Name	First Name	Affiliation (if any)	Comment Document Number	Appendix Page Where Comment Document can be Found [a]
Anonymous			PC-070	Bsup 167
Anonymous			PC-075	Bsup 173
Anonymous			PC-080	Bsup 178-179
Anonymous			PC-086	Bsup 185
Anonymous			PC-088	Bsup 187
Baitinger	Claudia	Friends of the Earth Germany North Rhine Westphalia	PC-047, PC-055	Bsup 50-51, Bsup 78-110
Bancroft	Brenda		PCT-15	Bsup 243-244
Barton	Sarah		PC-006	Bsup 7
Beeny	Diane		PC-081	Bsup 180
Belaski	Meghan		PC-074	Bsup 171-172
Blackman	William		PC-076	Bsup 174
Bledsoe	Deb		PC-089	Bsup 188
Boslar	Guido	Alliance 90/The Greens	PC-048, PC-050	Bsup 52-53, Bsup 58-59
Boslar	Marita		PC-046, PC-049	Bsup 47-49, Bsup 54-57
Bridges	Donald	Citizens for Nuclear Technology Awareness	PC-013, PCT-06	Bsup 22-24, Bsup 224-225
Cadotte	Bruce		PC-002	Bsup 2
Carroll	Glenn	Nuclear Watch South	PCT-21	Bsup 255-256
Chaput	Ernest		PCT-11	Bsup 233-235
Clements	Tom	SRS Watch	PC-008, PC-053, PC-060, PCT-01	Bsup 10-18, Bsup 65-75, Bsup 123-133, Bsup 215-217
Cooper	Elaine		PCT-04	Bsup 222
Corbett	Susan	Sierra Club	PCT-24	Bsup 261-262
Dickson	Paul		PC-054	Bsup 76-77
France	Marushka		PC-084	Bsup 183
Geddes	Stephen.		PC-007	Bsup 8-9
Gillas	Dawn		PC-012; PCT-05	Bsup 21, Bsup 222-223
Goergen	Chuck		PC-057, PCT-07	Bsup 113-115, Bsup 225-

Last Name	First Name	Affiliation (if any)	Comment Document Number	Appendix Page Where Comment Document can be Found [a]
				227
Gray	Erica		PC-082	Bsup 181
Greenlaw	Pamela		PCT-03	Bsup 220-221
Guld	Robert		PCT-27	Bsup 266-268
Haase	Martina		PC-062	Bsup 137-143
HaLevy	Libbe		PC-087	Bsup 186
Hall	Chris	S.C. Sierra Club	PCT-16	Bsup 245-247
Haskell	Sandy		PCT-19	Bsup 252
Hayes	Rose		PCT-09	Bsup 229-231
Hoel	David		PC-097	Bsup 203-205
Hogness	Pauline		PC-079	Bsup 177
Jenkins-Boseman	Brendolyn		PCT-28	Bsup 269-270
Jensen	Pia		PC-043	Bsup 40-42
Jones	Virginia		PC-001	Bsup 1
Kaminski	Daniel	SRS Citizens Advisory Board	PCT-08	Bsup 228-229
Kehr	Ken, Jr.	N. Augusta Chamber of Commerce	PCT-10	Bsup 232
Kotting-Uhl	Sylvia	Member, German Bundestag	PC-059	Bsup 119-122
Krischer	Oliver	Member, German Bundestag	PC-093	Bsup 192-193
Lance	Laura		PCT-12	Bsup 235-237
Lawless	Bill		PCT-17	Bsup 247-249
Lindner-Hausner	Hilde		PC-044	Bsup 43-45
Lovato	Greg	Nevada Department of Environmental Protection	PC-058	Bsup 116-118
Mahood-Jose	Eileen		PC-071	Bsup 168
Mann	Viv		PC-039	Bsup 35
Martin	William		PC-090	Bsup 189
Matos	David	Carolina Peace Resource Center	PCT-18	Bsup 249-252
McConney	Ramona	U.S. Environmental Protection Agency	PC-064	Bsup 147-148
McLeod	Rick	SRS Community Reuse Organization	PC-021, PCT-13	Bsup26-27, Bsup 238-241
Miller	Barry		PC-077	Bsup 175
Minerd	Leslie		PCT-26	Bsup 264-266
Moormann	Rainer		PC-063	Bsup 145-146
Nicholson	Ruth		PC-003	Bsup 3
Parr	Susan	Chamber of Commerce	PCT-14	Bsup 243
Parson	Marolyn		PC-065	Bsup 149-158
Patterson	Karen	S.C. Nuclear Advisory Council	PC-051	Bsup 60-63
Powell	Larry		PC-092	Bsup191
Presler	Jeannie		PC-052	Bsup 64
Quast	Irene		PC-061, PC-067	Bsup 134-136, Bsup 161-163
Rafter	Becky		PC-066	Bsup 159-160
Reynolds	Donna		PC-041	Bsup 37
Rhodes	Suzanne	League of Women Voters	PC-009, 056; PCT-02	Bsup 19, Bsup 111-112, Bsup 219
Rickman	Wayne	CNTA	PC-032, PCT-25	Bsup 29-30, Bsup 263-264

Last Name	First Name	Affiliation (if any)	Comment Document Number	Appendix Page Where Comment Document can be Found [a]
Rieman	Laurie		PC-072	Bsup 169
Rivard	Betsy		PCT-23	Bsup 258-259
Schimmelpfennig	Pamela		PC-083	Bsup 182
Sego	Erika		PC-085	Bsup 184
SEIPA		SE Indigenous Peoples Association	PC-068	Bsup 164-165
Shepherd	Tammy	Columbia County Chamber of Commerce	PC-042	Bsup 38-39
Spinelli	Nina		PC-005	Bsup 5-6
Stennes	Nancy		PC-078	Bsup 176
Tatum	Gloria		PCT-22	Bsup 256-258
Thomas	Ruth	Environmentalists, Inc.	PC-096	Bsup 200-202
Thompson	Mark		PC-091	Bsup 190
Utley	Charles	Blue Ridge Environmental Defense League	PCT-20	Bsup 253-254
Wert	Julie		PC-073	Bsup 170
Wilder	Ronald		PC-094	Bsup 194-195
Williams	Joanne		PC-036	Bsup 32
Wilson	Shelly	South Carolina Department of Health and Environmental Control	PC-095	Bsup 196-199
Wortiska	Dan		PC-069	Bsup 166
Yates	Kenneth		PC-004	Bsup 4
Young	Jesse	Don't Waste Aiken	PC-038	Bsup 34

[a] Page references to the delineated public comments, including the transcript, are expressed as Bsup-xxx, indicating that the referenced document can be found in a supplement attachment to Appendix B.

Table B-2 presents the commentors and associated comment numbers and the corresponding section of this appendix where the DOE response to comment can be found. For ease of use, commentors are presented alphabetically by last name.

Table B-2 List of Commentors, Comment Number, and Summary Response

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
Anonymous		PC-070-1	B.2.13
Anonymous		PC-070-2	B.2.13
Anonymous		PC-075-1	B.2.2, B.2.6
Anonymous		PC-080-1	B.2.9
Anonymous		PC-080-2	B.2.4
Anonymous		PC-080-3	B.2.2, B.2.4
Anonymous		PC-086-1	B.2.2
Anonymous		PC-088-1	B.2.2, B.2.9, B.2.12
Anonymous		PC-088-2	B.2.5, B.2.9, B.2.13
Baitinger	Claudia	PC-047, PC-055	See Table Note c
Bancroft	Brenda	PCT-15-1	B.2.2
Barton	Sarah	PC-006-1	B.2.2, B.2.3
Barton	Sarah	PC-006-2	B.2.11, B.2.13

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
Beeny	Diane	PC-081-1	B.2.2
Beeny	Diane	PC-081-2	B.2.11, B.2.11.3
Belaski	Meghan	PC-074-1	B.2.2, B.2.6
Blackman	William	PC-076-1	B.2.2
Bledsoe	Deb	PC-089-1	B.2.2
Boslar	Guido	PC-048	See Table Note c
Boslar	Guido	PC-050	See Table Note c
Boslar	Marita	PC-046	See Table Note c
Boslar	Marita	PC-049	See Table Note c
Bridges	Donald	PC-013-1	B.2.2
Bridges	Donald	PC-013-2	B.2.2
Bridges	Donald	PC-013-3	B.2.11
Bridges	Donald	PC-013-4	B.2.2
Bridges	Donald	PCT-06-1	B.2.2
Bridges	Donald	PCT-06-2	B.2.2, B.2.11.2
Bridges	Donald	PCT-06-3	B.2.11
Bridges	Donald	PCT-06-4	B.2.2
Cadotte	Bruce	PC-002-1	B.2.2
Carroll	Glenn	PCT-21-1	B.2.5
Carroll	Glenn	PCT-21-2	B.2.2, B.2.6
Carroll	Glenn	PCT-21-3	B.2.3
Chaput	Ernest	PCT-11-1	B.2.2
Chaput	Ernest	PCT-11-2	B.2.2
Chaput	Ernest	PCT-11-3	B.2.2
Chaput	Ernest	PCT-11-4	B.2.13
Chaput	Ernest	PCT-11-5	B.2.6, B.2.10
Clements	Tom	PC-008-1	B.2.9
Clements	Tom	PC-008-2	B.2.2, B.2.6, B.2.12
Clements	Tom	PC-008-3	B.2.2, B.2.7
Clements	Tom	PC-008-4	B.2.9
Clements	Tom	PC-008-5	B.2.1, B.2.4, B.2.5, B.2.10
Clements	Tom	PC-008-6	B.2.9
Clements	Tom	PC-008-7	B.2.2
Clements	Tom	PC-008-8	B.2.5, B.2.7
Clements	Tom	PC-008-9	B.2.4
Clements	Tom	PC-008-10	B.2.2, B.2.4
Clements	Tom	PC-008-11	B.2.5
Clements	Tom	PC-008-12	B.2.5, B.2.6
Clements	Tom	PC-008-13	B.2.1, B.2.5
Clements	Tom	PC-008-14	B.2.3
Clements	Tom	PC-008-15	B.2.6
Clements	Tom	PC-008-16	B.2.1
Clements	Tom	PC-053-1	B.2.9, B.2.13
Clements	Tom	PC-053-2	B.2.3, B.2.6, B.2.13
Clements	Tom	PC-053-3	B.2.3, B.2.9
Clements	Tom	PC-053-4	B.2.2
Clements	Tom	PC-053-5	B.2.9, B.2.10
Clements	Tom	PC-053-6	B.2.2, B.2.5
Clements	Tom	PC-053-7	B.2.13
Clements	Tom	PC-060-1	B.2.1, B.2.5

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
Clements	Tom	PC-060-2	B.2.1, B.2.5, B.2.9, B.2.13
Clements	Tom	PC-060-3	B.2.1, B.2.7, B.2.9, B.2.11,
Clements	Tom	PC-060-4	B.5.3
Clements	Tom	PC-060-5	B.2.5.3
Clements	Tom	PC-060-6	B.2.5.3
Clements	Tom	PC-060-7	B.2.5.3
Clements	Tom	PC-060-8	B.2.5.3
Clements	Tom	PC-060-9	B.2.5.3
Clements	Tom	PC-060-10	B.2.5.3
Clements	Tom	PC-060-11	B.2.5.3
Clements	Tom	PC-060-12	B.2.5.3
Clements	Tom	PC-060-13	B.2.5.3
Clements	Tom	PC-060-14	B.2.5.3
Clements	Tom	PC-060-15	B.2.5.3
Clements	Tom	PC-060-16	B.2.5.3
Clements	Tom	PC-060-17	B.2.2, B.2.7
Clements	Tom	PCT-01-1	B.2.5, B.2.9, B.2.11
Clements	Tom	PCT-01-2	B.2.2, B.2.3
Clements	Tom	PCT-01-3	B.2.2
Clements	Tom	PCT-01-4	B.2.9
Clements	Tom	PCT-01-5	B.2.2
Clements	Tom	PCT-01-6	B.2.5, B.2.6, B.2.9
Clements	Tom	PCT-01-7	B.2.2
Cooper	Elaine	PCT-04-1	B.2.6
Corbett	Susan	PCT-24-1	B.2.2, B.2.6, B.2.12, B.2.13
Corbett	Susan	PCT-24-2	B.2.2
Dickson	Paul	PC-054-1	B.2.2, B.2.10
France	Marushka	PC-084-1	B.2.2, B.2.11
France	Marushka	PC-084-2	B.2.2
Geddes	Stephen V.	PC-007-1	B.2.2
Geddes	Stephen V.	PC-007-2	B.2.6, B.2.8, B.2.12
Gillas	Dawn	PC-012-1	B.2.1
Gillas	Dawn	PCT-05-1	B.2.2
Gillas	Dawn	PCT-05-2	B.2.2
Goergen	Chuck	PC-057-1	B.2.2
Goergen	Chuck	PCT-07-1	B.2.2
Gray	Erica	PC-082-1	B.2.2, B.2.9, B.2.13
Greenlaw	Pamela	PCT-03-1	B.2.1, B.2.5
Greenlaw	Pamela	PCT-03-2	B.2.4, B.2.5
Greenlaw	Pamela	PCT-03-3	B.2.11.1
Greenlaw	Pamela	PCT-03-4	B.2.9
Guld	Robert	PCT-27-1	B.2.2
Guld	Robert	PCT-27-2	B.2.6, B.2.12
Guld	Robert	PCT-27-3	B.2.11.2
Guld	Robert	PCT-27-4	B.2.2
Guld	Robert	PCT-27-5	B.2.13
Haase	Martina	PC-062	See Table Note c
HaLevy	Libbe	PC-087-1	B.2.12
HaLevy	Libbe	PC-087-2	B.2.11.3
HaLevy	Libbe	PC-087-3	B.2.5

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
HaLevy	Libbe	PC-087-4	B.2.2
Hall	Chris	PCT-16-1	B.2.6, B.2.13
Haskell	Sandy	PCT-19-1	B.2.2
Hayes	Rose	PCT-09-1	B.2.12
Hayes	Rose	PCT-09-2	B.2.11.2
Hayes	Rose	PCT-09-3	B.2.6
Hayes	Rose	PCT-09-4	B.2.6
Hayes	Rose	PCT-09-5	B.2.6, B.2.12
Hoel	David	PC-097-1	B.2.2
Hoel	David	PC-097-2	B.2.10
Hoel	David	PC-097-3	B.2.8, B.2.12, B.2.13
Hoel	David	PC-097-4	B.2.2, B.2.6
Hoel	David	PC-097-5	B.2.6, B.2.12
Hoel	David	PC-097-6	B.2.9
Hogness	Pauline	PC-079-1	B.2.13
Jenkins-Boseman	Brendolyn	PCT-28-1	B.2.6, B.2.9
Jenkins-Boseman	Brendolyn	PCT-28-2	B.2.4, B.2.11
Jenkins-Boseman	Brendolyn	PCT-28-3	B.2.11.3
Jenkins-Boseman	Brendolyn	PCT-28-4	B.2.11.2
Jenkins-Boseman	Brendolyn	PCT-28-5	B.2.5
Jenkins-Boseman	Brendolyn	PCT-28-6	B.2.1
Jensen	Pia	PC-043-1	B.2.11.3
Jensen	Pia	PC-043-2	B.2.9, B.2.11
Jones	Virginia	PC-001-1	B.2.2
Jones	Virginia	PC-001-2	B.2.12
Kaminski	Daniel	PCT-08-1	B.2.8, B.2.9
Kaminski	Daniel	PCT-08-2	B.2.6, B.2.12, B.2.13
Kehr	Ken, Jr.	PCT-10-1	B.2.2
Kotting-Uhl	Sylvia	PC-059-1	B.2.7
Krischer	Oliver	PC-093	See Table Note c
Lance	Laura	PCT-12-1	B.2.6, B.2.13
Lance	Laura	PCT-12-2	B.2.2, B.2.13
Lance	Laura	PCT-12-3	B.2.11.3
Lawless	Bill	PCT-17-1	B.2.2
Lawless	Bill	PCT-17-2	B.2.13
Lindner-Hausner	Hilde	PC-044-1	B.2.3, B.2.9
Lindner-Hausner	Hilde	PC-044-2	B.2.2, B.2.4
Lindner-Hausner	Hilde	PC-044-3	B.2.5, B.2.9
Lindner-Hausner	Hilde	PC-044-4	B.2.7
Lovato	Greg	PC-058-1	B.2.1, B.2.5
Lovato	Greg	PC-058-2	B.2.5
Lovato	Greg	PC-058-3	B.2.6
Lovato	Greg	PC-058-4	B.2.11.4
Mahood-Jose	Eileen	PC-071-1	B.2.2, B.2.9
Mann	Viv	PC-039-1	B.2.7, B.2.11
Mann	Viv	PC-039-2	B.2.6, B.2.11.3
Martin	William	PC-090-1	B.2.2
Matos	David	PCT-18-1	B.2.2, B.2.6, B.2.12, B.2.13
Matos	David	PCT-18-2	B.2.2, B.2.11, B.2.11.2
McConney	Ramona	PC-064-1	B.2.5

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
McLeod	Rick	PC-021-1	B.2.1, B.2.9
McLeod	Rick	PC-021-2	B.2.2
McLeod	Rick	PC-021-3	B.2.1, B.2.6, B.2.8, B.2.11, B.2.13
McLeod	Rick	PCT-13-1	B.2.1, B.2.2
McLeod	Rick	PCT-13-2	B.2.2
McLeod	Rick	PCT-13-3	B.2.2, B.2.6, B.2.8, B.2.12, B.2.13
Miller	Barry	PC-077-1	B.2.2
Miller	Barry	PC-077-2	B.2.2
Minerd	Leslie	PCT-26-1	B.2.6, B.2.12
Minerd	Leslie	PCT-26-2	B.2.2
Moormann	Rainer	PC-063-1	B.2.5.3, B.2.10
Moormann	Rainer	PC-063-2	B.2.2, B.2.4
Moormann	Rainer	PC-063-3	B.2.1, B.2.5
Nicholson	Ruth	PC-003-1	B.2.6
Nicholson	Ruth	PC-003-2	B.2.7, B.2.9
Parr	Susan	PCT-14-1	B.2.2
Parson	Marolyn	PC-065-1	B.2.6, B.2.11, B.2.11.2
Parson	Marolyn	PC-065-2	B.2.11
Parson	Marolyn	PC-065-3	B.2.12
Parson	Marolyn	PC-065-4	B.2.13
Parson	Marolyn	PC-065-5	B.2.9, B.2.12
Patterson	Karen	PC-051-1	B.2.2
Patterson	Karen	PC-051-2	B.2.1
Patterson	Karen	PC-051-3	B.2.6, B.2.8, B.2.12, B.2.13
Powell	Larry	PC-092-1	B.2.2, B.2.12
Presler	Jeannie	PC-052-1	B.2.12, B.2.13
Quast	Irene	PC-061	See Table Note c
Quast	Irene	PC-067	See Table Note c
Rafter	Becky	PC-066-1	B.2.9
Rafter	Becky	PC-066-2	B.2.1
Rafter	Becky	PC-066-3	B.2.10
Rafter	Becky	PC-066-4	B.2.6
Rafter	Becky	PC-066-5	B.2.4
Rafter	Becky	PC-066-6	B.2.2
Rafter	Becky	PC-066-7	B.2.2, B.2.9
Rafter	Becky	PC-066-8	B.2.7
Reynolds	Donna	PC-041-1	B.2.2
Rhodes	Suzanne	PC-009-1	B.2.2
Rhodes	Suzanne	PC-009-2	B.2.6
Rhodes	Suzanne	PC-056-1	B.2.2, B.2.5, B.2.6
Rhodes	Suzanne	PC-056-2	B.2.9
Rhodes	Suzanne	PC-056-3	B.2.3
Rhodes	Suzanne	PC-056-4	B.2.2
Rhodes	Suzanne	PC-056-5	B.2.13
Rhodes	Suzanne	PC-056-6	B.2.9
Rhodes	Suzanne	PCT-02-1	B.2.3
Rhodes	Suzanne	PCT-02-2	B.2.2
Rickman	Wayne	PC-032-1	B.2.2
Rickman	Wayne	PCT-25-1	B.2.2
Rieman	Laurie	PC-072-1	B.2.2, B.2.9

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
Rivard	Betsy	PCT-23-1	B.2.6
Rivard	Betsy	PCT-23-2	B.2.3
Rivard	Betsy	PCT-23-3	B.2.5
Rivard	Betsy	PCT-23-4	B.2.1
Schimmelpfennig	Pamela	PC-083-1	B.2.2
Sego	Erika	PC-085-1	B.2.2, B.2.6, B.2.11.3
Shepherd	Tammy	PC-042-1	B.2.2
Shepherd	Tammy	PC-042-2	B.2.11
SE Indigenous Peoples		PC-068-1	B.2.6, B.2.11.3, B.2.13,
SE Indigenous Peoples		PC-068-2	B.2.9, B.2.11, B.2.13
SE Indigenous Peoples		PC-068-3	B.2.1
SE Indigenous Peoples		PC-068-4	B.2.11, B.2.11.3, B.2.13
Spinelli	Nina	PC-005-1	B.2.9, B.2.12
Spinelli	Nina	PC-005-2	B.2.11.3
Stennes	Nancy	PC-078-1	B.2.2, B.2.9, B.2.11.3, B.2.12, B.2.13
Tatum	Gloria	PCT-22-1	B.2.6, B.2.12
Tatum	Gloria	PCT-22-2	B.2.3, B.2.5, B.2.6
Tatum	Gloria	PCT-22-3	B.2.2, B.2.3
Tatum	Gloria	PCT-22-4	B.2.11, B.2.11.2
Thomas	Ruth	PC-096-1	B.2.1, B.2.5
Thomas	Ruth	PC-096-2	B.2.5
Thomas	Ruth	PC-096-3	B.2.1
Thomas	Ruth	PC-096-4	B.2.1, B.2.11, B.2.13
Thomas	Ruth	PC-096-5	B.2.11.2
Thomas	Ruth	PC-096-6	B.2.1
Thomas	Ruth	PC-096-7	B.2.2
Thompson	Mark	PC-091-1	B.2.2
Utley	Charles	PCT-20-1	B.2.11
Utley	Charles	PCT-20-2	B.2.2, B.2.7
Wert	Julie	PC-073-1	B.2.2
Wilder	Ronald	PC-094-1	B.2.2, B.2.7, B.2.11, B.2.11.3
Wilder	Ronald	PC-094-2	B.2.11.3
Wilder	Ronald	PC-094-3	B.2.2, B.2.6, B.2.12
Williams	Joanne	PC-036-1	B.2.7
Williams	Joanne	PC-036-2	B.2.6, B.2.13
Wilson	Shelly	PC-095-1	B.2.2, B.2.6, B.2.12, B.2.13
Wilson	Shelly	PC-095-2	B.2.6
Wilson	Shelly	PC-095-3	B.2.8, B.2.13
Wilson	Shelly	PC-095-4	B.2.6, B.2.13
Wilson	Shelly	PC-095-5	B.2.1, B.2.6
Wilson	Shelly	PC-095-6	B.2.6
Wilson	Shelly	PC-095-7	B.2.1, B.2.12
Wortiska	Dan	PC-069-1	B.2.2
Yates	Kenneth R.	PC-004-1	B.2.2

Last Name	First Name	Comment Number [a]	Response Summary Section [b]
Young	Jesse	PC-038-1	B.2.2
Young	Jesse	PC-038-2	B.2.6
Young	Jesse	PC-038-3	B.2.2

[a] Oral comments received in the public meeting are identified with a PCT- prefix. All other comment documents are identified with a PC- prefix.

[b] Comments frequently addressed multiple response topics within the same delineated comment. For those comments, each of the response summary sections in this appendix where the comment is addressed is listed in the Response Summary Section column.

[c] Multiple form letters were received during the public comment period, including several with petitions. Only the first such form letter was delineated, Lindner-Hausner, PC-044. All subsequently received form letters and petitions received a comment document number and are included in the compilation of public comments in Section B-2, but were not individually delineated. Please refer to Lindner-Hausner PC-044 for the form letter delineation and the corresponding response summary section associated with the respective comment.

B.3.2 PUBLIC COMMENTS AND PUBLIC MEETING TRANSCRIPT

This section of Appendix B presents the delineated comment documents. Each comment document is provided with the respective delineated comments noted in the margin. Personally identifiable information (PII) such as personal addresses, email addresses, and phone numbers were redacted.

As noted above, there were multiple duplicate comment documents. Several comment documents (e.g., PC-010) were initially hand-notes capturing testimony provided at the public meeting on the Draft EA. After the meeting transcript was received and specific comments extracted from that transcript, the hand-written notes were labelled as duplicates. However, to preserve the integrity of the comment document numbering system, the document numbers for the duplicate documents were retained.

Several commentors submitted identical form letters. Only one of these form letters was delineated (e.g., PC-044). Subsequent submittals of the same form letter were not delineated (e.g., PC-046, PC-047, et seq.). The duplicate form letters are also retained and presented in the compilation of documents.

The comment documents received via email, letter, and fax are presented first, and are followed by the transcript from the public meeting.

From: Virgina Jones
Subject: [Germanspentnuclearfuelea] No to German fuel

001-1 I am opposed to German fuel being
#Received in any form at SRS
#processed in any manner at SRS
#stored for ANY amount of time, in any waste form at SRS...low level, vitrified, TRU, spent or high level.

001-2 There is NO national repository for disposition of nuclear materials.
There is not even a Congressional PLAN for a disposition site.
There is not even a single penny of Congressional funding designated for a disposition site.
It will take decades to build a disposition site and that's not talking about state and national approval and licensing of such a site.

Sent from my iPad

From: Bruce Cadotte
Subject: [Germanspentnuclearfuelea] Acceptance of spent German HEU fuel at SRS

Consistent with existing policy and with US interests in nonproliferation, the subject fuel should of course be received at SRS for processing. The simplest and lowest-cost secure alternative would seem to be the H Area Alternative, and DOE should adopt that alternative.

002-1 One would think that the receipt of US-origin HEU for processing would, by this time, be settled policy that would pose no unexpected impacts and that could be pursued without the continual added costs and delays of re-reviews, unless there has been some technical development that would bar this practice. I've seen no mention in the documentation that there has been any such development. After all, that this fuel was out there and that it was expected to be returned for disposition is not a surprise. But I understand the CYA need to make sure the NEPA trail has been well-papered. Please proceed with all deliberate speed.

From: Ruth Nicholson
Subject: [Germanspentnuclearfuelea] Comment on this project proposal

I wish to register my opinions about the proposed environmental impact statement for bringing spent nuclear fuel from Germany to the SRS.

003-1 South Carolina, as a relatively poor state, has, for decades, accepted all kinds of toxic waste from other locations in exchange for money from companies eager to be rid of the waste. "Dumping ground" is a term often mentioned for our state. Even with assurances of safe storage and minimal risk to the natural environment and public health, our state is now struggling with the failure of many of the "safe" storage methods, resulting in contamination of ground water and danger to the public health. It is my opinion that no assurances of safety can rule out problems in the future, especially with the lack of oversight which has also been an unfortunate tradition in South Carolina.

003-2 Second, the national government has dragged its feet on reprocessing projects after promising that these would get off the ground and create jobs, etc., as well as making nuclear materials sent to the SRS "safer." How can citizens of this state be sure that the money and manpower and oversight for re-processing of the German material will be adequately funded and carried out according to the optimistic blueprint?

003-1 South Carolina is a small state. It has borne the load of so much dangerous material for which no other state wanted to take responsibility. I am strongly against relying on ANY environmental impact statement, no matter how encouraging, to allow the German material project to go forward. We have enough radioactive material already at SRS, in a deteriorating storage situation. It would be reckless to accept more. The future health and wellbeing of the citizens here demand that we say "No!"

Sincerely,
Ruth Nicholson
West Columbia, SC

From: Kenneth Yates
Subject: [Germanspentnuclearfuelea] Comments

My comments on the Draft EA for the Acceptance and Disposition of Spent Nuclear Fuel form the Federal Republic of Germany follow:

1. Savannah River Site (SRS) routinely accepts spent nuclear fuel from small reactors all over the world as part of the program begun under President Eisenhower. Thus, it seems entirely fitting the U.S. accept the shipment of German spent fuel to SRS. The number of shipments is small compared to the total number of shipments received by SRS over the past several decades, and small compared to the number of shipments that will continue to be routinely accepted at SRS.

2. The form of the German spent fuel is robust. That is, the carbon coating is very tough and not amenable to dissolution in water, dispersal in the atmosphere as particulate, or dispersal due to fire.

004-1 3. The Castor shipping casks meet transportation requirements established by the U.S. The material used for the cask walls (ductile cast iron) is very durable. Cask tests are included as part of U.S. approval. The Sandia crash tests a few decades ago provide useful information on the crash-worthiness of shipping casks in general.

4. Given the current climate of international terrorist activities, the spent fuel will be safer at SRS than in Germany. Moreover, SRS has the capability to process the spent fuel in a number of ways,thereby eliminating the potential for proliferation or (at least) greatly increasing the proliferation resistance of the material.

5. While there are those who will always concerned about, or oppose, almost anything involving nuclear/radioactive materials, there is nothing particularly unusual about the proposed activity and any safety issues involved have long since been more than adequately addressed.

In conclusion, I fully support the shipment of German spent fuel to SRS.

K. R. Yates
Aiken, SC 29803

From: Nina Spinelli
Subject: [Germanspentnuclearfuelea] Public Comment

Good Morning,

Attached is my public comment regarding the Acceptance and Disposition of Spent Nuclear Fuel Containing U.S. Origin Highly Enriched Uranium from the Federal Republic of Germany.

Thank you,

Nina Spinelli - Member of the Public

To paraphrase, the Department of Energy's purpose in this proposed project is to accept, store, process and ultimately disposition the spent nuclear from Germany to support the United States' policy to reduce and eventually eliminate HEU derived from US origin. This return would further current policy to safely store HEU in a form that is no longer usable for an impoverished nuclear device, a radiological dispersal device, or other radiological exposure device. The draft EA also highlights that while the focus of the assessment is on HEU, spent nuclear fuel does contain other radioactive materials that in the wrong hands, may create radiological devices, such as dirty bombs, that could cause harm people and the world.

005-1

In the EA, the baseline is no action, which in my understanding is leaving the material in Germany. Germany today is a leading member of the European Union and a member of the United Nations, acting as the third-largest financial contributor after the US and Japan. According to the CIA Fact Book, the German economy is the fifth-largest in the world and Europe's largest. The country has a civil legal system and a Federal Armed Force, a Navy, Air Force, Central Medical Services, and Joint Support Services. All that to say to that Germany has many factors similar to the United States as far as financial stability and military power to maintain the security of the currently housed HEU, and in my opinion, maintain the HEU safely and securely.

I believe that many public comments will be shared voicing concerns about the amount of HEU that will be brought to the Savannah River Site and the lack of a long-term geological repository that will actually store this material. Concerns will be discussed about this material essentially sitting-in limbo at the Savannah River Site. While as a citizen I have no doubt that the DOE will work diligently to safely store and maintain the material, it seems odd to bring material from one seemingly stable location to another without a final disposition path in place. I

005-1 believe that if a final path could be established, bringing the material from Germany brought to SRS to be sorted and moved would make more sense.

005-2 My comment, however, does not focus on what will happen with the material once brought, but rather, on the transportation of the material. Train and ship will be primarily used to transport the material from Germany to the Savannah River Site. The material will be transported in approximately 30 shipments over a three-year period over 4,000 nautical miles. In total, it will take 120,000 miles to bring the material to SRS. My concern rests in the actual transit of the material. I understand all the safety precautions that will be in place, but the open sea seems to provide extreme vulnerability of the material. Stories, both over past years and recent weeks, have emerged about vessels being taken hostage and attacked in an attempt to gain access to materials on board.

005-1 I am deeply concerned about how ships will be protected against theft, the cost associated with that protection, and I do not believe that the benefit of bringing the material to the US is not worth the material crossing 120,000 open sea miles. I, as a member of the public, believe that no action should be taken at this time, since I do not believe that the material is a threat in Germany and that our work should focus on receiving fuel from states that do pose a risk and having a final resting place for those foreign receipts.

From: Sarah Barton
Subject: [Germanspentnuclearfuelea] Spent Nuclear Fuel From Germany
EA

Dear Tracy Williams,

006-1 This letter is written in objection to the ill conceived plan to bring in spent commercial nuclear fuel from Germany. This waste is not part of the Atoms For Peace agreement, but a ploy to bring in the fuel, as a purely profitable venture, based on monetary gain, and has nothing to do with national security, nor, obviously, clean up. The NNSA has declared that this waste is left safe, in Germany, and poses no international security risks. In fact, it is more of a risk to move this material, than to let it remain in German.

006-2 As a legitimately concerned lifetime resident of Aiken, and daughter of a past nuclear reactor operator, my father developed cancer, as a result of his exposure while employed at DuPont. We are still struggling to clean up the mess from our ignorant past, in so far as ways of dealing with this waste goes. The last thing we need is to be the world's repository for such toxic waste.

I, a concerned citizen, with a voice that counts, urge you, strongly, to take a stance against brining in more waste, while we are still cleaning up the aftermath of our previous waste. I believe a healthy environment, in which to live and raise our children, trumps the hunger for monetary gain, through this reprocessing. I believe that anyone who cares about the environment, and our future, will put forth every effort to put a stop to this insanity. I hope you are one of them.

Sincerely,

Sarah L. Barton

From: Stephen Geddes
Subject: [Germanspentnuclearfuelea] Comment on bringing German nuclear waste to SRS in South Carolina

Please add this to the record of comments received subsequent to the 4 Feb 16 DOE Public meeting in North Augusta, SC:

To: Tracy Williams, NEPA Compliance Officer
Draft Spent Nuclear Fuel from Germany EA
U.S. Department of Energy
07 February 2016

007-1 Somewhere in the public meeting presentation, I believe, the comment was made that this waste had been provided to Germany under the Atoms for Peace program which obligated us to take the material back when Germany was finished with it. That being the case, I support bringing the material to SRS, a place where it can be protected from theft by terrorist organizations and treated, as necessary, prior to ultimate disposal.

007-2 If it is germane to this proposition, and allowed under the rules for preparing the final Environmental Assessment, I would like to see the US government specify where the "ultimate disposal" point will be and specify a "to be delivered no later than date" to assure that the material not remain in South Carolina any longer than might be necessary for a chemical separation to be effected to minimize the volume of the radioactive waste, if that is what is desired. Also, to minimize the opportunity the Congress and various Administrations might have to attempt to change its mind on delivery of the material to its "ultimate disposal" point, I would suggest the same, or similar, conditions currently placed on the Federal Government to complete certain work at SRS be included in the agreement for receiving and removing this waste to its "ultimate disposal" point, i.e., a one (no, make that ten) million dollar a day fine to be paid to the State of South Carolina by the Department of Energy, to begin to be paid on the very day that the material remains at SRS in South Carolina beyond that "to be delivered no later than date."

So long as that "ultimate disposal" point is provided and the needed fine and means of payment is specified, I see no reason why this Environmental Assessment not be finalized.

Also, please include the following article as a part of my comment, for the record.

http://www.examiner.com/article/this-public-meeting-could-be-key-to-the-safety-of-all-americans?

Thank you.

Stephen V. Geddes sent 07February,2016 via email to:
germanspentnuclearfuelea@leidos.com

Stephen V. Geddes
Aiken SC 29801-5163

cc: Senator Lindsay Graham,
Senator Tim Scott
Representative Joe Wilson
Governor Nikki Haley

SRS WATCH

Savannah River Site Watch

Comments of Tom Clements, Director, Savannah River Site Watch at the Public Meeting on the Draft Environmental Assessment on the Import, Processing and Dumping of Commercial German Spent Fuel at the Savannah River Site, February 4, 2016

Not Needed - Not a Nonproliferation Project - A Bad Trend that Adds to the SRS Waste Burden

These comments are being formally submitted for the record of the U.S. Department of Energy's *Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany* (DOE/EA-1977).

008-1

The overall impression of the draft environmental assessment is that is a presentation of highly speculative technologies and highly speculative schedules for implementation of the spent fuel import proposal. The department has done a poor job in making a clear proposal concerning both the need for import of the highly radioactive spent fuel from the long-closed AVR and THTR reactors in Germany and for the processing of it at the Savannah River Site.

The goal of the document and general proposal remains a mystery as explanation in the document is lacking. Is it for development of a new reprocessing technique? Is it make-work for SRNL? Is it part of an effort keep H-Canyon open by utilizing it? Is it a source of income for SRNL and H-Canyon? Is it tied to future development of pebble-bed reactors and graphite fuel management? One thing is clear: this proposal will result in more high-level nuclear waste coming to SRS with no exit path out of the state of South Carolina.

008-2

This speculative, rough proposal that has been presented is part of a disturbing trend for SRS to import nuclear materials for payment, under the guise of nuclear non-proliferation. The payment by Germany for the work done under the "work for others agreement" appears to be a major motivation to so far pursue this project. The possibility of larger amounts of funding by Germany is tempting to some. The proposal is clear indication to the public that some see part of the future of SRS engaged in this type of waste import and waste management business, which will result in more nuclear waste being disposed of or stranded at SRS.

008-3

It must be noted that while the "Statement of Intent" between U.S. and German entities, dated April 2014, discusses use of SRS facilities for processing the spent fuel, the "Work for Others Agreement" (WFO-13-002), dated November 2012 discusses placement at the Juelich site of facilities to test the digestion process. Is this approach still being pursued? If not, is there another WFO agreement in place? What does any new WFO say about testing facilities and full-scale facilities at Juelich or SRS? If

testing and full-scale deployment of the technologies do not take place at Juelich, why not? What is the justification if processing goes forward to export the material to SRS and not carry out the program in Germany? Though comments of this nature were submitted during the scoping for the EA, DOE has not adequately addressed this matter.

008-3

No Need for the Proposal and Spent Fuel Import

From an environmental perspective even DOE can't muster any reasons in the document for importing the spent fuel versus its management in Germany. Thus, the "need" for the import proposal is simply not presented. While the work may be intriguing from a scientific perspective, the lack of need for it must guide the decision-making process.

008-1

The draft EA states that the "Direct Spent Fuel Disposal Alternative" was rejected as "this alternative was dismissed from further consideration because the CASTOR cask is not a qualified disposal container nor is there an existing spent nuclear fuel cask qualified for disposal of this type of spent fuel." While direct disposal in the U.S. most certainly must be rejected the U.S. could help Germany with this alternative, long the planned disposal option, if the Germans requested help. The draft EA makes no presentation that a certified disposal cask is being developed or could be developed (in Germany) or that direct disposal is not a viable alternative. Rather than development of processing techniques that generate a host of waste streams, many of which pose environmental or radiological dispersion device risks, the focus of graphite spent fuel management may best be served by development of direct disposal methods. The draft EA should address this in as far as the U.S. could help Germany with this approach.

008-4

Timeline Suspect

Unfortunately, as the techniques proposed are highly speculative. In the time-line for research, pilot facilities and design and construction of full-scale facilities, there are many opportunities for failure of the program if the CASTOR casks with the spent fuel are imported in advance of the path forward being known, as is the case now. Given this possibility for failure, the direct disposal option must be explored if the spent fuel is stranded at SRS.

It is highly suspect as to why the shipment of the casks to SRS is at the front-end of the project, while research is being conducted on techniques by which to process the spent fuel. Cask receipt would occur even before and during development of processing techniques and construction and operation of speculative pilot-scale facilities. To make this situation worse, the casks would be at SRS before the full-scale process was chosen and facilities constructed and the process put into operation. It all appears to be educated guessing at an "ideal" path forward and timeline.

This backwards schedule is a recipe for the casks being stuck at SRS if the project fails or is abandoned or slows down considerably, all of which are very possible. The claim that storage would be for up to 10 years is not supported by any facts presented in the draft EA.

008-5

Connection to Other HTGRs

008-6

The possibility that the project of processing the German graphite balls is linked to other speculative plans to process other graphite materials, such as from the Fort Saint Vrain or Peach Bottom reactors (and bring that spent fuel to SRS).

Additionally, it is unknown if developers of the graphite fuel processing techniques aim to apply them to graphite fuel materials intended to be used by the X-energy company in its speculative Xe-100 high-temperature gas-cooled pebble bed reactor. It is of interest to note that a number of staff on the X-energy project, which just received a $40 million grant from DOE to develop the Xe-100 reactor, also worked on aspects of the AVR reactor project at the Forschungzentrum Juelich.

Are there long-term plans for application of the processing techniques now under development by SRNL, and discussed in the draft EA, to other graphite fuel apart from the AVR and THTR fuel? If so, that discussion is lacking in the draft EA and the issue of "segmentation" (under NEPA) arises if such is the case.

Non-Proliferation Argument Suspect

008-7

Likewise, from a nuclear non-proliferation perspective, DOE briefly mentions a nuclear non-proliferation justification for the spent fuel import and processing but makes no case the material involved poses a proliferation risk in Germany.

The draft EA states that "DOE's purpose and need for the receipt, storage, processing, and disposition of the spent nuclear fuel from Germany is to support the U.S. policy objective to reduce, and eventually to eliminate, HEU from civil commerce" but no justification is presented as to why the shipment of the spent fuel to the U.S. will further this goal.

That this project is being pursued by the DOE's Office of Environmental Management and the Savannah River National Lab and not the National Nuclear Security Administration [through its the Office of Material Management and Minimization (M^3)] reveals that the weak nuclear non-proliferation justification presented in the document is suspect. It is apparent that it was not NNSA, in charge of DOE's non-proliferation efforts to secure fissile materials around the world, that made the proposal to bring the AVR and THTR spent fuel to the U.S.

Though reduction and elimination of the use of highly enriched uranium (HEU) is admirable and a goal worthy of supporting, the graphite spent fuel in question does not pose a proliferation risk. Of particular importance and underscoring the lack of need for the project, in the draft EA document DOE ignores the NNSA determination that the material is "not a proliferation concern" if it remains in Germany. The draft EA does not in any way attempt to question this determination.

An August 1, 2013 memo from the NNSA, obtained under a Freedom of Information Act request by Savannah River Site Watch, definitively concludes there is no proliferation risk with the material in Germany and that it is of "low attractiveness" from a security perspective:

We have completed a technical evaluation of the High-Temperature Gas-Cooled Reactor graphite fuel assemblies currently stored at Forschungzentrum Juelich (GmbH) to assess its material attractiveness. The graphite spheres each weigh approximately 200g. The concentration of uranium (233 U) is 0.5% by weight, as dioxide. Thorium dioxide is also present at 55 by weight along with a small amount of SiC (2.3 g). We assess the material as low attractiveness (Attractiveness level "E"), which only requires Category IV security protection. We also assess the material is not attractive to sub-state/terrorist entities in its current state. Since the material is in a secure environment in a politically stable country, it is not of a proliferation concern.

008-7

If the basis for the draft EA is that the material is not secure in Germany or that the "attractiveness level" is higher than stated by NNSA or that if there is a proliferation risk to the material in Germany it must be fully discussed. The avoidance of these issues is telling and leads one to conclude that EM does not believe there is a risk of nuclear non-proliferation with the graphite material. Given that the export issue will likely make its way through the legal system in the European Union and Germany, EM's weak and unsubstantiated claim of a proliferation risk will likely have no standing in any court.

It must be noted that the DOE memo cited above does mention that the U.S. has "an unofficial responsibility to assure the material is adequately dispositioned." Thus, DOE's cooperation "to help Germany develop and implement" its own disposition plan in Germany may be warranted if Germany wants such cooperation. As has long been the plan, direct disposal is the most viable option for disposal in Germany. It is also possible that the processing techniques could be used in Germany if a "nuclear non-proliferation impact assessment" determines there is no proliferation risk to them. (As we have pointed out, DOE has staunchly avoided preparing this essential document, which we again request be prepared.)

008-8

Is part of the goal of this project for SRNL or EM to hold any patents or rights to any technology developed? If so, this may point out that the business angle may be the real motivation for this project. A discussion of this is needed.

008-1

While the draft document mentions non-proliferation as a driver for the project, it proceeds to present proliferation-prone reprocessing technologies that could possibly remove uranium from graphite spent fuel. The document does not reveal how a policy was determined to develop a new reprocessing technique for graphite spent fuel. We request a copy of that policy and request it be made part of the record.

While separated uranium may be contaminated and need further processing to purify it, the draft EA includes no discussion of the proliferation implications of developing new reprocessing and processing technologies for graphite fuel. We have maintained since we first revealed this project to the public over three years ago that the new reprocessing techniques being developed were the real proliferation risk with this project. But no analysis of that is attempted in the draft EA and no stand-alone nuclear non-proliferation impact analyses has been prepared by the DOE's Office of Environmental Management or the National Nuclear Security Administration. We have requested before and now request again that such a document be prepared.

008-8

Amount of Uranium in the Graphite Balls

008-9 Though this has been raised in the past, the draft EA makes no attempt to clarify the current amount of uranium in the irradiated graphite balls. Nor does the draft EA discuss the fact that some of the balls only initially contained low-enriched uranium and not high-enriched uranium. Why is this not discussed?

008-10 As many of the balls initially contained LEU and as the irradiated LEU and HEU balls are mixed in the CASTOR casks, as confirmed to SRS Watch by an FZJ official during a tour of the CASTOR storage facility in September 2014, what justification does DOE have to import the LEU balls? Though DOE's non-proliferation case is weak at best, there is no hint of any justification for importing the LEU balls.

008-9 Likewise, the HEU level in the balls has decreased due to irradiation and decay but DOE does not discuss this in the draft EA. DOE's way to address this issue is to avoid discussing it. Does DOE propose to open the casks, determine which balls are LEU and which are HEU and then ship the LEU balls back to Germany? Would the LEU balls be separated out in Germany before shipment of the casks to the U.S.? What kind of facility would be constructed to open the cask and separate the balls? That DOE has proposed to import both HEU balls and LEU balls reveals that something is going on beyond any non-proliferation consideration. The EA must discuss this issue.

008-11 Additionally, it has been mentioned that the thorium in the graphite balls may result in a sludge-like material. The draft EA must discuss any negative aspects of thorium removal and processing and if this puts a strain on SRS waste tanks or other disposal methods.

Increased Risk of Dispersal Device?

008-12 Though the document states that the graphite spent fuel would be made into "a form no longer usable for an improvised nuclear device, a radiological dispersal device, or other radiological exposure device," various of the waste streams or separated uranium/thorium streams may pose a much greater risk in a radiological dispersal device than the intact graphite balls. The small graphite spheres may well have enduring structural integrity and serve to contain any radioactivity within them. The draft EA has avoided a discussion on this aspect, which must be addressed. The draft EA has failed to make any case that the graphite balls must be processed to be safer or more secure.

The new techniques being developed, whether applied in the U.S. or another country may be what poses the relatively greater risk and may result in waste forms that require greater protection than the intact balls in robust containers. Where is the analysis in the draft EA that the intact graphite balls pose a greater risk in "an improvised nuclear device, a radiological dispersal device, or other radiological exposure device" than the separated radioactive streams of materials resulting from processing the graphite balls?

Project Speculative and being done in Stages; Segmentation under NEPA

The draft EA affirms that the proposal is speculative and that it will be done in stages: "Because technologies for processing the spent nuclear fuel from Germany are in various stages of development, DOE recognizes that there is uncertainty in their performance and therefore, potential impacts."

While DOE states under the "purpose and need" section that "DOE's purpose and need for the receipt, storage, processing, and disposition of the spent nuclear fuel from Germany," the "proposed action" is divided into segments that may not even accomplish DOE's stated goal. Under "proposed action" (section 1.4) it is stated that "If the current feasibility studies show adequate promise, and DOE and Germany decide to proceed with the project, the German government would work with DOE to transport spent nuclear fuel in chartered ships across the Atlantic Ocean to Joint Base Charleston-Weapons Station, near Charleston, South Carolina." Why isn't a complete, well-defined and viable project presented in the document before us?

Further, the document states that a "maturation approach" is being used to proceed with research activities in order to develop technologies. The document affirms that "major maturation activities" and "scale-up maturation is a multi-year development program" will be needed. While the work may be serious, this sounds more like a research and development project designed to keep Savannah River National Laboratory busy than anything else.

008-13

At least some of these "maturation" activities are being done under a Categorical Exclusion. The document affirms that "should future research and development requirements be different from those evaluated and approved in these evaluations, additional NEPA reviews will be conducted prior to initiating those activities."

It is clear that any decision made after possible completion of the current draft EA would simply be but one decision in a long series of steps necessary to development of the technology and facilities to store, process and dispose of the spent fuel. Research is incomplete and is of unknown scope. There are no final "feasibility studies" nor does the project yet show "adequate promise" for implementation.

Technical and financing issues are unresolved and no "appropriate legal framework" exists to carry out the project. Neither DOE nor the German government has decided to proceed with the proposal, and DOE has presented a process, including the current draft EA, that is leading to the scope and implementation of the project would being decided in stages, or segments, with one action taken triggering another connected action.

While the document attempts to present various speculative research, development and implementation plans and timelines and environmental impacts, it is clear that additional NEPA and other documents and analyses will be needed at the various steps that analyze and/or deploy as-of-now-unknown technologies. Once research and feasibility studies are complete impacts, timelines and facilities needed may be significantly different from the cursory and speculative presentations of them in the draft EA. From the array of speculative technologies and options presented, the document fails to

clearly and firmly make a case for how a single technology will be reviewed and chosen (if this project were to proceed to fruition).

008-13

Impermissible segmentation of decisions under the National Environmental Policy Act are not permitted but that is precisely the approach that DOE is pursuing with this project. 40 CFR 1500 - 1508 prohibits the breaking up of a larger project into smaller components, in order to avoid finding no significant impact of a project considered as a whole.

008-14

We will leave the bigger question of the legality of the export for lawyers and the legal system in Germany and the European Union, but it is clear under German law that the AVR and THTR were experimental power reactors and not research reactors, as DOE is now trying to claim. As a legal process on this matter has already begun before the EU it will play out on that stage and in Germany. The legal complications for the proposal will only grow when and if an export license application is made to the German regulatory authority (*B*undesamt für Strahlenschutz). If requested, SRS Watch will agree to submit documentation or appear in person in legal proceedings in Europe.

Inadequate discussion of Storage

The draft EA states that the cask would be stored "on existing and/or new concrete or gravel storage pads in H-Area, L-Area, or a combination of the areas." The draft EA also states that "After the casks have been placed on storage pads, they would be covered to protect them from the weather. Protection could be provided by covers for individual casks or by weather enclosures (steel super structure and fabric covers) that could be placed over an entire storage pad."

The draft EA goes on to say: "Casks storage in H-Area would be on existing storage pads and, if needed, on new pads built for this project. A portion of the casks could be stored on 4 existing concrete pads (approximately 20,000 square feet) in H-Area that would be made available by relocating equipment and equipment racks currently on the pads to other storage locations available in H-Area and F-Area. To accommodate all of the casks, an additional 14,000 square feet of storage capacity could be made available by constructing a new gravel or concrete pad and expanding the working area around an existing pad."

The cask-storage discussion is totally inadequate and describes inferior facilities which DOE does not describe as meeting seismic standards, air-crash standards, severe weather impacts or strict security standards.

008-15

If the material in the casks pose a proliferation risk or risk of being used in a "dirty bomb" then security of the storage facility must be extremely high. The DOE memo of August 2013 entitled "Proliferation Attractiveness of Juelich Graphite Spheres" mentions storage in Germany in a "secure environment" and it will be expected that security in the U.S. will be superior to that used at the Juelich facility in Germany. Simple placement on a pad with a temporary cover will not meet needed security requirements. Where is the discussion of this in the draft EA?

008-16 **In conclusion,** the proposal to import German graphite spent fuel to SRS for processing should be terminated. If the proposal is pursued, it is clear that potentially significant environmental impacts mandate preparation of a full "environmental impact statement" (EIS).

###

Attachment submitted for the record: NNSA's Office of Nuclear Threat Science memo entitled "Proliferation Attractiveness of Juelich Graphite Spheres," dated August 1, 2013

Tom Clements
Director, Savannah River Site Watch
Columbia, South Carolina
http://www.srswatch.org/
https://www.facebook.com/SavannahRiverSiteWatch

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

August 1, 2013

MEMORANDUM FOR KENNETH PICHA
DEPUTY ASSISTANT SECRETARY
OFFICE OF TANK WASTE AND NUCLEAR MATERIAL

ARTHUR G. ATKINS
ACTING ASSISTANT DEPUTY ADMINISTRATOR
OFFICE OF GLOBAL THREAT REDUCTION

FROM: JACKSON Q. CROCKER
DIRECTOR
OFFICE OF NUCLEAR THREAT SCIENCE

SUBJECT: Proliferation Attractiveness of Jülich Graphite Spheres

We have completed a technical evaluation of the High Temperature Gas-Cooled Reactor graphite fuel assemblies currently stored at Forschungzentrum Jülich (GmbH) to assess its material attractiveness. The graphite spheres each weigh approximately 200 g. The concentration of uranium (^{233}U) is 0.5% by weight, as dioxide. Thorium dioxide is also present at 5% by weight along with a small amount of SiC (2.3 g). We assess the material as low attractiveness (Attractiveness level "E"), which only requires Category IV security protection. We also assess the material is not attractive to sub-state/terrorist entities in its current state. Since the material is stored in a secure environment in a politically stable country, it is not of a proliferation concern.

However, because the material is of U.S. -origin, the NNSA believes that the Department does have an unofficial responsibility to assure the material is adequately dispositioned. Therefore, NNSA supports "Work for Other" activities by DOE's Office of Environmental Management to help Germany develop and implement an appropriate disposition pathway for this material. Although not a nonproliferation activity, it does serve to minimize the amount of U.S. HEU at civilian facilities worldwide.

cc: Jay Tilden, NA-80
Deleon Edgardo, EM-22

[redacted]

~~OFFICIAL USE ONLY~~

Printed with soy ink on recycled paper

COMMENTS ON DOE PROPOSAL TO IMPORT GERMAN SPENT FUEL TO SRS – LEAGUE OF WOMEN VOTERS OF SOUTH CAROLINA

PLEASE ADD TO SPOKEN COMMENTS

009-1

EURATOM and the World Nuclear Association, among others, have clear laws and policies that nuclear wastes are the responsibility of the country producing the wastes. Germany, the UK, France and Japan are potential leaders in future regional nuclear waste management strategies. There is no good reason for these countries to dump at SRS.

According to a recent NRC document - *Nuclear Reactors** - research and test reactors, by definition, do not produce electricity. The US has about 31 research and test reactors, for a variety of purposes.

The US has 99 operating commercial reactors. We have about 50 more reactors - many experimental, some preliminarily licensed and operated relatively briefly, if at all - including a pebble reactor. Although the industry learned from many of these reactors, we do not call them research reactors, and neither should Germany. The German reactors produced about 13 MW/year of electricity for nearly 20 years, on and off. By NRC definition research reactors do not produce electricity.

009-1

German willingness to pay the US to experiment with separations is not a good reason for SRS to pursue this project. There is no particular use for the separated product, and there is absolutely no reason to separate out the wastes. The Germans should proceed with previous plans to entomb the spent fuel, as the US is likely to do with the reactor in Colorado.

The League of Women Voters of SC questions what is **REALLY** going on – DOE HQ is pushing this German shipment; NRC HQ was involved in a secret suggestion to ship commercial Exelon waste; a shipment of Japanese plutonium primarily generated in UK – each proposed dumping at SRS. These nuclear leaders – DOE & NRC HQ – should be helping to push Congress to get serious about a permanent repository.

009-2

The responsibility for the world's nuclear wastes surely can't depend upon the old H canyon and leaky tanks. These recent proposals are exceedingly short sighted, as well as illegal. Suzanne Rhodes, Nuclear Waste Project, suzrhodes@juno.com 803-546-5800

*http://pbadupws.nrc.gov/docs/ML1525/ML15254A456.pdf, page 17. Undated but apparently published in 2015.

February 4, 2016, (7:00 to 9:00 PM) at the North Augusta Community Center 495 Brookside Drive, North Augusta, South Carolina 29841

Comment document number PC-010 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-03

Comment document number PC-011 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-04

Spent Nuclear Fuel from Germany Environmental Assessment

PUBLIC WRITTEN COMMENT FORM

PLEASE PRINT - THANK YOU FOR YOUR INPUT Date: 2/4/16

012-1 I agree that this EA is appropriate to support the actions as described. If the decision is to bring the material to SRS, I support that.

- I take offence to people/groups who claim that "the people of Aiken don't want it here"! Those comments should be struck because they are FALSE!
- I also take offence to the "antis" making sensationalized comments that are totally FALSE!

****** CONTINUE ON THE BACK IF YOU NEED MORE SPACE ******

NAME: Dawn Gillas
ADDRESS:
CITY: New Ellenton
STATE/ZIP: SC 29809
EMAIL:

PLEASE HAND IN THIS FORM TODAY OR EMAIL, MAIL, OR FAX BY MARCH 11, 2016 TO:

Tracy Williams, NEPA Compliance Officer
Draft Spent Nuclear Fuel from Germany EA
U. S. Department of Energy
P.O. Box A, Aiken, South Carolina 29802
TOLL-FREE FAX: 1-877-865-0277
EMAIL: GermanSpentNuclearFuelEA@leidos.com

PUT "PUBLIC COMMENTS ON DRAFT SPENT NUCLEAR FUEL FROM GERMANY ENVIRONMENTAL ASSESSMENT" ON SUBJECT LINE

Donald N. Bridges, Chair
Citizens for Nuclear Technology Awareness
Comments on Draft Environmental Assessment for the
Acceptance and Disposition of Spent German Nuclear Fuel to SRS
Thursday, February 4, 2016

My name is Donald Bridges and I live in North Augusta. I am a retired former employee of Savannah River, a former Chair of the SRS Citizens Advisory Board, and presently Chair of the Citizens for Nuclear Technology Awareness (CNTA). I have over 40 years of experience in the nuclear industry.

I would like to make these comments on behalf of the Citizens for Nuclear Technology Awareness, a non-profit organization based in Aiken, SC.

CNTA would like to speak in support of the proposed action of receiving, processing, and later preparing this nuclear material for disposition. CNTA strongly supports these actions for the following reasons:

013-1
- Receipt and processing of this Highly Enriched Uranium (HEU) serves the national interests and policy by reducing and eliminating this HEU from civil commerce. In short it serves the national interests by making the world safer by removing such material from potential misuse.

013-2
- Receipt and processing of this HEU should be done in this area because SRS is the only Site in the free world that has the processing facilities, technical expertise, and infrastructure to disposition this material.

013-3
- This action provides jobs for SRS and this area, and is consistent with the traditional and historical role of the Site over the past 60 years, which has been successful for both the Site and the communities surrounding the Site.

013-4
- The proposed work will be carried out safely by well-trained operators who routinely work with nuclear materials in safe, well-controlled conditions.
- The environmental impact will be negligible as determined by a very thorough and exhaustive study.

013-3 Further the entire work scope will be funded by the Germans offering a significant economic boon to the area with a program that is projected to cost as much as several hundred million dollars over a 4-6 year period. This is much needed work in view of the fact that the Site has experienced project delays and layoffs within the past few years.

Processing this nuclear material will necessarily involve some additional research and development which will enhance the technical expertise of the SRNL.

013-1 Overall, this action will result a positive move for the Site. While this action serves our own local best interests it will also serve to take actions that are in the best interests of the national and international nuclear community.

While some may question the transportation safety, the processing and the storage of additional nuclear materials let me point out the following facts:

- Annually the Site has always been among the safest plants in SC over its entire history.
- The Site has an unchallenged and enviable safety record including:
  - Never had a nuclear event with significant or noteworthy off-site consequences.
  - Never had a nuclear fatality.
- The Site workers and the citizens of surrounding areas are among the healthiest people in SC and Georgia.
- The nuclear material proposed for receipt by SRS is US origin material and shipments of US origin material from various international sites have routinely been received at SRS for many years.
- The Site has had literally thousands of nuclear material shipments over its 60 year history and never experienced a significant accident or occurrence.
- The off-site radiation exposure from Site operations is negligible compared to allowable limits.
- Any nuclear high level waste from this material will be processed along with Site HLW and placed in a stable glass form in SS containers in well shielded and protected facilities.

- High Level waste placed in containers as noted above from a practical standpoint represent absolutely zero risk to the public or the environment.

Any independent assessment will confirm that the proposed action is safe and secure with no technical basis for rejecting such an action.

Comment document number PC-014 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-07

Comment document number PC-015 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-08

Comment document number PC-016 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-09

Comment document number PC-017 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-10

Comment document number PC-018 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-11

Comment document number PC-019 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-12

Comment document number PC-020 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-14

SRS
COMMUNITY REUSE ORGANIZATION
two states, one future

February 4, 2016

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, South Carolina 29804

RE: Draft Environmental Assessment (EA) for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium (HEU) From the Federal Republic of Germany

Dear Ms. Williams:

Our organization – the Savannah River Site Community Reuse Organization (SRSCRO) – is the U. S. Department of Energy's designated Community Reuse Organization for the Savannah River Site and is governed by a 22-member Board of Directors composed of business, government and academic leaders from Georgia and South Carolina. The SRSCRO is a 501(c) (3) private non-profit organization charged with developing and implementing a comprehensive strategy to diversify the economy of a designated five-county region of Georgia and South Carolina. SRSCRO counties include Aiken, Allendale and Barnwell in South Carolina and Richmond (Augusta) and Columbia counties in Georgia. The SRSCRO is focused on new missions at SRS and ensuring the site maintains its role as part of this nation's national security structure.

021-1 It is our understanding that following this public comment period, DOE will either issue a NEPA determination, called a Finding of No Significant Impact (FONSI), or announce its intent to prepare an environmental impact statement (EIS). However, even if these actions are taken, they do not constitute a decision by DOE to accept the German material but will be used to help formulate that decision. We would like to receive confirmation of this understanding. We believe DOE should strongly consider preparing an EIS due to the duration, complexity, and other uncertainties about the project.

021-2 As stated during the public scoping meeting, we believe the Savannah River Site (SRS) has the capability to safely handle and process the German HEU. We further support the involvement of the Savannah River National Laboratory (SRNL) and its research efforts related to this program. Furthermore, we understand additional activities must be completed before DOE can make a decision on the acceptance of German material. These include (1) irradiated sample testing to confirm anticipated fission products pathways; (2) development of a pilot scale system including the remote handling of the CASTOR casks; (3) a Technology Readiness Assessment to confirm Engineering Scale of the System has been achieve; and (4) establishment of a full cost recovery contract

P.O. Box 696, Aiken, South Carolina 29802 P: 803.508.7401 F: 803.593.4296 www.srscro.org
Serving the Counties of Aiken SC, Allendale SC, Barnwell SC, Columbia GA, and Richmond GA

with the appropriate German entities. We support waiting on the results from these activities before a final decision is made.

We do believe this project has the potential of rendering this U.S.-origin HEU in a form no longer usable for an improvised nuclear device, a radiological dispersal device, or other radiological exposure device. Before any decision is made to accept, transport, process, and disposition the HEU compliance with all applicable requirements of United States law and DOE requirements, including NEPA must be met and resolution of any technical, financial, and legal issues resolved. If a decision is made to accept this material, it must be under a full cost recovery scenario as mentioned previously.

This includes the appropriate legal framework or agreements to implement the project. We request such an agreement include a **Community Commitment Plan** from the German Government. Such a plan is part of several existing DOE contracts and is included in DEAR Section 970.5226-3 and prescribed in 48 CFR 970.2673. This project will greatly benefit from its location in South Carolina and from the workforce and other resources provided by the region. In recognition of these benefits, the German Government should take meaningful actions to implement its community commitment as described in DEAR 970.5226-3. Such activities should include Regional Educational Outreach Programs; Regional Purchasing Programs; and Regional Economic Development and Community Support. This list is not intended to preclude other constructive community activities.

021-3

While we fully support DOE's objective in pursuing this project, a major concern for our region and the State is that this proposed nuclear material and other nuclear material currently here or coming to SRS will ultimately have a disposition path out of SRS. We appreciate the opportunity provide comments on this draft EA.

Sincerely,

R. V. McLeod

Rick McLeod
Executive Director, SRSCRO

Comment document number PC-022 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-15

Comment document number PC-023 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-16

Comment document number PC-024 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-17

Comment document number PC-025 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-18

Comment document number PC-026 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-19

Comment document number PC-027 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-20

Comment document number PC-028 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-21

Comment document number PC-029 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-22

Comment document number PC-030 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-23

Comment document number PC-031 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-24

Comments relating to Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium From the Federal Republic of Germany Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium From the Federal Republic of Germany.

Submitted by:
RDML Wayne Rickman USN (Ret)

Aiken SC 29803

The Savannah River Site from inception has been in the forefront of National Security. Among other National Defense related roles; the capabilities, professionalism and dedication of SRS employees is clearly demonstrated in the vital National Security program of nonproliferation and nuclear threat reduction.

032-1

With the dissolution of the Soviet Union in 1991, the control and reduction of nuclear materials has been and continues to be of the highest priority. In this case the U.S. objective, the minimization of Highly Enriched Uranium, is met by returning this fuel to the United States for safe storage and stabilization. The stabilization will result in the HEU being placed in a form no longer usable for an improvised nuclear device, a radiological dispersal device, or other radiological exposure device.

Savannah River Site contains two national assets. The Savannah River National Laboratory and H Canyon.

The Savannah River National Laboratory has and continues to perform at the highest level securing, packaging and shipping nuclear materials worldwide.

032-1

H canyon is the only, large hardened nuclear material processing facility in the United States capable of disposing of the HEU so that it is not useable in any terrorist nuclear device.

Given the proven capabilities of the Savannah River National Laboratory to design a safe process and the proven credible nuclear operational safety record of H-Canyon personnel, these two observations confirms and re-enforces the proposal that this important, vital, necessary operation should be conducted at SRS.

The safety record of the employees at SRS is Excellent, and having personally reviewed other DOE sites management and safety processes, my assessment is that DOE could not have picked a better, safer, more capable site for this necessary nonproliferation mission of "securing and stabilization of nuclear material" than SRS

This proposal allows the confluence of these two national priorities and principles to combine with the two identified national assets here at SRS to reduce the threat margin for the citizens of the United States and allow the world to be a safer place.

Comment document number PC-033 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-26

Comment document number PC-034 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-27

Comment document number PC-035 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-28

From: germanspentnuclearfuelea-bounces@listserv.leidos.com
Sent: Monday, February 15, 2016 4:44 PM
To: GermanSpentNuclearFuelEA@leidos.com
Subject: [Germanspentnuclearfuelea] German nuclear waste

NEPA Compliance
Dept. of Energy

Please accept the No Action Alternative

036-1 German spent nuclear fuel waste should stay in Germany. It is outrageous to hide behind a proliferation threat. Would this even be under consideration if the Germans weren't going to pay the U.S. to get the waste out of their way?

036-2 The mission at SRS for decades has been to clean up the waste the United States created. With no final disposition for the waste, even if it is satisfactorily processed, it should be unthinkable to be considering accepting waste from other countries.

It doesn't make sense to be focusing on the details of environmental assessment when the main point is not being addressed: given the nuclear history in the state, why should South Carolina be burdened with any more nuclear waste at all?

Joanne Williams
Columbia SC 29206

Comment document number PC-037 was a placekeeper for a duplicate. Commentor comments can be found in the delineated public meeting transcript at PCT-12

From Don't Waste Aiken, February 4, 2016

Comment on the Draft Environmental Assessment on the processing of experimental German nuclear waste at the SRS

From the beginning, the mission of Don't Waste Aiken has been to reduce the inflow of nuclear waste into the SRS and to encourage timely and complete cleanup of all waste, including the Legacy Waste which has been there for decades.

Germany has wisely turned its back on nuclear power. But they, like the United States, have not seen fit to develop a safe and secure permanent repository. So of course they would love to ship it all here to the SRS. And of course Savannah River Nuclear Solutions, a private for profit corporation, would love to have the millions promised by the Germans for developing and implementing the processing and storage of this high level waste. And these shipments could be just the beginning of a new source of income for nuclear waste research at the Savannah River National Lab. However we know from experience that once the waste comes here, it stays here. And the short term profits go elsewhere.

038-1

Nuclear waste is the most poisonous substance on the face of the earth and we've got plenty of it right in our back yard. The DOE has said there is no proliferation risk to this experimental waste staying in Germany. All U.S. federal plans for a permanent repository for high level waste have failed. Until we have a place to safely and securely store nuclear waste that is not right here where we live, we at Don't Waste Aiken say NO MORE!

038-2

038-3 We call for the termination of this project now!

Jesse and Connie Young, Lisa Darden, and Greg Fitzpatrick for Don't Waste Aiken, Aiken, South Carolina

From: Viv Mann
Sent: Sunday, February 21, 2016 9:19 AM
To: GermanSpentNuclearFuelEA@leidos.com
Subject: [Germanspentnuclearfuelea] German Nuclear Spent Fuel

Hello.

039-1 We are Opposed to the proposed plan to bring spent nuclear fuel or any other nuclear waste to our area. The transport of this fuel is also dangerous and a security concern. No one here wants our air, lands, waters, citizens contaminated.

039-2 Clearly, there is an appalling aura of greed and lack of interest in the well-being of our communities here. Presently, there are leaking barrels of spent nuclear waste that have yet to be dealt with properly.

039-1 We are residents of Aiken County, South Carolina who want this project terminated. There is no risk to the spent fuel staying put where it is now in Germany. STOP POISONING OUR LANDS !!!
Do you live here ? Do your loved ones live here ?

Comment document PC-040 was a replaced by a revised supplement comment document. See Revised Comment Document PC-056

From:
Sent: Thursday, March 10, 2016 1:00 PM
To: GermanSpentNuclearFuelEA@leidos.com
Subject: [Germanspentnuclearfuelea] Spent Nuclear Fuel

041-1 Please, please, please ***do not*** consider the proposition to receive, store, process and disposition spent nuclear fuel (SNF) from the Federal Republic of Germany at DOE's Savannah River Site (SRS) (Draft Spent Nuclear Fuel from Germany EA). SRS is NOT the place for this! Thank you.
Donna Reynolds

From: tammy@columbiacountychamber.com
Sent: Tuesday, February 2, 2016 1:41 PM
To: GermanSpentNuclearFuelEA@leidos.com
Subject: [Germanspentnuclearfuelea] Support letter for HTGR

Please see attached letter for the support of HTGR at Savannah River Site.

Tammy G. Shepherd, IOM, GCCE
President / CEO

CHAMBER
COLUMBIA COUNTY · GA
Member Driven. Business Focused.

Columbia County Chamber of Commerce
1000 Business Boulevard
Evans, GA 30809
(706) 651-0018 Office

tammy@columbiacountychamber.com
www.columbiacountychamber.com

CHAMBER
COLUMBIA COUNTY · GA

Tammy Shepherd
President/CEO

1000 Business Blvd.
Evans, GA 30809
706-651-0018 (office) 706-651-0021 (fax)

Tammy@columbiacountychamber.com
www.columbiacountychamber.com

February 1, 2016

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, SC 29802

Dear Ms. Williams,

042-1 The Columbia County Chamber of Commerce, representing over 1000 business members in the Greater Augusta area, supports the proposal to accept highly enriched uranium from Germany for processing.

Our Board of Directors believes that Savannah River Site is the right location in our country for this work to occur. Savannah River Site has over 60 years of experience safely managing nuclear materials. The many employees who work at SRS are our neighbors, and we believe they are experts in this industry.

042-2 By creating new jobs and maintaining current jobs at the site, this will keep our region growing and thriving. The economic impact of the site is tremendous for our two-state, multi-county region. These benefits outweigh any risks which we know will be managed by SRS.

042-1 Our organization also believes that it is crucial for this material to be kept safe from the enemies of the United States. The United States must be the leader on HEU in the hopes that the materials will no longer be usable for improvised nuclear devices. Savannah River National Lab's high tech innovations ensure the ability to process nuclear materials, and Savannah River Site is the safest place to secure and prepare the proliferant materials for disposition.

Thank you for the opportunity to provide comments on this matter.

Sincerely,

Tammy G. Shepherd
President / CEO
Columbia County Chamber of Commerce

From:
Sent: Friday, February 26, 2016 5:40 AM
To: GermanSpentNuclearFuelEA@leidos.com
Subject: [Germanspentnuclearfuelea] Draft Spent Nuclear Fuel from Germany EA: # 2016-01371

Please find attached my comment on Draft Spent Nuclear Fuel from Germany EA: # 2016-01371 as a PDF - it is also in text, here:

Federal Register Number: 2016-01371

Environmental Assessments; Availability, etc.: Acceptance and Disposition of Spent Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium From the Federal Republic of Germany.

"The shipping campaign from Germany would involve about 30 shipments over approximately a 3.5-year period to transport 455 CASTOR (3) casks containing the SNF from Germany aboard chartered ships across the Atlantic Ocean to Joint Base Charleston-Weapons Station near Charleston, South Carolina. From Joint Base Charleston-Weapons Station, the CASTOR casks would be transported to SRS on dedicated trains."

Risk is a critical factor in the decision-making for an assessment of the logistical disposition of the SNF "composed of kernels containing thorium and U.S.-origin highly enriched uranium (HEU) embedded in small graphite spheres that were irradiated in research reactors used for experimental and/or demonstration purposes."

Does the assessment include accounting for rail transport - material integrity of rails, security along the full route at all times, and is there rapid response emergency services ready along the route in case of incidents?

Ditto for ocean transport - material integrity of shipping vessels, on board security, port security, and rapid response emergency services on board and at ports?

Recent and ongoing acts of terrorism create a need to be fully prepared for assault and/or theft, especially considering the time frame from start, to finish. Multiple years of activity exposes shipments to greater risk potential. Who will be responsible in the event of a terrorist attack?

Natural events also need to be considered. Have logistics managers assessed ocean weather and are all vessels fully prepared for a potential natural disaster at sea? We have experienced large, ocean based hurricanes at sea in "off season" times recently. Is the changing climate factored in?

Transporting HEU in any form poses possibly great risks. What insurance coverage will this project have?

It is my belief that the risks are too high and that nations ought revamp codes and rules, et. al., to emphasize security; keep radioactive materials where they are and manage their fate there. I support the No Action Alternative.

Sincerely,

Pia C. Jensen

--
Saludos

Pia Jensen

Federal Register Number: 2016-01371

Environmental Assessments; Availability, etc.: Acceptance and Disposition of Spent Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium From the Federal Republic of Germany.

> "The shipping campaign from Germany would involve about 30 shipments over approximately a 3.5-year period to transport 455 CASTOR (3) casks containing the SNF from Germany aboard chartered ships across the Atlantic Ocean to Joint Base Charleston-Weapons Station near Charleston, South Carolina. From Joint Base Charleston-Weapons Station, the CASTOR casks would be transported to SRS on dedicated trains."

Risk is a critical factor in the decision-making for an assessment of the logistical disposition of the SNF "composed of kernels containing thorium and U.S.-origin highly enriched uranium (HEU) embedded in small graphite spheres that were irradiated in research reactors used for experimental and/or demonstration purposes."

043-1

Does the assessment include accounting for rail transport - material integrity of rails, security along the full route at all times, and is there rapid response emergency services ready along the route in case of incidents?

Ditto for ocean transport - material integrity of shipping vessels, on board security, port security, and rapid response emergency services on board and at ports?

Recent and ongoing acts of terrorism create a need to be fully prepared for assault and/or theft, especially considering the time frame from start, to finish. Multiple years of activity exposes shipments to greater risk potential. Who will be responsible in the event of a terrorist attack?

Natural events also need to be considered. Have logistics managers assessed ocean weather and are all vessels fully prepared for a potential natural disaster at sea? We have experienced large, ocean based hurricanes at sea in "off season" times recently. Is the changing climate factored in?

Transporting HEU in any form poses possibly great risks. What insurance coverage will this project have?

043-2

It is my belief that the risks are too high and that nations ought revamp codes and rules, et. al., to emphasize security; keep radioactive materials where they are and manage their fate there. I support the No Action Alternative.

Sincerely,

Pia C. Jensen

Von: Hilde Lindner-Hausner und Bürgerinitiative gegen atomare Anlagen www.biwaanaa.de
kontakt@biwaanaa.de

An: GermanSpentNuclearFuelEA@leidos.com

CC: Claudia.Baitinger@bund.net

Sehr geehrte Frau Williams
wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung vonetwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Wir haben folgende Einwendegegen diese Pläne:
•Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auchnicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
•Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Rechtverboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch)von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh).Für beide deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!•
Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierungund Endlagerung in Deutschland wären somit möglich.
•Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
•Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
•Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR.
Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.
DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR

%20PUBLIC.pdf

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "
Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS. Final date for comments: 11.03.16.

Dear Ms. Williams

we are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercialGerman pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for our comments are:

044-1

European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant wastefrom neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and
Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.

044-2

Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bnkWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performanceof these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They
were commercial NPPs.

There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU.
A conditioning and final storage in Germany is possible.

The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830kg).

044-3

As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.

044-4 The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already similar offers

With my signature I support these comments against the DEA
concerning the processing of German pebble bed NPP fuel elements at SRS.

Hilde Lindner-Hausner
Mühlberg 12
92702 Kohlberg

Comment document PC-045 was a updated and revised by comment document PC-056. Please see comment document PC-056 for the complete delineation from this commentor.

From: _____
Sent: Thursday, March 10, 2016 3:44 PM
To: GermanSpentNuclearFuelEA
Cc: Marita boslar
Subject: [Germanspentnuclearfuelea] Comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS

Following comments are attached:

Dear Ms. Williams

I am deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial Ger-man pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for my comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.
- The German government has officially announced here in the past years

that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an “Draft Environmental Assessment” (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already similar offers.

Yours sincerely,

Marita Boslar

BÜNDNIS 90
DIE GRÜNEN

Alliance 90 / The Greens, Marita Boslar, Steineweiher 2, 52428 Jülich

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, South Carolina 29802

Alliance 90/The Greens
Vice-chair of parliamentary party leader
Member of alderman (Jülich)
Marita Boslar
Steineweiher 2
52428 Jülich
Germany
Tel.: +49 (0)2461 9367093
marita.boslar@posteo.de
www.gruene-juelich.de

Jülich, 2016-03-10

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS.

Dear Ms. Williams

I am deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for my comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.
- The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already similar offers.

Yours sincerely,

M. Boslar

Sammeleinwendungen – Keine Castor-Exporte in die USA

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS

Dear Ms. Williams

we are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. Our reasons are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.

The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries.

TRANSLATION/ Übersetzung:

Sehr geehrte Frau Williams

wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung von etwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Die Gründe für unsere Bedenken:

- Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auch nicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
- Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Recht verboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch)von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh). Für beide deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-

Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these Comments on DEA dealing with processing of German pebble bed NPP fuel elements at SRS – final 11.03.16

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Willkomm-Lantz, Emily	Jülich	
2.	Andrä, Barbara	Langerwehe	B. Andrä
3.	Schallehn, Robert	Köln	
4.	Andrä, Christian	Langerwehe	
5.	Wagensack, Thomas	Heimsack	
6.	Schmitz, Johanna	Düren	J. Schmitz
7.	Hohn, Astrid	Kreuzau	A. Hohn
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net Stand 06.02.16

PC-048

Guido Boslar Steineweiher 2 52428 Jülich
GERMANY

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, South Carolina 29802

Jülich, 2016-03-10

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin High/y Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS

Dear Ms. Williams

I am deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for my comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of

of the THTR fuel elements are broken with probably similar consequences.

- The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already similar offers.

Yours sincerely,

PC-049

2 attachments (2 MB)

Sammeleinwendungen USA.pdf; ATT00001.txt;

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS.

-->Lists with signatures (26) are attached.

Yours sincerely,

Marita Boslar

Aktionsbündnis "Stop Westcastor"
http://www.westcastor.de/
Germany
52428 Jülich

PC-049

Sammeleinwendungen – Keine Castor-Exporte in die USA

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin High/y Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS. Final date for comments: 11.03.2016

Dear Ms. Williams

We are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for our comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.
- The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already similar offers.

TRANSLATION/ Übersetzung:

Sehr geehrte Frau Williams,

wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung von etwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Die Gründe für unsere Bedenken:

- Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auch nicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
- Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Recht verboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch) von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh). Für beide

Bsup54

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Moch, Jan	Jülich	[signature]
2.	Lambertz, Andreas	Jülich	[signature]
3.	Lentz, Florian	Niederzier	[signature]
4.	Becker, Jan	Köln	[signature]
5.	Juran, Biagra	Aachen	[signature]
6.	Bonrath, Timo	Jülich	[signature]
7.	Cádiz Bedini, Andrew Paolo	Aachen	[signature]
8.	Nadi, Samia Ahmed	Aachen	[signature]
9.	Funk, Thomas	Bonn	[signature]
10.	Smeets, Michael	Aachen	[signature]

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Kaienburg, Pascal	Aachen	
2.	Richter, Alexei	Düren	
3.	POMASKA, Manuel	Düren	
4.	Huhn, Vito	Köln	
5.	Flohre, Jan	Aachen	
6.	Kirchartz, Thomas	Jülich	
7.	SINGH, Aryan	Düren	
8.	Klempfs, Josef	Aachen	
9.	Meyer, Manuela	DORTMUND	
10.	Zeeden, Mirja	Bonn	

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Weigand, Daniel	Titz	
2.	Wolff, Katharina	Köln	
3.	Gerhards, Ulrike	Hückelhoven	
4.	Schillings, Diana	Mausbach	
5.	Hilsbach, Markus	Eschweiler	
6.	Kirchhoff, Joachim	Aachen	
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

PC-050

Guido Boslar Steineweiher 2 52428 Jülich
GERMANY

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, South Carolina 29802

Jülich, 2016-03-10

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin High/y Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS

Dear Ms. Williams

I am deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for my comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of

of the THTR fuel elements are broken with probably similar consequences.

- The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already similar offers.

Yours sincerely,

From: Ashlie.Lancaster@admin.sc.gov
Date: March 11, 2016 at 5:41:53 PM EST
To: "GermanSpentNuclearFuelEA@leidos.com"
<GermanSpentNuclearFuelEA@leidos.com>
Cc: JoshBaker@gov.sc.gov
Subject: SC Nuclear Advisory Council German Fuel EA Comments
Please see the attached letter.

Ashlie Lancaster
Innovations Director, Office of the Executive Director

The South Carolina
Department of Administration
1200 Senate Street, Suite 460, Columbia, SC 29201
(803) 734-9260 | (803) 734-9002 fax

Note: Act 121 of 2014 (SC Restructuring Act of 2014) abolished the Budget and Control Board. Effective July 1, 2015, the Department of Administration has been established. Please update your contact information.

PC-051

STATE OF SOUTH CAROLINA
Nuclear Advisory Council
1200 Senate Street, 460 Wade Hampton Building
Columbia, SC 29201
(803)734-8120

March 10, 2013

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, South Carolina 29804
RE: Draft Environmental Assessment (EA) for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium (HEU) From the Federal Republic of Germany (DOE/EA-1977)
Dear Ms. Williams:

The South Carolina Nuclear Advisory Council (NAC) was formed by statute to advise the Governor on issues relating to nuclear materials and activities in South Carolina. We appreciate this opportunity to provide comments on DOE's draft EA analyzing accepting, processing, and dispositioning used nuclear fuel from the Republic of Germany that includes US-origin highly enriched uranium.

051-1 The Nuclear Advisory Council supports the national goal of eliminating highly enriched uranium from civil commerce and understands that the proposed action, to return this used fuel the SRS for processing and disposition, would support that goal.

In this EA, DOE analyses two action alternatives with four disposal options, and a no action alternative for disposition of the German fuel.

- Dissolving the HEU fuel kernels in H Canyon and
    - vitrifying through the liquid nuclear waste system
    - extracting U for disposal as a LLW grout and vitrifying the remaining material through the liquid nuclear waste system
    - extracting U and Th for disposal as a LLW grout and vitrifying the remaining materials through the liquid nuclear waste system
- Downblending and converting the fuel kernels into a U-Al alloy using a melt and dilute technology. The resulting ingots would be stored in concrete overpacks in L-Area.
- No action in which the HEU fuel would not be transported to the U.S.

PC-051

STATE OF SOUTH CAROLINA
Nuclear Advisory Council
1200 Senate Street, 460 Wade Hampton Building
Columbia, SC 29201
(803)734-8120

We understand that a NEPA analysis of the environmental consequences is only one of many actions that must be addressed prior to a decision on whether or not or proceed with this program, and actually we believe the NEPA analysis is one of the less complex tasks.

051-2

The EA discusses on-going technical feasibility studies done as NEPA Categorical Exclusions. Given that these studies are necessary to determine if the graphite digestion technology is possible on a scale adequate to complete the project in a timely manner and to identify technology risks and mitigation measures, the NAC suggests that DOE postpone its final NEPA decision until such time as those studies are complete, and the public has an opportunity to review their conclusions.

We understand that NEPA addresses only environmental consequences and that the public should limit its comments to environmental considerations. However, the NAC is compelled to reiterate that we do not consider the environmental impacts as the primary drivers in this decision. NAC is confident that, regardless of the technology selected, SRS has the ability to successfully complete the disposition.

051-3

Regardless of NAC's support of the goal of securing nuclear materials from civil commerce, and our confidence in the technical abilities of the SRS, we cannot support this program unless DOE satisfactorily addresses our concerns regarding the effects of this specific project on the vast amount of nuclear materials already at SRS without the benefit of disposition plans, schedules and funding. Until such time as Congress funds and DOE demonstrates the ability to schedule and execute plans for the disposition of nuclear materials at SRS, NAC does not support transferring additional materials at SRS, particularly from allied countries with adequate security systems.

At a minimum, if DOE proceeds with this project, it should enter into a binding agreement with the State of South Carolina that ensures that the German funds are used to store, process and disposition the German fuel within a time period that South Carolina will support.

Thank you for providing us the opportunity to comment in this draft EA.

Sincerely,

PC-051

STATE OF SOUTH CAROLINA

Nuclear Advisory Council

1200 Senate Street, 460 Wade Hampton Building
Columbia, SC 29201
(803)734-8120

Karen Patterson, Chair
South Carolina Nuclear Advisory Council

cc: Members of Council
Gov. Haley

From:
Sent: Tuesday, March 15, 2016 5:45 AM
To: GermanSpentNuclearFuelEA@leidos.com
Subject: [Germanspentnuclearfuelea] Draft Spent Nuclear Fuel from Germany EA comments

South Carolina to discuss a proposed shipment of radioactive waste from Germany to the Savannah River Site (SRS) in South Carolina.

To Tracy Williams at the Draft Spent Nuclear Fuel from Germany EA comments.

052-1

Renegotiate all international treaties to share information and solve nuclear waste at its current locations around the world. No Russia, no German, no Japan, or British or any other nation's nuclear waste should be brought to the US for any reason. We have too much unresolved nuclear waste products of our own.

There is taxpayer lack of trust in Congress, the Senate Appropriations Committee, and its agencies ability to perform national cleanup measures at the 80 spent nuclear fuel and high-level waste sites, in 35 states, across America. Not ever solving nuclear waste needs to be a realistic national level debate discussion.

All nuclear sites need share science at all levels and create no more nuclear weapons, and make all waste disposal locations uniformly; so to avoid future confusion, and costs, with the nuclear waste storage locations that exist worldwide.

Also no more talk nuclear waste pit Boreholes for Hanford, or anywhere please. The National Nuclear Safety Administration needs to solve nuclear waste period; and plan to use only new plants, that don't produce more radioactive waste.

We live down river from the toxic Hanford WA Nuclear Site along the Columbia River. I hope our river can stay radioactive free, as much as possible. It's very sad that our delayed, over budget cleanup operation at Hanford WA Nuclear Site became a national park.

Gene & Jeannie Presler

SRS WATCH

March 4, 2016

Ms. Tracy Williams
NEPA Compliance Officer
U.S. Department of Energy
P.O. Box B
Aiken, South Carolina 29802

Documents for Record of *Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany*

053-1 Attached are translations of two legal briefs, originally in German, to be considered as comments for the record of the draft EA:

The Legality of the Export of Radioactive Waste of AVR Juelich to the USA
21 September 2014
commissioned by Bund (Friends of the Earth - Germany)

Shipment and Disposition of Spent Nuclear Fuel from the AVR Juelich Nuclear Reactor to the U.S. Department of Energy Savannah River Site and Non-Compliance Under Germany and European Law
3 December 2014
commissioned by Greenpeace Germany

As they document the illegality for export of the AVR spent fuel to SRS, thank you for including these for the record.

Sincerely,

Tom Clement

Tom Clements

Research Unit Sustainability and Climate Policy
Könneritzstraße 41
D-04229 Leipzig

The Legality of the Export of Radioactive Waste of AVR Jülich to the USA

Legal Opinion on behalf of the Bund für Umwelt und Naturschutz Germany, State Association North Rhine-Westphalia e.V. (BUND NRW)

By

Prof. Dr. Felix Ekardt, LL.M., M.A., Leipzig and
Lawyer Raphael Weyland, Hamburg

Final version, 21 September 2014

(translated by Manuela Jäger)

About the authors

Prof. Dr. Felix Ekardt, LL.M., M.A., heads the Research Unit Sustainability and Climate Policy in Leipzig and Berlin (www.sustainability-justice-climate.eu), that is dedicated to the basic research and policy advice to public and non-profit entities in the field of human science sustainability research about policy instruments, legal issues, conditions of social transformation and justice issues. He is also Professor of Public Law and Philosophy of Law at the Baltic Institute of Maritime Law, Environmental Law and Infrastructure Law of the Law Faculty of the University of Rostock as well as Long-Term Fellow at the Research Institute for Philosophy Hannover.

Lawyer Raphael Weyland authored with Prof. Dr. Felix Ekardt, LL.M., MA, his PhD thesis on the updating of environmental legislation and is connected to the Research Unit Sustainability and Climate Policy since his legal environmental focused studies in Bremen. After his legal clerkship at the Federal Environment Ministry and the European Commission he worked for two years as a lawyer in a firm specialized in environmental law in Hamburg and there inter alia represented clients against new power plants and river deepening. When writing this opinion he supports the Hamburg Institute in various consulting projects for energy policy and for public transport.

Preface

The here presented expert report analyses whether the export of the fuel element spheres of the pebble bed reactor "Arbeitsgemeinschaft Versuchsreaktor Jülich – AVR Jülich" (association experimental reactor Jülich), as it is planned by the German government, is compatible with the statutory provisions of the German and European law. Because of the very topicality the given analyses is focused thus on the evident problematic regulations as a short expert report.

The analysis was done in September 2014 on behalf of the Bund für Umwelt und Naturschutz Germany (the German Friends of the Earth member), state association North Rhine-Westphalia (BUND NRW). It displays the opinion of the authors and not necessarily fully that of the BUND NRW.

The present expert opinion depicts the scientific findings of the authors. It relates specifically to the observed case of the planned export of radioactive waste of AVR Jülich for refurbishment to the centre for nuclear weapons Savannah River Site (SRS), USA. Therefore the statements made are not necessarily applicable to other cases of exports of radioactive waste abroad by other plants – even if the juridical assessment of other cases might be similar. Furthermore, it is possible that a court which is concerned with a concrete case assesses the legal questions (substantially convincing or not) differently from the authors.

Leipzig/Hamburg, September 2014

Felix Ekardt and Raphael Weyland

Short summary

The present legal opinion draws on to the recent planning by various authorities on state and national level after which fuel element spheres of the pebble bed reactor Arbeitsgemeinschaft Versuchsreaktor Jülich - AVR Jülich (association experimental reactor Jülich) shall be shipped to the USA. The German public receives this planning critically. The accusation that exporting fuel element spheres abroad was against the law resonates repeatedly. Therefore, the task was to examine to what extent the statutory provisions of the German and European law are excluding the export of fuel element spheres to the USA.

- The AVR Jülich was a pebble bed reactor at which the nuclear fuel is located inside individual graphite coated spheres. The AVR Jülich initially fed electricity into the electricity grid in the year 1967. In the end of 1988 it was deactivated due to earlier incidents. At present, about 300,000 fuel element spheres within 152 castor casks are put into interim storage on the premises of the Forschungszentrum (research centre) Jülich (FZJ). They contain inter alia not fully consumed fuel particles of fissionable uranium (U-235), non-fissionable uranium (U-238) and thorium (Th-232), as well as the consequential emerging plutonium (Pu-239), uranium (U-239) and other fission products. According to the Statement of Intent of 1 April 2014 signed by the American Department of Energy (DOE), the German Federal Ministry for Education and Research (BMBF) and the Ministry for Innovation, Science and Research North Rhine-Westphalia (MIWF NRW), the attempt shall be made to export the fuel element spheres for refurbishment as soon as possible to the American centre for nuclear weapons Savannah River Site (SRS) in South Carolina.
- An ordinary transport permit is not sufficient to authorize the planned export of fuel element spheres of AVR Jülich to the USA according to § 4(1) of the Atomic Energy Act (AtG). This regulation relates solely to the transport process of nuclear fuels. For the question whether the export of fuel element spheres of AVR Jülich to the USA would be legal or not the disposal regime of the Atomic Energy Act is much more relevant. Any approval in accordance with the Nuclear Waste Shipment Ordinance would however likewise be unlawful, because the shipment violates the Atomic Energy Act provisions.
- The export of the fuel element spheres of AVR Jülich for reprocessing in the centre for nuclear weapons SRS in the USA violates § 9a(1) Sentence 1 of the Atomic Energy Act. However, such a disposal of the radioactive waste does principally not constitute a harm-free utilization within the meaning of the Atomic Energy Act, regardless whether or not AVR Jülich was a research reactor. In contrast to the thus far executed refurbishment of radioactive waste of conventional pressurized and boiling water reactors, in the case of an eventual refurbishment of nuclear waste of pebble bed reactors it is especially problematic that the nuclear fuel is merged with graphite and there is no practicable technique so far for the removal of the graphite. Likewise, the Statement of Intent of 1 April 2014 does not assume the feasibility of refurbishment. Moreover, according to the findings of the German Government the refurbishment of the fuel element spheres of AVR Jülich would also lead to additional nuclear radiation and to the additional accumulation of extremely dangerous plutonium. In due consideration of the legislative assessment in consequence of the amendment of the Atomic Energy Act in 2002 it can overall not be assumed that a refurbishment of the fuel element spheres of AVR Jülich constitutes a harm-free utilization.

- Furthermore, the shipment of the fuel element spheres of AVR Jülich for refurbishment is also according to § 9a(1) Sentence 2 of the Atomic Energy Act explicitly inadmissible, because AVR Jülich was a plant for the commercial generation of electricity and not a research reactor within the meaning of the Atomic Energy Act. In accordance with the Atomic Energy Act the term research reactor applies only to those plants that are used for research related to neutron radiation, for example for isotope research for medical purposes, for biological measures as well as for the generation of tracers. AVR Jülich did not serve such a purpose. It was ordered instead as nuclear power reactor by a consortium of 15 municipal power supply companies. During its operating time the AVR Jülich delivered in total 1.51 terra watt-hours electricity. A correspondent energy supply contract is given. According to media reports from the mid-1970s this generated a revenue of about 3 million DM. Also the German Government and the Federal Office for Radiation Protection (BfS) proceed in official documents on the assumption that AVR Jülich was a nuclear power reactor and not a research reactor. Apart from that, concerning the legal differentiation it is irrelevant that the full name of AVR Jülich contains the term "Versuchsreaktor", meaning experimental reactor.
- In addition, the disposal of the fuel element spheres of AVR Jülich can also not be considered as safe, controlled disposal within the meaning of § 9a(1) Sentence 1 of the Atomic Energy Act. An immediate permanent disposal abroad is however not envisaged, moreover, it is in principle inadmissible according to the disposal regime of the Atomic Energy Act. On top of that, at present neither in Germany nor in the USA exists a repository for the permanent disposal of the nuclear waste in question.
- This prohibition of permanent disposal abroad is also confirmed by § 1(1) Sentence 1 of the Selection of Sites Act (StandAG), which says that for the permanent disposal of all waste produced domestically a repository must be sought (exclusively) on German territory. Complementary, by means of § 1(1) Sentence 2 of the Selection of Sites Act it is further clarified that any future export of radioactive waste for the purpose of permanent disposal abroad is inadmissible due to international treaties.
- The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA also contradicts the provisions of European law. According to Art. 4(2) of the Directive 2011/70/EURATOM the shipment of the fuel element spheres of AVR Jülich to the USA for refurbishment fails to abdicate Germany's responsibility for permanent disposal. According to Art. 4(4) Sentence 1 Half-Sentence 1 of the Directive 2011/70/EURATOM a permanent disposal has to take place in principal domestically. This provision applies for the radioactive waste of AVR Jülich. A privileging of AVR Jülich as research reactor does also not come into consideration according to the provisions of the European Atomic Energy Community. Also, the exceptionally envisaged permanent disposal abroad as in Art 4(4) Sentence 1 Half-Sentence 2 of the Directive 2011/70/EURATOM is out of question, because the preconditions of Art 4(4) Sentence 2 of the Directive 2011/70/EURATOM are not met by the envisaged treatment of the radioactive waste in the USA.
- This result is overall supported by the environmental law principles of the European Union law that are basically applicable to the sphere of nuclear energy. Especially the principle of origin and the polluter pays principle of Art 191(2) Subsection 1 Sentence 2 of the Treaty on the Functioning of the European Union argue in particular against a refurbishment of the fuel element spheres abroad and principally in favour of

a domestic permanent disposal of the radioactive waste. There are no evident reasons to exceptionally derogate from those principles for the export of the radioactive waste abroad.

Table of Contents

Expert Report

A. Reason, Subject and Question of the Export Report

In Jülich, Germany, the Arbeitsgemeinschaft Versuchsreaktor (Association experimental reactor) GmbH (AVR GmbH) operated the high-temperature reactor "Arbeitsgemeinschaft Versuchsreaktor Jülich" (AVR Jülich).[1] The AVR Jülich is a pebble bed reactor at which the nuclear fuel is located in individual graphite coated spheres. The AVR Jülich initially fed electricity into the electricity grid in the year 1967. In the end of 1988 it was deactivated due to earlier incidents.

In the eighties, more than 100 casks of fuel element spheres of AVR Jülich were stored in the shaft mine Asse that in the meantime has been concretely damaged and threatened by water inflow; the temporarily approved storage from 1976 to 1978 of 100,000 fuel elements of AVR Jülich in the shaft mine Asse could however not be implemented.[2]

At present, about 300,000 fuel element spheres within 152 castor casks are put into interim storage on the premises of the Forschungszentrum (research centre) Jülich (FZJ) near the AVR Jülich. They contain inter alia not fully consumed fuel particles of fissionable uranium (U-235), non-fissionable uranium (U-238) and thorium (Th-232), as well as the consequential emerging plutonium (Pu-239), uranium (U-239) and other fission products.[3] The permit of the interim storage at the AVR Jülich, which is insufficiently protected against incidents,[4] expired at the end of July 2014, with the result that the interim storage takes place currently merely based on a nuclear law directive.[5]

On the 1 April 2014 a Statement of Intent among the American Department of Energy (DOE), the German Federal Ministry for Education and Research (BMBF) and the Ministry for Innovation, Science and Research North Rhine-Westphalia (MIWF NRW) was signed.[6] In that Statement of Intent the parties testify to collaborate in order to export the fuel element spheres as soon as possible to the American centre for nuclear weapons Savannah River Site (SRS) in South Carolina. According to this Statement of Intent, the transport of the fuel element spheres to the USA shall begin in the summer of 2015.[7]

[1] Cf. on this and the following with further references the detailed depiction in *Schubert*, Kugelhaufenreaktoren, p. 4ff., 7f.; further *Mnormann/Streich*, in: Strahlentelex 664-665/2014, p. 1ff.
[2] Cf. with further references the final report of the parliamentary investigation committee for the disposal site for nuclear waste Asse II, 15 October 2012 (Parlamentarischer Untersuchungsausschuss zum Atommüllager Asse II), *Bündnis 90/Die Grünen*, Abschlussbericht, p. 41f., 46f.
[3] Cf. on this and the following the self-representation on the website of the FZJ that has in the meantime become responsible for the waste disposal. Available at http://www.fz-juelich.de/portal/EN/AboutUs/self-conception/responsibility/avr/FAQ_Transport/_node.html.
[4] For criterions by court rulings see OVG Schleswig, judgment of 19 June 2013, Az. 4 KS 3/08, juris.
[5] Cf. on this the depiction on the website of the Federal Office for Radiation Protection (BfS) which is in charge of authorizations. The notifications of permission are published there as well. Available at http://www.bfs.de/de/transport/zwischenlager/dezentrale_zwischenlager/standorte/kkj.html.
[6] Cf. on this and the following the report of *Streck* in the magazine Telepolis of 24 June 2014, available at http://heise.de/-2237193. The Statement of Intent is available at http://www.nrswatch.org/uploads/2/7/5/8/27584045/statement_of_intent_march_april_2014.pdf.
[7] Cf. concerning the planned export also the response of the German Government to the minor interpellation by several delegates of the faction Die Linke of 5 September 2014, BT-Drs. 18/2488, p. 3.

This process was criticised by various organisations and the media. In terms of content, the planned export of the fuel element spheres of AVR Jülich is objected because of the fact that also in the USA neither a refurbishment of the nuclear waste is guaranteed, nor exists there a permanent disposal site. Furthermore, the export would water down the Nuclear Non-Proliferation Treaty and it violates the polluter pays principle. It is also criticised that the priority is given to mere business-related interests and that the transports them-selves are redundant, unsafe and dangerous.[8] In legal terms, the planned export of the fuel element spheres of AVR Jülich is objected, for example, because it violates both the provisions of the German nuclear law, which is in the meantime oriented towards the permanent disposal within Germany, and possibly the provisions of the European law.[9]

Against this background the subject and the question of the present legal opinion must be understood. Hereinafter, it shall be further examined in the substantive respect, whether the export of radioactive waste from the AVR Jülich to the USA is compatible with the statutory provisions of the German and European law.

B. Violation of the Provisions of the German Law

The export of the fuel element spheres of AVR Jülich to the USA could violate the provisions of the German nuclear law. Especially the Atomic Energy Act[10] contains in particular substantive provisions about the transport (see I.) and the disposal (see II.) of radioactive waste. Moreover, there are statements about the disposal of spent fuel elements also in the Selection of Sites Act, StandAG (see III.).[11]

I. No Export based on a mere Transport Permit according to § 4 Atomic Energy Act

An ordinary transport permit according to § 4(1) of the Atomic Energy Act is not sufficient to authorize the planned export of the fuel element spheres of AVR Jülich to the USA. Because the regulation of § 4 relates solely to the transport process of nuclear fuels.

Though the fuel element spheres of AVR Jülich in question are in fact nuclear fuels within the meaning of § 4(1) Sentence 1 of the Atomic Energy Act. After all, the fuel element spheres contain fissionable products within the meaning of the register of § 2(2) Sentence 1 Number 1a), b), c), and d) of the Atomic Energy Act and they have to be classified as nuclear fuels pursuant to the legal definition within the meaning of the Atomic Energy Act. Also, in principal the fuel element spheres of AVR Jülich would have to be transported in the case of

[8] Cf. in addition to the above mentioned references for example the report in Spiegel Nr.33/2014, p.15, the press release of „ausgestrahlt of 21 July 2014, available at https://www.ausgestrahlt.de/presse/artikel/9e96dfe4ab42695bc7d453c1f530a062/export-von-atommuell-muss-gestoppt.html, or the article by Greenpeace of 05 July 2014, available at https://www.greenpeace.de/themen/castortransporte-aus-juelich.
[9] Cf. in addition to the above mentioned references for example the notification of the information network Contratom, available at http://www.contratom.de/2014/07/08/atommullexport-aus-juelich-ist-illegal/.
[10] Atomic Energy Act (AtG), version of the notification of 15 July 1985, BGBl.I, p. 1595, that was changed as last by Art. 5 of the Act of 28 August 2013, BGBl. I, S. 3313.
[11] Standortauswahlgesetz (StandAG) of 23 July 2013, BGBl. I, p.2553.

an alleged export to the USA. This is why a transport permit according to § 4(1) of the Atomic Energy Act would also at least be necessary for such a transport.[12]

Nevertheless the regulation of the § 4 of the Atomic Energy Act relates only to the process of transportation as such. The regulation for the safety of the transport includes as well the standardization of the reservation on approval.[13] This means that the transport within this rule is considered only as a link in a chain of different processes that are likewise regulated by the respective authorizations, like the import and export or the disposal of nuclear fuels. Except for the provisions concerning the safety of the transport[14] this regulation thus does not contain any further substantive provisions.

In order to answer the question whether the export of the fuel element spheres of AVR Jülich to the USA is legal, therefore the whole prevailing legal regime for the utilization of radioactive residues and for the disposal of radioactive waste is relevant. A legalization of the export on the basis of an authorization pursuant to § 4 of the Atomic Energy Act is excluded.

II. No Export due to Violation of the Disposal Provisions of § 9a(1) Atomic Energy Act

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA could be substantively excluded in particular because it violates the provisions of § 9a(1) Atomic Energy Act and the - for an export necessary - authorization[15] would be illegal in this case pursuant the Nuclear Waste Shipment Ordinance.[16] Due to the amendment of the Atomic Energy Acts in 2002[17] the provision of § 9a(1) was principally changed.[18] The provision regulates the utilization of radioactive residues (see 1.) and prohibits thereby the shipment of certain nuclear fuels for a utilization a priori (see 2.) and it contains substantive provisions for the disposal of radioactive waste (see 3.).

1. The Export is no harm-free Utilization in the meaning of § 9a(1) Sentence 1 Atomic Energy Act

The provisions of § 9a (1) Sentence 1 of the Atomic Energy Act require for the disposal of radioactive residues in principal two different statements of facts concerning the disposal: aside from the possibility of direct permanent disposal by a controlled disposal of radioactive waste, which shall be analysed later, as it is regulated in Variant 2 of the second Half-Sentence of the norm, the harm-free utilization of radioactive residues is generally regulated in Variant 1 of the second Half-Sentence of the norm. According to that, also the person, who

[12] This however should indeed be also denied due to the reasons shown hereinafter.
[13] Cf. on this and the following *Fischerhof*, Atomic Energy Act, § 4, Recital 1.
[14] Cf. the provisions in § 4(2) Number 1 to 6 of the Atomic Energy Act.
[15] Cf. reservation on approval in § 5(2) Sentence 1 Number 1b) of the Atomic Energy Act that is relevant in the case of the export of radioactive waste out of Europe, because in this case the approval provision of § 3 of the Atomic Energy Act is not relevant. The relevance of that requirement of approval is incidentally assumed at *Wollenteit*, Verbringung, p. 8ff.
[16] Nuclear Waste Shipment Ordinance, Atomrechtliche Abfallverbringungsverordnung (AtAV) of 30 April 2009, BGBl. I, p. 1000.
[17] Law of 25 July 2002, BGBl. I, p. 2674.
[18] See for example *Müller-Dehn*, in: *Posser/Schmans/ Müller-Dehn*, AtG § 9a Recital 179ff.

deals with the nuclear fuels from defunct plants within the meaning of § 7 of the Atomic Energy Act, has to take care that these residues must be utilized in a harm-free manner as far as they cannot be disposed in a harm-free manner.

Regardless of the ascertainment of this utilization provision by § 9a(1) Sentence 2 of the Atomic Energy Act – which shall be analysed in the following as well – the export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA could be already generally excluded since it does not constitute a harm-free utilization within the meaning of § 9a(1) Sentence 1 Half-Sentence 2 Variant 1 of the Atomic Energy Act.

According to the testimonies of the Statement of Intent of 1 April 2014 the fuel element spheres of AVR Jülich shall be refurbished in the centre for nuclear weapons SRS in the USA. That does not point towards an immediate permanent disposal but rather a utilization within the meaning of the Atomic Energy Act. According to the Atomic Energy Act, utilization means that the radioactive residues are directed to a new usage.[19] It is however arguable whether the planned refurbishment constitutes a harm-free utilization that fulfils the provision of the Atomic Energy Act. The term harm-free derives from the Federal Emission Control Act.[20] There, the utilization is seen as harm-free, if both the manner and the product of utilization are environmentally sound. The utilization is not harm-free, if, for example, it leads to an accumulation within the cycle of pollutants, if overall the expected environmental damages are higher after the refurbishment.[21]

The Statement of Intent implies in particular that the fuel element spheres shall be separated from the containing graphite by a physical-chemical procedure.[22] It is disputable whether this is feasible at all in practice, because the separation of uranium from the fuel element spheres was accomplished so far only in small amounts and only in the laboratory.[23] In contrast to the thus far executed refurbishment of nuclear waste of conventional pressurized and boiling water reactors, which is also challenging, the potential refurbishment of nuclear wastes of pebble bed reactors is especially problematic due to the fact that the nuclear fuel is merged with graphite and there is no technique so far for the removal of the graphite.[24] Also, the Statement of Intent it-self does not assume the necessary feasibility of the refurbishment, because it states only:[25]

> *„DOE is considering the feasibility of using H-Canyon facilities at SRS to chemically remove the graphite from the fuel kernels."*

Accordingly, the DOE refers merely to a preliminary examination of the feasibility. Hence, neither the feasibility of the refurbishment, nor the overall harm-free utilization are by any means ensured.

[19] *Fischerhof*, § 9a Recital 5.
[20] Cf. *Fischerhof*, § 9a Recital 5.
[21] Cf. with further references *Jarass*, BImSchG, § 5 Recital 111.
[22] Statement of Intent, Number 1. 4, p. 2, available at http://www.sruwatch.org/uploads/2/7/5/8/27584045/statement_of_intent_march_april_2014.pdf.
[23] Cf. the report of *Streck* in the magazine Telepolis of 24 June 2014, available at http://heise.de/-2237193, p. 3.
[24] Cf. to the course of the events also the depiction of the background article of „ausgestrahlt, available at https://www.ausgestrahlt.de/mitmachen/juelich/hintergrund.html.
[25] Statement of Intent, Number 1. 4, p. 2, available at http://www.srswatch.org/uploads/2/7/5/8/27584045/statement_of_intent_march_april_2014.pdf.

Another fact argues further against the (economic) feasibility of the refurbishment: According to the previous notion of the German Government, a utilization of exactly the fuel element spheres of AVR Jülich was ineligible. The disposal report by the German Government from 1988 states explicitly that the fuel elements of AVR Jülich are economically not usable; consequently the permanent disposal was envisaged.[26]

Furthermore, there are also other important reasons to reject the harmlessness of the utilization of the alleged refurbishment of the fuel element spheres of AVR Jülich in the centre for nuclear weapons SRS in the USA. The refurbishment of nuclear waste raises inter alia questions of safety and the protection of the environment. Concerning safety, the refurbishment is in particular problematic since especially high-temperature reactors as AVR Jülich produce weapons-grade material, for example plutonium. In this respect the whole purpose of the Atomic Energy Act would be subverted.[27] Concerning the protection of the environment, the refurbishment of nuclear waste usually results in an increase of waste and leads thereby to the intensification of the unresolved problem of permanent disposal. That is why the German Government has decided against the further potential refurbishment with the amendment of the Atomic Energy Act in 2002. The Explanatory Memorandum states this explicitly:[28]

> *„Die Aufarbeitung von Kernbrennstoffen führt zu radioaktiven Immissionen und zu einem zusätzlichen Anfall von Plutonium. Das Gesetz enthält daher ein Verbot der Abgabe bestrahlter Brennelemente aus Kernkraftwerken an Wiederaufarbeitungsanlagen ab dem 1. Juli 2005."*

That means:

> *The refurbishment of nuclear fuels results in radioactive emissions and in the additional accumulation of plutonium. Therefore, the Act contains a prohibition of the shipment of irradiated fuel elements from nuclear plants to reprocessing plants from 1 July 2005 onwards.*

This explanation is widely commended since the constitutionally indispensable protection of life and the environment from risks of nuclear energy is at stake.[29] When interpreting the term harmlessness, it is principally necessary to consider also the protective purpose of the Atomic Energy Act.[30] Pursuant § 1 Number 2 of the Atomic Energy Act, life and health must be protected from the dangers of nuclear energy and from the harmful impact of ionizing radiation. However, according to the findings of the German Government the possible refurbishment of the fuel element spheres of AVR Jülich would result in additional nuclear radiation and in the additional accumulation of the extremely dangerous plutonium. In due consideration of the legislative assessment in consequence of the amendment of the Atomic Energy Act in 2002, for both safety reasons and reasons for environmental protection, it can

[26] Report of the German Government for the disposal of the nuclear power plants and other nuclear facilities, BT-Drs. 11/1632 of 13 January 1988, p. 12.
[27] Cf. already the title of the Atomic Energy Act is „Gesetz zur friedlichen Verwendung der Kernenergie und den Schutz gegen ihre Gefahren", which means Law for the peaceful uses of nuclear energy and the protection against its dangers. Therefore the utilization shall happen only for peaceful purposes. Cf. *Offermann-Clos*, NVwZ 1989, p. 1112, 1115.
[28] Draft law of 11 September 2011, BT-Drs. 14/6890, p. 14.
[29] *Breuer*'s opinion is that this explanation instils respect „a limine"; cf. with further references: *Breuer*, Entsorgung, p. 113f.
[30] Similar *Fischerhof*, AtG, § 5 Recital 5.

therefore not be assumed that the refurbishment of the fuel element spheres of AVR Jülich constitutes a harm-free utilization.

Consequently, the export of the fuel element spheres of AVR Jülich to the USA is generally excluded since the planned refurbishment does not constitute a harm-free utilization within the meaning of § 9a(1) Sentence 1 Half-Sentence 2 Variant 1 of the Atomic Energy Act. The harmlessness of the utilization must be rejected because the technical feasibility of the refurbishment as well as its economic feasibility are uncertain. Furthermore, any refurbishment of fuel element spheres containing plutonium runs contrary to the ratio legis of the Atomic Energy Act.

2. Export is principally inadmissible according to § 9a(1) Sentence 2 of the Atomic Energy Act

In addition, the export of the fuel element spheres of AVR Jülich to the USA for refurbishment could be also inadmissible because it violates the explicit prohibition of § 9a(1) Sentence 2 of the Atomic Energy Act. According to this complemented provision of the amendment of the Atomic Energy Act, any shipment of irradiated nuclear fuel that originates from a plant for the commercial generation of electricity is inadmissible.[31]

It is therefore decisive, whether or not AVR Jülich (from which the fuel element spheres originate) was a plant for the commercial generation of electricity within the meaning of the Atomic Energy Act. The legal background of this regulation concerns the privileging of so called research reactors, which do not constitute plants for the generation of commercial electricity.[32] The wording of that regulation of § 9a(1) Sentence 2 of the Atomic Energy Act is definite and precise. Thus, it is only crucial whether or not the radioactive residues originate from a plant that was built for the commercial generation of electricity. Pursuant the provisions for the authorization of such plants within § 7(1) Sentence 2 of the Atomic Energy Act only those plants that are not run commercially, like research reactors, are not included in the prohibition.[33] Apart from that, the norm is closed to a further analogy due to the lack of a regulatory gap.[34] The privileging of the research reactors is legislatively justified with the importance of research, for example for basic research, for material research and isotope research for medical purposes (e.g. cancer therapies), for biological measures (e.g. environmental analytics) as well as for the generation of tracers.[35] Prerequisite of all these cases is the use of neutron radiation, e.g. to produce isotopes. The concerned provision of the amended Atomic Energy Act relates consequently only to research reactors with an according objective. These objectives only are the reason that led the legislature to privilege research reactors in § 9a Atomic Energy Act due to the evident particularities of the research field.[36]

According to the full name of AVR Jülich it is labelled as Versuchsreaktor (experimental reactor). This term however is for the analyses irrelevant pursuant to § 9a(1) Sentence 2 of the Atomic Energy Act – exactly like the occasionally vaguely and contradictory label as

[31] Cf. also *Müller-Dehn*, in: *Posser/Schmans/Müller-Dehn*, AtG, § 9a Recital 187ff.
[32] Cf. *Müller-Dehn*, in: *Posser/Schmans/Müller-Dehn*, AtG, § 9a Recital 188.
[33] Cf. Explanatory Memorandum of 11 September 2011, BT-Drs. 14/6890, p. 21.
[34] Similar also *Posser*, in: *Posser/Schmans/Müller-Dehn*, AtG, § 7 Recital 100.
[35] Cf. Explanatory Memorandum of 11 September 2011, BT-Drs. 14/6890, p. 19.
[36] See for the particularities of the research field Explanatory Memorandum of 11 September 2011, BT-Drs. 14/6890, p. 24.

Versuchs- oder Forschungsreaktor (experimental or research reactor) by politicians.[37] Because the name of the reactor is merely chosen by the consortium of the operators themselves it cannot influence the legal category. Moreover, § 9a(1) Sentence 2 of the Atomic Energy Act does not envisage an extra category for experimental reactors (just as the provisions of the plant approval in § 7(1) of the Atomic Energy Act). Pursuant the systematic of the Atomic Energy Act regarding the substantive disposal provisions, it is only decisive whether it is a privileged research reactor (e.g. in the medical field) or a nuclear plant that has generated electricity on a commercial basis.

According to those standards, the AVR Jülich constitutes definitively a plant that was built for the commercial generation of electricity. This is because AVR Jülich constitutes neither a plant for medical purposes, nor for biological measures. Also, no basic research was conducted in that plant, other than in the older research reactor DIDO (FRJ-2) of the FZJ[38]. Instead, the AVR Jülich was built to generate electricity. It was ordered as nuclear power reactor by a consortium of 15 municipal power supply companies.[39] Furthermore, the AVR Jülich was actually used for the commercial generation of electricity. For doing so there was an energy supply contract between the former Rheinisch-Westfälische Elektrizitätswerk AG (today RWE AG) signed the 07.06.1968 respectively 24.06.1968.[40] According to the statistic of the International Atomic Energy Agency (IAEA) the AVR Jülich delivered in total 1.51 terra watt-hours of electricity. The IAEA refers explicitly to a commercial use after May, 19th 1969.[41] According to media reports this generated about 3 Million DM of electricity revenue in the mid-1970s.[42] Also, the German Government and the Federal Office for Radiation Protection (BfS) proceed in official documents on the assumption that AVR Jülich was a nuclear power reactor (for commercial generation of electricity) and not a research reactor (e.g. for medical purposes).[43] As reaction to a question to the Government, in 2010 the German Government confirmed that there were 21 research reactors in Germany; within the list of names given by the Government the AVR Jülich does not appear.[44]

After all, AVR Jülich is clearly not a research reactor within the meaning of the Atomic Energy Act. The AVR was according to its provisions a plant which was built for the commercial generation of electricity and operated as such. Radioactive residues that originate from the AVR Jülich can in principal not be utilized in a harm-free manner by refurbishment due to the explicit prohibition by law. The export of fuel element spheres of AVR Jülich to

[37] The Statement of Intent of 1 April 2014 the AVR Jülich for example is called „German Research Reactor", cf. number I.1., p. 1. The German Government also called the AVR Jülich recently vaguely as experimental reactor that though it has generated electricity on the other hand it has had a defining function as research and development reactor. Cf. the response of the German Government of 5 September 2014 to the minor interpellation by several delegates of the faction Die Linke of 5 September 2014, BT-Drs. 18/2488, p. 2.
[38] Cf. *Schubert*, Kugelhaufenreaktoren, p. 4.
[39] Cf. the background depiction of .ausgestrahlt, available at https://www.ausgestrahlt.de/mitmachen/juelich/hintergrund.html.
[40] See *Ziermann/Günther*, Abschlussbericht, p. 29.
[41] Cf. the statistical depiction on the IAEA website, available at http://www.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=114.
[42] As in the newspaper article „Wird Jülichs Reaktor zur Atombombe?" in Welt am Sonntag of 9 July 1978.
[43] Cf. the appearance of AVR Jülich in the list of nuclear power plants and not on the list of research reactors on the website of the Federal Office for Radiation Protection (BfS) available at http://www.bfs.de/de/kerntechnik/ereignisse/standorte/karte_kw.html, also according to a recent report after the Convention on Nuclear Safety from the year 2013 by the Federal Environment Ministry, AVR Jülich is mentioned on the list of nuclear power plants and not on the list of research reactors, cf. *BMU*, Berlin, p. 186ff.
[44] See the written answer dated the 17 September 2010, BT-Drs. 17/2988, p. 1f.

the centre for nuclear weapons SRS in the USA to discharge the nuclear fuels for refurbishment is for this reason in principle also inadmissible according to § 9a(1) Sentence 2 of the Atomic Energy Act.

3. Export is not a Controlled Disposal within the Meaning of § 9a(1) Sentence 1 of the Atomic Energy Act

On top of this, the planned export of the fuel element spheres of AVR Jülich to the USA is also inadmissible on the basis of § 9a(1) Sentence 1 Half-Sentence 2, Variant 2 of the Atomic Energy Act. Alternatively to the provision of the harm-free utilization that was only just rejected, this regulation introduces the possibility and substantive duty to dispose radioactive residues in a controlled way (direct permanent disposal). Controlled disposal means the disposal according to the provisions of the Atomic Energy Act.[45] According to the disposal regime of § 9a(1, 1b, 3) of the Atomic Energy Act, the controlled disposal envisages an interim disposal for the nuclear fuels until a repository for permanent disposal is available.[46]

Pursuant the Statement of Intent of 1 April 2014 the fuel element spheres of AVR Jülich are not supposed to be disposed permanently in the centre for nuclear weapons SRS in the USA – rather the USA plans instead the refurbishment of the fuel elements for the extraction of the uranium of the nuclear fuels.[47] Besides, also in the USA there is no repository site for the controlled disposal of radioactive waste. Moreover, according to the disposal regime of § 9a(3) Sentence 1 of the Atomic Energy Act the Federal State of Germany has the duty to establish repositories for the permanent disposal of radioactive waste that originate from German nuclear power plants – and not any other country. For these reasons the export of the fuel element spheres of AVR Jülich to the USA for the permanent disposal is also inadmissible on the basis of § 9a(1) Sentence 1 Half-Sentence 2 Variant 2 of the Atomic Energy Act.

4. Interim Result

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA for refurbishment violates the disposal regime of § 9a(1) of the Atomic Energy Act. Such a disposal of the radioactive residues does not constitute a harm-free utilization within the meaning of the Atomic Energy Act. Furthermore, the shipment of the fuel element spheres for the refurbishment is evidently inadmissible since the AVR Jülich was a plant for the commercial generation of electricity. Moreover, the disposal of the fuel element spheres of AVR Jülich cannot be considered a controlled disposal, because the direct permanent disposal abroad is not envisaged; also at present there is no repository for the permanent disposal of the concerned nuclear waste – neither in Germany, nor in the USA.

Regardless of the actual type of action, the executive authority is bound to the provisions of the Atomic Energy Act due to the principle of the priority of the law that is deduced from Art.

[45] *Fischerhof*, AtG, § 9a Recital 6.
[46] Cf. also Explanatory Memorandum of 11 September 2011, BT-Drs. 14/6890, p. 6.
[47] Cf. on this and the following again the report of *Sireck* in the magazine Telepolis of 24 June 2014, available at http://heise.de/-2237193, p.2.

20(3) of the Basic Law for the Federal Republic of Germany.[48] The required authorization for the export of the radioactive residues to the USA pursuant § 5(2) Sentence 1 Number 1b) of the Nuclear Waste Shipment Ordinance must be rejected due to the shown violation of the provisions of the Atomic Energy Act according to the preconditions of approval of § 9(1) Number 4 of the Nuclear Waste Shipment Ordinance read in conjunction with § 8(1) Number 4 of the Nuclear Waste Shipment Ordinance.

III. No Export due to § 1(1) of the Selection of Sites Act (StandAg)

At last, it must be analysed, if in reference to the Selection of Sites Act any changes in the shown disposal regime occur that exceptionally allow the export of the fuel element spheres of AVR Jülich. According to § 1(1) Sentence 1 of the Selection of Sites Act the purpose of the Selection of Sites Act is to provide procedural instruction in order to find a site suited as repository for permanent disposal of the radioactive waste generated in Germany.

Already according to this original ratio legis, it can be stated that by the Selection of Sites Act no change of the disposal regime specified in the Atomic Energy Act shall take place. According to the Explanatory Memorandum, the Selection of Sites Act shall rather codify merely the procedure of the selection of a site. This is supposed to help in the search for the envisaged permanent disposal pursuant § 9a (3) Sentence 1 of the Atomic Energy Act.[49] In the case of the controlled disposal by a permanent disposal of the nuclear waste, the disposal regime of the Atomic Energy Act is thereby confirmed by § 1(1) Sentence 1 of the Selection of Sites Act. In particular, it is stated that the repository site for a permanent disposal of waste that was produced in Germany must be sought exclusively on German territory, including the waste that was produced abroad by the refurbishment of irradiated fuel elements originating from German nuclear power plants.[50] The Explanatory Memorandum emphasizes:[51]

> *„Die Beseitigung bzw. Endlagerung der radioaktiven Abfälle, die bei der Nutzung der Kernenergie in Deutschland entstehen, soll in nationaler Verantwortung gelöst werden. Eine Entsorgung in anderen Ländern und ein Export von radioaktiven Abfällen zur Endlagerung kommen nicht in Betracht."*

That means:

> *The disposal and/or the permanent disposal of radioactive waste that emerges by the use of nuclear energy in Germany shall be solved in national responsibility. The disposal in other countries and the export of radioactive waste for the permanent disposal do not come into consideration.*

This supports the above mentioned explanation after which the export of the fuel element spheres of AVR Jülich for the permanent disposal in the USA is inadmissible (see Subparagraph B. II. 3.). Furthermore, the whole law does not even concern the matter of disposal of the harm-free utilization through potential refurbishment of the fuel element spheres in the centre for nuclear weapons SRS in the USA which was examined above in detail. In this respect this basic disposal regime of the Atomic Energy Act can also not be

[48] *Sommermann*, in: v. *Mangold/Klein/Starck*, GG II, Art. 20 Recital 270ff.
[49] Cf. Draft law of 14 May 2013, BT-Drs. 17/13471, p. 1.
[50] Cf. the wording of § 1(1) Sentence 1 of the Selection of Sites Act as well as the Explanatory Memorandum of the draft law of 14 May 2013, BT-Drs. 17/13471, p. 19.
[51] Cf. draft law of 14 May 2013, BT-Drs. 17/13471, p. 2.

changed by the Selection of Sites Act. Any legalization of the export of the fuel element spheres of AVR Jülich for the refurbishment in the USA, as it is mentioned in the Statement of Intent of 1 April 2014, is not possible on the basis of § 1(1) Sentence 1 of the Selection of Sites Act.

Furthermore, no change of the disposal regime of the Atomic Energy Act takes place by § 1(1) Sentence 2 of the Selection of Sites Act that would allow the export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA. This provision was complemented in the Selection of Sites Act on the recommendation of the Ecology Committee in the German Federal Parliament.[52] It states that in order to reach the (above depicted) legal objective of the Selection of Sites Act no international treaties shall be concluded that allows the shipment of radioactive waste for the purpose of permanent disposal outside of Germany. Also, this provision as proved by the definite wording of § 1 (1) Sentence 2 of the Selection of Sites Act relates only to the matter of disposal of discarding by permanent disposal and not to the utilization by refurbishment. Simply based on the wording of this provision neither a change of the principal disposal regime of the Atomic Energy Act, nor the legalization of the export of the fuel element spheres of AVR Jülich for refurbishment can be effected.[53] Furthermore, the Explanatory Memorandum of this provision confirms by the amendment statement effected on the recommendation of the Ecology Committee in the German Federal Parliament of § 1(1) Sentence 2 of the Selection of Sites Act, that the scope of the matter of disposal of the Atomic Energy Act shall rather be restricted and not expanded. Accordingly, it is explained there that the amendment statement in view of a (further reaching) EU-Directive served the unequivocal conclusion that Germany does not export its nuclear waste abroad. In that way it shall be ensured that any disposal abroad of spent fuel rods originating from the generation of electricity is prohibited in each and every case.[54]

For the moment it can be left undetermined to what extent the EURATOM Directive mentioned in § 1(1) Sentence 2 of the Selection of Sites Act effectively provides an expanded basis for the export of radioactive waste (more at Subparagraph C. I.) that had to be restricted then again by a provision of the Selection of Sites Act. Because regardless of this, no changes of the disposal regime of the Atomic Energy Act take place, neither by the actual purpose in § 1(1) Sentence 1 of the Selection of Sites Act, nor by the amendment statement in § 1(1) Sentence 2 of the Selection of Sites Act. The provision of § 1(1) Sentence 1 of the Selection of Sites Act rather states unequivocally that the law overall refers only to the matter of disposal of § 9a(1) Sentence 1 of the Atomic Energy Act and serves to codify the procedure of the selection of a permanent disposal site within the meaning of § 9a(3) Sentence 1 of the Atomic Energy Act. In this respect § 1 (1) Sentence 1 of the Selection of Sites Act specifies further unequivocally that the permanent disposal refers to the waste produced domestically and that a permanent disposal site must be sought exclusively on German territory. In order to guarantee that all the domestically generated radioactive waste is stored in a (still missing) German permanent disposal site, § 1(1) Sentence 2 of the Selection of Sites Act further clarifies that a future export of radioactive waste abroad for the purpose of permanent disposal is inadmissible due to international treaties. Overall the export of the fuel element spheres of

[52] Cf. decision-recommendation of 26 June 2013, BT-Drs. 17/14181, p. 1, 3.
[53] This applies regardless of whether a further export prohibition could have been enshrined within the regulation as it was partly demanded in the media, cf. the background information of .ausgestrahlt, available at https://www.ausgestrahlt.de/mitmachen/atom-muell/atommuell-export.html.
[54] Cf. Decision-recommendation of 26 June 2013, BT-Drs. 17/14181, p. 11f.

AVR Jülich for the purpose of refurbishment in the centre for nuclear weapons SRS in the USA is also pursuant § 1(1) of the Selection of Sites Act not admissible as an exception.

IV. Interim Result

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA violates the provisions of the German Law. A transport permit pursuant § 4(1) of the Atomic Energy Act is not sufficient for the export of the radioactive waste of AVR Jülich abroad. Any authorization according to the Nuclear Waste Shipment Ordinance would be illegal because the shipment violates provisions of the Atomic Energy Act. Regardless of the question whether or not AVR Jülich is a research reactor, § 9a(1) Sentence 1 of the Atomic Energy Act prohibits the export because a harm-free utilization of the fuel element spheres cannot be ensured. Furthermore, the utilization of the fuel element spheres by the planned refurbishment in the centre for nuclear weapons SRS in the USA is also unequivocally prohibited pursuant § 9a(1) Sentence 2 of the Atomic Energy Act, because the AVR Jülich was a plant for the commercial generation of electricity and not a (non-commercial) research reactor. Any permanent disposal of the radioactive waste of AVR Jülich abroad – though admittedly not at the first step but however indirectly envisaged – is according to the disposal regime of § 9a(1) Sentence 1, § 9a(3) of the Atomic Energy Act prohibited in principal. This exclusion is furthermore confirmed by the provision in § 1(1) Sentence 2 of the Selection of Sites Act.

C. Violation of the Provisions of the European Law

Furthermore, it must be examined if there are provisions on the European level that prohibit the export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA. Such provisions could derive for example from a Directive of the European Atomic Energy Community (EURATOM) (see I.) and further possibly also from the European Union law (see II.).

I. No Export due to Art. 4(2, 4) of Directive 2011/70/EURATOM

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA could also violate substantive provisions of the Directive 2011/70/EURATOM.[55] This directive attempts to establish a community framework for the responsible and safe management of spent fuel elements and radioactive waste.

In principal, the fuel element spheres of AVR Jülich fall under the scope of the directive, because pursuant Art. 2(1a) of the Directive 2011/70/EURATOM the directive applies to all stages of disposal of spent fuel elements from civilian use.

Then, concerning its substantive disposal provisions, the Directive 2011/70/EURATOM also differentiates between the matters of refurbishment and permanent disposal. According to Art. 4(2) of the Directive 2011/70/EURATOM, in the case radioactive waste or spent fuel

[55] Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel elements and radioactive waste, ABl. EU 2011 Nr. L 199, p. 48.

elements are shipped to another country for the purpose of refurbishment or processing, it applies that the final responsibility for the permanent disposal of the fuel elements as well as of any other in the processing generated waste stays with the country of origin without further restrictions. This provision does not allow for any exception, also not for radioactive waste that originates from research reactors. Germany as member state of the European Atomic Energy Community therefore cannot abdicate its responsibility for the permanent disposal (in accordance with the directive) as stated in the directive by referring to the refurbishment of the fuel element spheres of AVR at the centre for nuclear weapons SRS in the USA.

With regards to the permanent disposal, Art. 4(4) Sentence 1 Half-Sentence 1 of the Directive 2011/70/EURATOM states now that in principle all radioactive waste must be stored within the member state from which they originate. However, this general principle does not apply for the shipment of spent fuel elements from research reactors pursuant Art. 2(3b) of the Directive 2011/70/EURATOM. It is therefore decisive here at first, to what extent the AVR Jülich could qualify as a research reactor. The Directive 2011/70/EURATOM itself does not contain any definition of the term research reactor. Also the Treaty establishing the European Atomic Energy Community[56], on which the concerned directive is based, does not define the term. Nevertheless, other EURATOM directives lead to the conclusion that also within the legislative authority of the European Atomic Energy Community the term "research reactor" is interpreted rather in a narrow sense and that a research reactor must be differentiated from a nuclear power plant (for the purpose of generation of electricity). For instance, within the definition of the term "nuclear plant" in Art. 3 Number 1 a) of the Directive 2009/71/EURATOM[57] firstly the term enrichment plant is mentioned, then the term nuclear plant and separately the term research reactor. Furthermore, according to the 19th Recital of the Directive 2011/70/EURATOM – the directive in question – a research reactor cannot be a reactor for the purpose of generation of electricity. This Recital differentiates i.e. between radioactive waste that originates from the generation of electricity and radioactive waste originating from industrial, agricultural, medical or research activities. After all, the standards regarding the term research reactor in the Directive 2011/70/EURATOM are similar to those of the German Atomic Energy Act. In due consideration of the recently made explanations (Subparagraph B. II. 2) the privileging of AVR Jülich pursuant Art. 3(3b) of the Directive 2011/70/EURATOM is therefore out of the question, for the reason that AVR Jülich was a reactor used for the generation of electricity.

However, according to Art. 4(4) Sentence 1 Half-Sentence 2 of the Directive 2011/70/EURATOM, on certain preconditions also a permanent disposal abroad shall be possible. Since the permanent disposal abroad deviates thereby from the polluter pays principle and from the basic principle of national responsibility mentioned in the 25th Recital of the Directive 2011/70/EURATOM[58], the permanent disposal abroad must be seen as exception to the rule. According to the relation of rule and exception the preconditions of such

[56] Consolidated version of the Treaty establishing the European Atomic Energy Community (2010/c 84/01), Abl. EU 2010 Nr. C84, p. 1.
[57] Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, ABl. EU 2009 Nr. L 172, p. 18.
[58] This Recital reinforces once more the basic nuclear principle of national responsibility, after which every member state it-self assumes the responsibility for the safe disposal of spent fuel elements and radioactive waste in the end.

a permanent disposal abroad as mentioned in the directive must be consequently interpreted in a narrow sense.[59]

According to these preconditions – by means of Art. 4(4) Sentence 2 b) and c) of the Directive 2011/70/EURATOM – it is required for the permanent disposal abroad inter alia that the repository for permanent disposal in the country of destination is already operating before the shipment takes place and that a high safety level is guaranteed in the country of destination. These preconditions are not met in the case of the planned export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA. Because already according to the Statement of Intent of 1 April 2014 it is uncertain whether the first stage before the permanent disposal is technically feasible – i.e. at first the separation of the graphite and the uranium. On the part of various associations the feasibility is principally contested (see the explanations at Subparagraph B. II. 1). Moreover, also the USA are not equipped with an operative permanent disposal repository and therefore the USA do not have a storage plan for the radioactive waste of AVR Jülich (see the explanations at Subparagraph B. II. 3). Since a permanent disposal of the fuel element spheres of AVR in the USA is not further specified and (at present) also not viable, the export violates also the substantive provisions of Art. 4(4) Sentence 1 of the Directive 2011/70/EURATOM. These directive provisions are in principal addressed to Germany as member state of the European Atomic Energy Community and they are in view of their objectives binding. Furthermore, the provisions are formulated clear and unequivocal and without further conditions, complete in themselves and whole. Even if a domestic act of transformation was ignored, the provisions unfold both direct applicability and a priority over possibly opposing national law.[60]

II. No Export on the Basis of the Principle of Origin and the Polluter Pays Principle of Art. 191(2) of the Treaty on the Functioning of the European Union

The European Union law contains a number of principles concerning the environmental law. For instance, the principle of origin and the polluter pays principle could argue against the export of the fuel element spheres of AVR Jülich to the USA. In principle, it must be paid attention to the fact that these provisions are merely legal principles. Concrete legal consequences cannot be derived from them regularly.[61] However, since they are binding in principle and since any deviation therefore requires an additional legitimation, they shall be discussed in the following.

At first it must be stated that the environmental principle of the European Union law can at present be principally applied even though the export of radioactive waste represents a process that belongs to the domain of nuclear energy. Although the relevant provisions of the European Atomic Energy Community regularly represent the more specific legal basis concerning the nuclear energy law.[62] However, the questions here are less questions of energy law or of the safety of the mere transport of nuclear waste. Special emphasis is rather placed on the aspect of environmental protection of the refurbishment and of the subsequent

[59] Also *Reßinagel/Hennschel*, Verbringung, p. 7ff.
[60] About the general principles of legal acts of the European Communities with regards to the de minimis provision of Art 249 EC Treaty for example *Biervert*, in: *Schwarze*, EU-Kommentar, Art. 249 EGV Recital 5f.
[61] Cf. on this and the following *Frenz*, Handbuch VI, Chapter 29, Recital 4609ff.
[62] With further references *Frenz*, Handbuch VI, Chapter 30, Recital 4699.

permanent disposal abroad. Due to this overlap, environmental related aspect can indeed be based on the wide-ranging environmental competence of the European Union.[63]

The principles concerning environmental protection of the Union law are found in Art. 191(2) Subsection 1 Sentence 2 of the Treaty on the Functioning of the European Union. In the actual case, primarily the principle of origin must be considered. Accordingly, the environmental policy of the European Union is based on the principle that environmental damages have to be combatted primarily at their origin. This principle, which becomes often relevant in the sphere of waste legislation, requires to combat the environmental damage at the source, also in order to prevent relocations of the environmental damages.[64] If this is taken into consideration, the export of the fuel element spheres of AVR Jülich has to be omitted. Exceptional reasons for the shipment of the radioactive waste are not evident. This applies in particular because a refurbishment in the USA is not ensured, a safe permanent disposal cannot be guaranteed at this point, whereas the transport and the refurbishment increase the health risks and aggravate the environmental problems (see the explanations at Subparagraph B. II. and B. III.).

Moreover, the polluter pays principle obtains importance in view of the planned export of the fuel element spheres of AVR Jülich to the USA. Accordingly, in principle the polluter is accountable for the realization of the required precautionary measures.[65] If the consequential costs, which emerge by the permanent disposal of radioactive waste, are taken into consideration there are also no reasons that argue in favour of the export of the fuel element spheres of AVR Jülich to the USA. The producer of the radioactive waste was initially a German operator consortium. In the meantime the Forschungszentrum Jülich is responsible for the disposal, a society which is at 90% owned by the Federal Republic of Germany and at 10% by the federal state North Rhine-Westphalia.[66] If Germany is – pursuant the polluter pays principle – also accountable for the so far unforeseeable consequential costs of the disposal of the radioactive waste, there is no evident reason why Germany should be able to abdicate its responsibility by exporting the fuel element spheres to the USA.

Even though these considerations taken legally and individually are not sufficiently operable, they obtain importance for example when interpreting Art. 4(4) Sentence 1 of EU Directive 2011/70/EURATOM. (Subparagraph C. I.). Furthermore, they predetermine that an export of radioactive waste, as the one of AVR Jülich, for refurbishment and permanent disposal, as in the centre for nuclear weapons SRS in the USA, must be omitted also by future legal acts of the European Union.

III. Interim Result

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA also contradicts the provisions of the European law. According to Art. 4(2) of the Directive 2011/70/EURATOM the shipment of the fuel element spheres of AVR Jülich to the USA for refurbishment fails to abdicate Germany's responsibility for permanent disposal.

[63] Cf. about the general overlap of energy and environmental politics again *Frenz*, Handbuch VI, Chapter 30, Recital 4688.
[64] With further references *Frenz*, Handbuch VI, Chapter 29, Recital 4619ff.
[65] Cf. *Frenz*, Handbuch VI, Chapter 29, Recital 4626.
[66] Cf. the self-disclosure on the website of the FZJ, available in http://www.fz-juelich.de/portal/EN/AboutUs/FactsFigures/_node.html.

According to Art. 4(4) Sentence 1 Half-Sentence 1 of the Directive 2011/70/EURATOM, in principal a permanent disposal has to take place domestically. This provision applies to the radioactive waste of AVR Jülich because a privileging of AVR Jülich as a research reactor does not come into consideration. Also, the exceptionally envisaged permanent disposal abroad as in Art 4(4) Sentence 1 Half-Sentence 2 of the Directive 2011/70/EURATOM is out of question, because the preconditions of Art 4(4) Sentence 2 of the Directive 2011/70/EURATOM are not met by the envisaged treatment of the radioactive waste in the USA. This result is overall supported by the environmental law principles of the European Union law that are basically applicable to the sphere of nuclear energy. Especially the principle of origin and the polluter pays principle of Art 191(2) Subsection 1 Sentence 2 of the Treaty on the Functioning of the European Union argue in particular against a refurbishment of the fuel element spheres abroad and principally in favour of a domestic permanent disposal of the radioactive waste. There are no evident reasons to exceptionally derogate from those principles for the export of the radioactive waste abroad.

D. Result

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA violates the provisions of the German law. A transport permit pursuant § 4(1) of the Atomic Energy Act is not sufficient for the export of the radioactive waste of AVR Jülich abroad. Any authorization according to the Nuclear Waste Shipment Ordinance would be illegal because the shipment violates provisions of the Atomic Energy Act. Regardless of the question whether or not AVR Jülich is a research reactor, § 9a(1) Sentence 1 of the Atomic Energy Act prohibits the export because a harm-free utilization of the fuel element spheres cannot be ensured. Furthermore, the utilization of the fuel element spheres by the planned refurbishment in the centre for nuclear weapons SRS in the USA also unequivocally prohibited pursuant § 9a(1) Sentence 2 of the Atomic Energy Act, because the AVR Jülich was a plant for the commercial generation of electricity and not a research reactor. The indirectly envisaged permanent disposal of the radioactive waste of AVR Jülich abroad is according to the disposal regime of § 9a(1) Sentence 1, § 9a(3) of the Atomic Energy Act in principal prohibited. This exclusion is furthermore confirmed by the provision in § 1(1) Sentence 2 of the Selection of Sites Act.

The export of the fuel element spheres of AVR Jülich to the centre for nuclear weapons SRS in the USA also contradicts the provisions of the European law. According to Art. 4(2) of the Directive 2011/70/EURATOM the shipment of the fuel element spheres of AVR Jülich to the USA for refurbishment fails to abdicate Germany's responsibility for permanent disposal. According to Art. 4(4) Sentence 1 Half-Sentence 1 of the Directive 2011/70/EURATOM a permanent disposal has to take place domestically in principal. This provision applies for radioactive waste of AVR Jülich because a privileging of AVR Jülich as a research reactor does not come into consideration. Also, the exceptionally envisaged permanent disposal abroad as in Art 4(4) Sentence 1 Half-Sentence 2 of the Directive 2011/70/EURATOM is out of question, because the preconditions of Art 4(4) Sentence 2 of the Directive 2011/70/EURATOM are not met by the envisaged treatment of the radioactive waste in the USA. This result is overall supported by the environmental law principles of the European Union law that are basically applicable to the sphere of nuclear energy. Especially the principle of origin and the polluter pays principle of Art 191(2) Subsection 1 Sentence 2 of

the Treaty on the Functioning of the European Union argue in particular against a refurbishment of the fuel element spheres abroad and principally in favour of a domestic permanent disposal of the radioactive waste. There are no evident reasons to exceptionally derogate from those principles for the export of the radioactive waste abroad.

Bibliography

Breuer, Rüdiger	Rechtliche Probleme der Entsorgung nach der Atomgesetznovelle. in: Ossenbühl, Fritz (Hrsg.): Deutscher Atomrechtstag 2002, Baden-Baden 2003, p. 107-128 (cited as: *Breuer*, Entsorgung).
Bund für Umwelt und Naturschutz Deutschland, Landesverband Nordrhein-Westfalen e.V. (Hrsg.)	Dorothea Schubert: Kugelhaufenreaktoren – Desaster oder Zukunftsoption? Das Fallbeispiel des AVR Jülich, BUND-Hintergrund, Düsseldorf 2009 (cited as: *Schubert*, Kugelhaufenreaktoren).
Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Hrsg.)	Übereinkommen über nukleare Sicherheit – Bericht der Regierung der Bundesrepublik Deutschland für die Sechste Überprüfungstagung im März/April 2014, Berlin 2013, available at http://www.bmub.bund.de/fileadmin/Daten_BMU/Pools/Broschueren/bericht_uebereinkommen_nukl_sicherheit_bf.pdf (cited as: *BMU*, Bericht).
Bündnis 90/Die Grünen im Bundestag (Hrsg.)	Alexander Roßnagel / Anja Hentschel: Verbringung in Deutschland erzeugter radioaktiver Abfälle und abgebrannter Brennelemente ins Ausland – Kurzgutachten, Berlin 2013, available at http://www.gruene-bundestag.de/fileadmin/media/gruenebundestag_de/themen_az/energie/gutachen_zur_verbringung_radioaktiver_abfaelle_end_ou.pdf (cited as: *Roßnagel/Hentschel*, Verbringung).
Bündnis 90/Die Grünen im Niedersächsischen Landtag (Hrsg.)	Abschlussbericht Parlamentarischer Untersuchungsausschuss zum Atommüllager Asse II, 15 October 2012, Hannover 2012, available at http://www.fraktion.gruene-niedersachsen.de/fileadmin/docs/fraktion/infopakete/Asse_Abschlussbericht-PUA_21.pdf (cited as: *Bündnis 90/Die Grünen*, Abschlussbericht).
Fischerhof, Hans	Deutsches Atomgesetz und Strahlenschutzrecht: Kommentar mit Berücksichtigung des internationalen Rechts – unter Mitwirkung des Instituts für Völkerrecht der Universität Göttingen, 2. Edition, Baden-Baden 1978 (cited as: *Fischerhof*, AtG).
Frenz, Walter	Handbuch Europarecht, Volume 6 – Institutionen und Politiken, Berlin 2011 (cited as *Frenz*, Handbuch VI).

Greenpeace e.V. (Hrsg.)	Ulrich Wollenteit: Rechtsgutachten zur Zulässigkeit der Verbringung von abgebrannten Kernbrennstoffen aus dem stillgelegten Kernkraftwerk AVR Jülich in die Wiederaufbereitungsanlage Savannah River Site (USA), Hamburg 2014, available at http://www.greenpeace.de/sites/www.greenpeace.de/files/publications/rechtsgutachten-juelich-20140917.pdf (cited as: Wollenteit: Verbringung).
Jarass, Hans	Bundes-Immissionsschutzgesetz – Kommentar, 9. Edition, München 2012 (cited as: *Jarass*, BImSchG).
Moormann, Reiner / Streich, Jürgen	Kugelhaufenreaktoren – Status nach Erscheinen einer unabhängigen Expertenstudie zum AVR Jülich, in: Strahlentelex Nr. 664-665/2014, p. 1-6 (cited as: *Moormann/Streich*, in: Strahlentelex Nr. 664-665/2014).
Offermann-Clas, Christel	Die Entsorgung radioaktiver Abfälle – eine Stellungnahme zum Entsorgungsbericht '88, in: NVwZ 1989, p. 1112-1120 (cited as: *Offermann-Clas*, in: NVwZ 1989).
Posser, Herbert / Schmans, Malte / Müller-Dehn, Christian	Atomgesetz – Kommentar zur Novelle 2002, Köln 2003 (cited as *Bearbeiter*, in: *Posser/Schmans/Müller-Dehn*, AtG).
Schwarze, Jürgen (Hrsg.)	EU-Kommentar, 2. Edition, Baden-Baden 2008 (cited as: *Bearbeiter*, in: *Schwarze*, EU-Kommentar).
Von Mangold, Hermann / Klein, Friedrich / Starck, Christian	Kommentar zum Grundgesetz – Volume 2: Article 20 to 82, 6. Edition, München 2010 (cited as: *Bearbeiter*, in: v. *Mangold/Klein/Starck*, GG II).

PC-053

Rechtsanwälte Günther
Partnerschaft

Rechtsanwälte Günther • Postfach 130473 • 20104 Hamburg

Michael Günther *
Hans-Gerd Heidel * §
Dr. Ulrich Wollenteit * §
Martin Hack (LL.M. (Stockholm)) * §
Clara Goldmann (LL.M. (Sydney)) *
Dr. Michèle John *
Dr. Dirk Legler LL.M. (Cape Town) *
Dr. Rada Verheyen LL.M. (London) *
Dr. Cathrin Zengerling LL.M. (Aix-en-Provence) *

§ Fachanwalt für Familienrecht
§ Fachanwalt für Verwaltungsrecht
* Partner der Partnerschaft
AG Hamburg PR 382

Postfach 130473
20104 Hamburg

Mittelweg 150
20148 Hamburg

Tel.: 040-278494-0
Fax: 040-278494-99
Email: post@rae-guenther.de
www.rae-guenther.de

3rd of December 2014
14/0379V/Hf/st
Sekretariat: Frau Stefanato
Tel.: 040-278494-16

Expert Opinion

Shipment and Disposition of Spent Nuclear Fuel from the AVR Jülich nuclear reactor to the U.S. Department of Energy Savannah River Site and Non-Compliance Under German and European Law

Prepared on behalf of **Greenpeace e.V.**,
Hongkongstraße 10, 20457 Hamburg, Germany

By Rechtsanwalt Dr. Ulrich Wollenteit,
Rechtsanwälte Günther, Mittelweg 150, 20148 Hamburg

I.
Executive Summary

The proposed shipment of spent nuclear fuels from the permanently shut down experimental reactor AVR Juelich (hereafterAVR) does not comply with German and European law. The AVR is not a research reactor. The shipment of spent nuclear fuels contradicts sec. 9a (1) Sentence 2 of the German Atomic Energy Act (hereafter AtG) which stipulates that the transfer of spent nuclear fuels for reprocessing purposes is not allowed after 1. July 2005. The shipment also is in non-compliance with sec. 9a (2) Sentence 1 and 3 AtG and Sec 1 (1) of the law concerning the selection process for final storage (hereafter StandAG) which states that high active waste originating from German nuclear facilities has to be transferred to a national final storage or in case of sec. 9a (2) Sentence 3 AtG into an interim storage facility. Furthermore, the shipment of high active waste from Germany to the United States (U.S.) Department of Energy (DOE) Savannah River Site does not stand in line with Art. 4 (4) Council Directive 2011/70/EURATOM of 19 July 2011 (establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste). This also stipulates that radioactive waste shall be disposed of in the Member State in which it was generated. Last but not least a shipment does not comply with Sec. 9 (1) No. 4 of the German regulation concerning transboundary shipment of waste (hereafter AtAV) which provides that such a shipment is not admissible when it contradicts sec. 9a (1) Sentence 2 AtG or sec. 9a (2) Sentence 1 AtG[1].

II.
Facts

In 2012 plans emerged to transfer 152 casks with spent nuclear fuels from the AVR to the nuclear reservation in Savannah River Sites. In a *Statement of Intent* from April 2014 the U.S. DOE and the German Federal Ministry for Education and Science (BMBF) and the Ministry for Innovation, Science and Research of the State of North Rhine-Westphalia agreed to promote the project "immediately"[2].The *Statement of Intent* from April 2014 furthermore elaborates that DOE is considering the feasibility of utilizing the H-Canyon reprocessing

[1] The paper is a revised and updated version of a former Expert Opinion of the author, *Wollenteit*, Rechtsgutachten zur Zulässigkeit der Verbringung von abgebrannten Kernbrennstoffen aus dem stillgelegten Kernkraftwerk AVR Jülich in die Wiederaufbereitungsanlage Savannah River Site (USA), erstellt im Auftrag von Greenpeace e.V., 3rd of September 2014, https://www.greenpeace.de/sites/www.greenpeace.de/files/publications/rechtsgutachten-juelich-20140917.pdf.

[2] http://www.sprewatch.org/uploads/2/7/5/8/27584045/statement_of_intent_march_april_2014.pdf; sub I. Nr. 4.

plant at the Savannah River Site to chemically remove the graphite from the fuel kernels by using molten salt technique being developed by the Savannah River National Laboratory and that the remaining fuel kernels could then be processed through the H-Canyon system for disposition[3]. It is not perfectly clear whether the *Statement of Intent* additionally is aiming at 303 casks from the Thorium High-Temperature Reactor (THTR) at Hamm Untrop stored in an interim storage facility at Ahaus (Germany). The documents presented by U.S. DOE on June 2014 in connection with the public scoping meeting (Potential Acceptance and Disposition of German Pebble Bed Research Reactor Highly Enriched Uranium (HEU) Fuel - Environmental Assessment)[4] suggest this.

The 152 casks are presently stored in an interim storage facility located on the compound of the Research Center Juelich (FZJ). The waste originates from the AVR, an experimental reactor (Versuchskernkraftwerk) that was run by a consortium of 15 electricity companies. The AVR was the first German graphite based high temperature reactor that was relying on a pebble bed technology. The AVR had a net output of 13 MW per year and did operate from 1966 until 1988.

In the *Statement of Intent* is argued that the graphite-based spent nuclear fuel was irradiated for "research and development purposes". The assumption that the AVR can be considered to be a "research reactor" serves as the main justification for the proponents of the shipment[5] and for some politicians[6] to deem the shipment to be in compliance with national and European law.

In an official list of the Federal Agency for Radiation Protection (Bundesamt fuer Strahlenschutz - BfS) the AVR until today has been considered to be a commercial nuclear power plant[7]. In a separate list by the BfS that covers research reactors, the AVR is not listed.[8] The International Atomic Energy Agency (IAEA) lists the AVR as a commercial nuclear power reactor with the further specification: "permanent shut down"[9].

[3] http://www.sprewatch.org/uploads/2/7/5/8/27584045/statement_of_intent_march_april_2014.pdf; sub I. Nr. 4.

[4] http://www.sprewatch.org/uploads/2/7/5/8/27584045/doc_public_meeting_presentation_june_2014-1.pdf

[5] E.g. Kölner Stadtanzeiger vom 04.04.2011, http://www.ksta.de/politik/hintergrund-der-forschungsreaktor-juelich,15187246,11965764.html; Aachener Zeitung vom 3. April 2014, http://www.aachener-zeitung.de/lokales/region/avr-reaktor-vor-umzug-ins-zwischenlager-1.793583.

[6] See e.g. MdP Krischer, Kotting-Uhl and Behm in their „Small Inquiry" (Kleine Anfrage), BT-Drs. 17/843.

[7] http://www.bfs.de/de/kerntechnik/ereignisse/standorte/karte_kw.html .

[8] http://www.bfs.de/de/kerntechnik/ereignisse/standorte/karte_fr.html .

[9] http://www.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=114 ; see also *Keller/Mathews*, Evolution of Safeguards Over Time, Past, Present, as Projected Facilities, Material and Budget, Prepared for the U.S. Department of Energy, July 2009, p 19.

III.
Legal Assessment

1. **Violation of the Ban on Delivery of Spent Nuclear Fuels to a Reprocessing plant in Sec. 9a (1) Sentence 2 AtG**

a) The Content of Sec. 9a (1) Sentence 2 AtG

Sec. 9a (1) Sentence 2 AtG bans the disposal of spent nuclear fuels to a reprocessing plant from any installation that is or has been commercially generating electricity by nuclear fission after 01. July 2005.

The provision has been implemented in the course of the first German phase out legislation in 2002. The ban intended to put an end to the irresponsible practice of reprocessing nuclear fuels which caused severe ecological and additional waste-management problems[10]. The compliance of the ban with European law was questioned but did not cause any serious concern[11].

b) Disposal of Spent Nuclear Fuel Resulting from Commercial Generation of Electricity

Sec. 9a (1) Sentence 2 AtG prohibits the disposal of spent nuclear fuels for the purpose of (harmless) reprocessing only if the spent nuclear fuel is deriving from a commercial generation of electricity. The disposal of spent nuclear fuel from a research reactor to a reprocessing plant for the purpose of "harmless"[12] reprocessing is not covered by the prohibition[13]. Predominant arguments already suggest that a "harmless" reprocessing of spent nuclear fuel at the U.S.DOE Savannah River Site is not feasible[14]. The second and more decisive question to be answered is whether the AVR qualifies for being a "research reactor". The *Statement of Intent* tries to suggest this by using the wording "research and development purposes".

[10] BT-Drs. 14/6890, p. 14; see also *Wollenteit/Gebauer*, Risiken der Wiederaufbereitung und die Vereinbarkeit des Verbots der Wiederaufbereitung mit Gemeinschaftsrecht, ZUR 1999, 250 ff, m.w.N..

[11] *Wollenteit/Gebauer*, ebenda; *Scheuing*, in: Koch/Roßnagel, 10. AtRS, 2000, S. 121 ff.

[12] As far as Sec. 9a (1) Sentence 2 AtG does not preclude disposing spent nuclear fuel to a reprocessing plant the provision only allows if the reprocessing takes place in a "harmless" way.

[13] See *Posser/Schmans/Müller-Dehn*, Atomgesetz, Kommentar zur Novelle 2002, § 9 a, Rn 188.

[14] See *Ekardt/Weyland*, Rechtmäßigkeit des Exports radioaktiver Abfälle des AVR Jülich in die USA, Forschungsstelle Nachhaltigkeit und Klimapolitik, Reichtsgutachten im Auftrag des Bund für Umwelt und Naturschutz Deutschland, Landesverband Nordrhein-Westfalen e.V. BUND NRW, Entfassung vom 21.09.2014.

Bsup72

The designation of the reactor to be an experimental reactor (Versuchsreaktor) might prima facie create the impression that the reactor has something to do with research purposes. But this impression is deceptive[15]. Research reactors are not designed to generate electricity. They have an exploratory focus. Usually they deal with the investigation of physical and material properties and the production of radionuclides in the field of medical science and other fields of technique. Research reactors do not use the thermal energy but the neutron radiation. They also serve educational purposes[16].

The German phase-out legislator followed the same logic when only prohibiting the licensing of reactors commercially generating electricity by Sec. 7 (1) Sentence 2 AtG. The official reasoning for the legislation follows the same specifications when exempting research reactors on constitutional grounds (with respect to academic freedom; Art 5 (3) of the Basic Law) from the prohibition of erecting new reactors:

> "Unaffected remain research reactors the significance of which e.g. in the field of basic research, materials research, isotopic research, biological measures (inter alia cancer therapy) and the production of tracer is widely acknowledged. Because of their function and because of their integration in European and bilateral, international binding scientific cooperations these reactors represent an exception with respect to power reactors. They do not serve the generation of electricity and represent a lesser risk potential because of their lower degree of power."[17]

Experimental reactors pursue completely different goals. The AVR and the Thorium High- Temperature Reactor (THTR) at Hamm Üntrop[18] were both

[15] See *Wollenteit*, l.c. (fn. 1).
[16] *IAEA*, Research Reactors: Purposes and Future, November 2010, p.2: "Research reactors comprise a wide range of different types of reactors that are generally not used for power generation. The primary use of research reactors is to provide neutron source for research and various applications, including education and training"; see also http://de.wikipedia.org/wiki/Forschungsreaktor.
[17] BT-Drs. 14/6890, S. 19: "Unberührt bleiben die Forschungsreaktoren, deren Bedeutung zum Beispiel für die Grundlagenforschung, die Materialforschung, die Isotopenforschung für medizinische Zwecke (z. a. Krebstherapien), für biologische Maßnahmen (z. a. Umweltanalytiken) sowie zur Erzeugung von Tracern weiterhin anerkannt wird. Diese Reaktoren stellen sowohl auf Grund ihrer Funktionen als auch auf Grund ihrer Einbindung in europäische und bilaterale, völkerrechtlich verbindliche Forschungskooperationen einen Sonderfall gegenüber Leistungsreaktoren dar. Sie dienen nicht der Erzeugung von Elektrizität und stellen auf Grund ihrer deutlich niedrigeren Leistung ein geringeres Risikopotential dar."
[18] The THTR even more was not a research reactor; see *Wollenteit*, l.c. (fn. 1), p. 6 f, and *Hermes*, Rechtliche Zulässigkeit der Verbringung der bestrahlten THTR-Brennelementekugeln in die USA zum Zweck der Wiederaufbereitung und des Verbleibs unter Berücksichtigung des europäischen Rechts und diesbezügliche Rechtsschutzmöglichkeiten, Rechtsgutachten erstellt im Auftrag des Ministeriums für Klimaschutz, Umwelt, Landwirtschaft, Natur- und Verbraucherschutz des Landes Nordrhein-Westfalen, 4th of February 2014.

operating on the basis of a new High-Temperature Gas Reactor technology (HTGR). Both reactors are considered to be "prototype reactors" for new HTGR fuels[19]. The AVR served as kind of blue-print for future HTGR-technologies. In early publications this purpose of the AVR has precisely been described as follows:

- "Brown Boveri/Krupp Reaktorbau Ltd. is developing a line of high-temperature helium-cooled pebble-bed reactors, with completely integrated primary system. The feasibility of the concept has been demonstrated by the AVR experimental reactor, which has been supplying electricity to the grid since December 1967. The next stage in the development is the 300 MWe THTR, which has the same design characteristics as the AVR."[20]

- "The AVR is a 15-MWe HTR steam cycle demonstration plant in Jülich, West Germany. The AVR began generating electricity in December 1967. Its purpose is to demonstrate the feasibility of an HTR with pebble fuel elements and high operating temperatures. The operating utility group is Arbeitgemeinschaft Versuchs-Reaktor (AVR) GmbH of Düsseldorf. The constructor was Brown-Boveri-Krupp Reaktorbau GmbH."[21]

These quotations clearly show that the purpose of the AVR was to demonstrate the feasibility of a future HTR-reactorline with pebble fuel elements and high operating temperatures. The operating utility (Arbeitsgemeinschaft Versuchs-Reaktor GmbH), consisting of 15 electricity companies, and the constructor (Brown-Boveri-Krupp Reaktorbau GmbH) were not acting out of scientific curiosity but were governed by commercial interests. Experimental reactors always seek to show the feasibility of a new technology and to develop prototypes for new reactor lines. This clearly indicates that spent fuels from such a reactor is not deriving from a scientific background but out of a commercial context in the sense of Sec. 9a (1) Sentence 2 AtG.

The decisive division line between power reactors and research reactors runs along functional criteria. As already was pointed out research reactors do not use the thermal energy but the neutron radiation. These reactors are linked to basic research, materials research and medical research while power reactors

[19] *Shropshire/Herring*, Fuel-Cycle and Nuclear Material Disposition Issues Associated with High-Temperature Gas Reactors, Paper presented at the Conference: Americas Nuclear Energy Symposium (ANES 2004), Miami, FL (US), 10/03/2004-10/06/2004, p. 7.
[20] *Oehme/Schöning*, Design, Features, and Engineering Status of the THTR 300 MWe Prototype Power Station, Paper presented at the Conference: Gas cooled reactor meeting, April 27-30, 1970, Oak Ridge, p. 1.
[21] *Cleveland*, ORNL Analyses of AVR Performance and Safety, Paper to be presented at the IAEA Specialists' Meeting on Safety and Accident Analyses for Gas-Cooled Reactors, Oak Ridge, Tennessee May 13 – 15, 1985, p. 3.

by using thermal heat are meant to generate electricity to be fed to the grid [22]. AVR has produced a considerable amount of electricity over 20 years and has fed this electricity to the grid. The AVR was a prototype for a new reactor line and clearly was built and operated in a commercial context. The fact that the technological concept of the AVR and the intention to develop a new line of power reactors retrospectively did not turn out to become a commercial success does not make the AVR a research reactor. Since the AVR (and the THTR even more) no doubt does not feature the characteristics of a research reactor it has to be deemed to be a power reactor[23]. This qualification complies with the approach of the BfS and the IAEA which both did not put the AVR and the THTR on their list of research reactors but on their list of power reactors.

c) Intermediate Result

The analysis above clearly shows that the disposal of spent fuel from the AVR to the U.S.DOE Savannah River Site for the purpose of reprocessing does not comply with binding German law[24]. The disposal contradicts Sec. 9a (1) Sentence 2 AtG which prohibits the disposal of spent nuclear fuel deriving from a power reactor to a reprocessing plant after 01. July 2005. This assessment without any doubt even more applies to the 303 casks deriving from the THTR at Hamm Üntrop[25] which possibly might also be covered by the *Statement of Intent*.

2. Violation of Sec. 9a (2) Sentence 1 and 3 AtG and of Sec. 1 (1) StandAG

The *Statement of Intent* from April 2014 clearly assumes a final disposition of the shipped spent nuclear fuel at Savannah River Site after a possible reprocessing procedure. The final disposition of nuclear waste deriving from a German nuclear installation in a foreign country brings up additional legal questions:

a) Violation of Sec. 9a (2) Sentence 1 and 3 AtG

The option to dispose of nuclear reactor spent fuel from a nuclear power plant by shipment to a foreign reprocessing plant has been closed by the phase out legislation in 2002 with no further transports after the 1st of July 2005. The only remaining legal way to dispose of spent nuclear reactor fuel is provided by Sec. 9a (2) Sentence 1 and 3 AtG[26]. The provision contains a compulsory

[22] *IAEA*, Research Reactors: Purposes and Future, November 2010, p.2.
[23] See *Wollenteit*, l.c. (fn. 1), p. 5 f; *Ekardt/Weyland*, l.c. (fn. 14), p. 7 ff.
[24] See also *Ekardt/Weyland*, l.c. (fn. 14), p. 7 ff.
[25] See *Wollenteit*, l.c. (fn. 1), p. 6; even more specific *Hermes*, l.c. (fn. 18).
[26] *Fehling/Schneider/Theobald*, Recht der Energiewirtschaft, § 8. Zulassung von Erzeugungsanlagen, 4. Auflage 2013, Rn. 2013.

obligation to dispose of high active waste in a final waste disposal site or an interim storage facility before final disposal. A cross border shipment of spent nuclear fuel that has been generated in Germany would violate the obligation stipulated in Sec. 9a (2) Sentence 1 and 3 AtG and therefore would be illegal[27]. This national concept of nuclear waste management is supported by Sec. 9a (3) AtG which contains a basic decision that the federal authorities are obliged to erect and to operate a final waste disposal site.[28]

b) Violation of Sec. 1 (1) StandAG

In July 2013 a law concerning the selection process for final storage (StandAG)[29] went into force. The objectives of the selective process established by the StandAG are outlined in Sec 1 (1) Sentence 1 StandAG as follows:

> "Goal of the selection process is to find in the **Federal Republic of Germany** a site for a final storage for nuclear waste subject to Sec. 9a (3) Sentence 1 AtG caused by activities in inland, especially of high active waste, in a scientific based and transparent procedure which guarantees best possible safety for a period of one million years."[30]

With this provision the German legislator has affirmed its basic decision that waste generated in a German nuclear installation shall ultimately be disposed in a final storage facility on within the boundaries of Germany. But the StandAG did not only affirm this basic decision but also closed a potential loophole that might arise from European law under Art 4 No 4 Council Directive 2011/70/EURATOM of 19 July 2011 (establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste)[31]. Art 4 No 4 Council Directive 2011/70/EURATOM allows the cross border shipment of nuclear waste if this shipment is justified by an international agreement. This possibility to circumvent the provisions of Sec. 9a (2) Sentence 1 AtG and of Sec 1 (1) Sentence 1 StandAG has been explicitly excluded

[27] That the disposition of spent nuclear fuel to a third party country under German law is not admissable clearly shows *Bercé*, Die Endlagerung radioaktiver Abfälle aus Deutschland im Ausland, Kassel 2014, p. 52; see also *Wollenteit*, l.c. (fn. 1), p. 8; *Ekardt/Weyland*, l.c. (fn. 14), p. 9 ff, with respect to the THTR, *Hermes*, l.c. (fn. 18), p. 21.
[28] *Reßnagel/Hentschel*, Kurzgutachten, Verbringung in Deutschland erzeugter radioaktiver Abfälle und abgebrannter Brennelemente ins Ausland, im Auftrag der Fraktion Bündnis 90/Die Grünen im Bundestag, Kassel 2013, S. 10.
[29] Gesetz zur Suche und Auswahl eines Standortes für ein Endlager für Wärme entwickelnde radioaktive Abfälle; Standortauswahlgesetz, 23rd July 2013, BGBl I 2013, 2553.
[30] „Ziel des Standortauswahlverfahrens ist, in einem wissenschaftsbasiertes und transparentem Verfahren für die im Inland verursachten, insbesondere hoch radioaktiven Abfälle den Standort für eine Anlage zur Endlagerung nach § 9a Absatz 3 Satz 1 des Atomgesetzes in der Bundesrepublik Deutschland zu finden, der die bestmögliche Sicherheit für einen Zeitraum von einer Million Jahren gewährleistet."
[31] OJ L 199 of 19 July 2011, p. 48.

by Sec 1 (1) Sentence 2 StandAG. Under Sec 1 (1) Sentence 2 StandAG the Federal Republic of Germany may not,

> "according to Council Directive 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (OJ L 199 of 19 July 2011, p 48) negotiate a treaty which would make possible the disposal of nuclear waste including spent nuclear fuel for the purpose of final disposal outside of Germany."

Sec 1 (1) Sentence 2 StandAG is meant to effectively discourage any future attempts to undermine the basic (national) concept of nuclear waste management by seeking an international solution.

a) Intermediate Result

The final disposition of spent nuclear fuel from the AVR at the U.S.DOE Savannah River Site does not comply with Sec. 9a (2) Sentence 1 and 3 AtG and with Sec. 1 (1) StandAG which both allow a disposition of radioactive waste and spent nuclear fuel only in a federal final disposal site or an intermediate storage facility in Germany. The targeted project to dispose of spent nuclear fuel from the AVR at the U.S.DOE Savannah River Site therefore would be illegal under German law.

3. Violation of Art 4 No 4 Council Directive 2011/70/EURATOM

Art 4 No 4 Council Directive 2011/70/EURATOM stipulates, that

> "(r)adioactive waste shall be disposed of in the Member State in which it was generated, unless at the time of shipment an agreement, taking into account the criteria established by the Commission in accordance with Article 16(2) of Directive 2006/117/Euratom, has entered into force between the Member State concerned and another Member State or a third country to use a disposal facility in one of them."

As already was pointed out Sec. 1 (1) Sentence 2 StandAG cuts off the possibility to legalize cross border shipment of nuclear waste through an international agreement. Since no treaty with the U.S. allows German authorities to use a foreign disposal facility in the U.S. the targeted shipment does not comply with Art 4 No 4 Council Directive 2011/70/EURATOM.

Art 2 (3) b) of the Directive Art 4 No 4 Council Directive 2011/70/EURATOM is not applicable for research reactors. However, this exception may not be invoked with respect to the AVR because the AVR is not a research reactor as already has been shown.

Therefore the targeted disposition of spent nuclear fuel from the AVR at U.S.DOE Savannah River Site would also violate European Law especially Art 4 No 4 Council Directive 2011/70/EURATOM. The violation therefore could trigger treaty violation proceedings under Art 258 f of the Treaty on the Functioning of the European Union (TFEU). Citizens of the EU could place an informal complaint with the Commission of the European Union[32].

4. Violation of Sec. 9 (1) No. 4 AtAV

The German Regulations concerning shipment of radioactive waste and spent nuclear fuel[33] (AtAV) contain provisions implementing the requirements of Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel[34]. They also supplement the provisions of Sec. 3 AtG which deal with licensing procedures concerning the import and export of nuclear fuel. Its scope is limited by Sec. 1 (1) AtAV to the "cross border shipment of nuclear waste and spent nuclear fuel".

Sec 5 (2) No 1 b) requires a license if radioactive waste or spent nuclear fuel shall be shipped from Germany to a third party country like the U.S. Sec. 9 AtAV contains licensing requirements for a cross border disposition of radioactive waste and spent nuclear fuel to a third party country. Sec. 9 (1) No 4 AtAV refers to Sec. 8 (1) No 4 AtAV which provides that a license may only be issued if

> "the shipment does not violate provisions within the area of application of this regulation especially Sec. 9a (1) Sentence 2 AtG and Sec. 9a (2) sentence 1 and 3 AtG".

As already has been pointed out the disposition of spent nuclear fuel for reprocessing purposes violates Sec. 9a (1) Sentence 2 AtG. The shipment of spent nuclear fuel with the intention of waste disposition contradicts Sec. 9a (2) sentence 1 and 3 AtG. Under Sec. 9 AtAV therefore a license for the disposition of spent nuclear fuel may not be issued[35]. The issuing of a license allowing the shipment of spent nuclear from the AVR the U.S.DOE Savannah River Site would clearly violate German law and therefore would be illegal.

[32] See also *Hermes*, l.c. (fn. 18), p. 21, with respect to the THTR.
[33] Verordnung über die Verbringung radioaktiver Abfälle oder abgebrannter Brennelemente (Atomrechtliche Abfallverbringungsverordnung – AtAV) vom 30. April 2009 (BGBl. I S. 1000).
[34] Council Directive 2006/117/EURATOM of 20 November 2006, OJ L 337/21.
[35] See also *Borck*, Die Endlagerung radioaktiver Abfälle aus Deutschland im Ausland, Kassel 2014, S. 53.

5. Transport License to U.S.DOE Savannah River Site Illegal

The shipment of spent nuclear fuel from the AVR to the U.S.DOE Savannah River Site would finally need a transport license under Sec. 4 AtG.

Since the disposition of the spent nuclear fuel from the AVR to U.S.DOE Savannah River Site would be illegal, preponderant considerations suggest that this would also apply to the issuing of a transport license under German law[36].

IV.
Final Conclusion

The licensing of a disposition of spent nuclear fuel from the AVR stored in an interim storage facility in Jülich (Germany) to the U.S.DOE Savannah River Site would severely violate several German and European laws and therefore would clearly be illegal. This assessment without any doubt also applies to the 303 casks deriving from the Thorium High-Temperature Reactor (THTR) at Hamm Uentrop.

Hamburg, 3rd of December 2014

Rechtsanwalt
Dr. Ulrich Wollenteit

[36] See *Wollenteit*, l.c. (fn. 1), p. 10 ff.

for EA record

SRS WATCH

Savannah River Site Watch

February 4, 2016

Statement of Concern for the Record about the Highly Speculative and Misguided Plans to Import Highly Radioactive German Commercial Spent Fuel to the Savannah River Site

053-2 Savannah River Site Watch (SRS Watch) is alarmed that unnecessary plans are continuing to import spent fuel from Germany for processing and dumping at the Savannah River Site. Importation of about 900,000 highly radioactive graphite balls from two long-closed commercial, experimental nuclear power reactors - now stored in 455 casks in Germany - is an action that must be terminated. The highly speculative import proposal would result in negative environmental impacts to SRS and could damage U.S. non-proliferation policies.

053-3
- European Union and German laws and regulations do not allow the export of nuclear waste, except for proliferation-relevant waste from research reactors. Likewise, reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. As both the AVR and THTR were not research reactors, the export of the spent fuel is not permitted. Despite efforts in the last three years by DOE to redefine the nature of the reactors, that effort will not stand up in court in the EU or in Germany.

053-4
- No "need" has been established to bring the spent fuel to SRS for processing. While DOE rhetorically claims in but a few sentences that there is a need for pursuing the proposal no such need has been established.

053-5
- DOE has rejected the option of "direct disposal" of the intact graphite balls but this is the option that has long been the plan in Germany and this is the option that must now be pursued. DOE can help with this option if Germany request such assistance.

053-6
- Despite the claim in the draft document that the project is being pursued for nuclear non-proliferation reasons, the DOE's National Nuclear Security Administration (NNSA) has established that there is no proliferation concern if the material remains in Germany. Additionally, the NNSA has determined that the material is of "low attractiveness" to terrorists. The biggest nuclear non-proliferation concern with this project remains the new reprocessing and processing techniques being developed but DOE still refuses to prepare a nuclear non-proliferation impact analysis on those new techniques.

053-7
- Perhaps of most concern is that this import will add to the waste burden at SRS at a time of shrinking clean-up budgets. The proposal is an unwelcome indication that SRS is fronting for efforts by Savannah River Nuclear Solution and the Savannah River National Lab to expand the business of nuclear waste import and processing as a substantial part of the future of the site. We firmly reject that SRS will become an international nuclear waste processing center under the guise of nuclear non-proliferation.

Tom Clements, Director, SRS Watch, Columbia, South Carolina, tel. 803-834-3084,
cell 803-240-7268, srswatch@gmail.com

Ms. Tracy Williams: March 14, 2016

I want to provide comments on the German fuel shipment to SRS as one who is fairly knowledgeable of SRS and nuclear fuel, and at least somewhat familiar with the "Atoms for Peace" program and the later resulting non-proliferation efforts. I have tried to address erroneous criticisms I've heard regarding the activity.

The operation is not unique. The Site has always had missions involving radioactive material because it has the expertise to handle it safely. A frequent mission has been to receive spent fuel from offsite, purify it to recover valuable products, and dispose of the fission products. These spent fuels have included Naval and experimental reactor fuel, as well as fully enriched fuel from research reactors to reduce the threat of theft and weapons proliferation. The mission is so common that the Site had a special facility for the purpose, named the Receiving Basin for Offsite Fuel (RBOF, pronounced rub-off on the Site). I understand RBOF is gone now, but I have no doubt that SRS can receive, store, and process the fuel safely.

As for the size of the shipment, I note that one ton of uranium dioxide would fit in a cube one and one-half foot on a side--if it were U-238, that is. The shipment will not be only uranium dioxide, nor will it be packed that tightly--enriched uranium has criticality concerns of course-- but it doesn't seem so very large.

Radioactive material can be dangerous, but when handled by experts according to procedure, there is little danger. Note that there have been over 30,000 shipments of spent fuel over American highways, railways, and waterways in the past 50 years without one incident.

The concept of dumping is also misleading. If the program materializes, the shipment would be unpackaged and prepared for orderly storage by trained personnel following written instructions with a checklist. It would remain there, safe and secure, until it is scheduled for processing, depending on work priorities and the results of the preparatory research. That research would determine how the fuel would be processed. This approach has been used in the past at SRS for a variety of legacy materials.

054-1

I really don't see why the program is even questioned. We provided the fuel to Germany with the clear understanding we would take it back, so how can we not? We are being paid to develop the processing flow sheet and to process the fuel. The program reduces risk of proliferation. The result of the program is useful non-carbon fuel. Thus the Germans benefit, the environment benefits, the world benefits, the US benefits, the site and local area benefit. Talk about a win-win concept. Of course we must proceed with the program.

Paul Dickson, Ph.D.
Formerly Chief Engineer, Separations
Savannah River Site

PC-055

Sammeleinwendungen – Keine Castor-Exporte in die USA

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS. Final date for comments: 11.03.16

Dear Ms. Williams

we are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for our comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences. Russia has already similar offers.

The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries.

TRANSLATION / Übersetzung:

Sehr geehrte Frau Williams,

wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung von etwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Die Gründe für unsere Bedenken:

- Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auch nicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
- Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Recht verboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch)von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh). Für beide deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

Bsup78

PC-055

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Umbach Marie-Luise	41239 Mönchengl.	M.-L. Umbach
2.	Dauvermann Elly	41239 M. Gl.	E. Dauvermann
3.	Fleischer Gisela	41239 M. Gl.	G. Fleischer
4.	Marga Behmen	41236 M. Gl.	M. Behmen
5.	Liesel Hunze	41236 M.-Gl.	L. Hunze
6.	Renate Kremer	41236 M. Gl.	R. Kremer
7.	Brita van Tessel	M. Gladbach	B van Tessel
8.	Körper Erika	41236 MG	E. Körper
9.	Pongs, Karlheinz	41236 MG	K. Pongs
10.	Rolle Anne	41236	A. Rolle

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de
www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:

Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,

V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net

Hinweis zum Datenschutz:
Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt.

Stand 18.02.2016

PC-055

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Elkerkamp, Willi	Weyberg	W. Elkerkamp
2.	SCHMITZ WOLFGANG	Weyberg	W. Schmitz
3.	Schmitz Rita	Wegberg	Rita Schmitz
4.	Kurt. Wolfsgruber	Mönchengladbach	
5.	Cvetkovski, Georgi	Wegberg	
6.	Wormitt Hedwig	Wegberg	H. Wormitt
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de
www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net

Hinweis zum Datenschutz:
Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt.

Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.

Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Büscher, Ulrich	Bönen	U. Büscher
2.	Büscher Gertrud	Bönen	G. Büscher
3.	von Kleist, Christiane	Bönen	Ch. von Kleist
4.	W. [illegible]	Bönen	[illegible]
5.	R. [illegible]	Bönen	R. [illegible]
6.	[illegible], Johanna	Hagen	[illegible]
7.	Dierig, Detlev	Beckum	[illegible]
8.	Blei, Joachim	Sunden	[illegible]
9.	Pohl Bernhard	Warstein	[illegible]
10.	Labus, H.-Ulrich	Wilnsdorf	[illegible]

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:

Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Schmidt Manfred	59199 Bönen	M. Schmidt
2.	Trawny, Klaus	59427 Unna	Trawny
3.	Jungmann Friedhelm	59439 Holzwickede	Jungmann
4.	Matthey, Bodo	32257 Bünde	Matthey
5.	[illegible]	59558 Lippstadt	[illegible]
6.	Kühnel, Frank	59557 Lippstadt	[illegible]
7.	Sämann, Pete	59510 Lippetal	[illegible]
8.	Akkad, Adolfin	44805 Bochum	[illegible]
9.	Hoffenhof, Heinz	57482 Wenden	[illegible]
10.	[illegible]	58455 Winterberg / Siedlinghausen	[illegible]

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Schleimer, Dieter	Aalen	D. Schleimer
2.	Witt, Klaus	Aalen	K. Witt
3.	Kratzel, Michael	Frondenberg	M. Kratzel
4.	Litteck, Ulrich	Bönen	U. Litteck
5.			
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.

Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	HARTGE, UWE	41199 MÖNCHENGLADBACH	U. H.
2.	Schellenberg, Sönke	52080 Aachen	
3.	Vastens, Dirk	41063 Mönchengladbach	D. Vastens
4.	Hahnen-Perkons, Michaela	41065 Mönchengladbach	M. Hahnen-Perkons
5.			
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Jansen Erik	Mönchengladbach	
2.	Wassels Hartmut	Mönchengladbach	
3.	Iven, Thilo	" " " "	
4.	Silvia Gutsmuth	Mönchengladbach	
5.	Gülmez, Gülizar	Mönchengladbach	
6.	AMAR HAYATI	MG	
7.	Eduard Fleuber	Mönchengladbach	
8.	Schäfer Tanja	MG – RY	
9.	Peter van Heesen	MG	
10.	Janssen Helmut	MG	

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:

http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, Prename	Wohnort City	Unterschrift Signature
1.	Zabci, Mutha	Mönchengladbach	
2.	GÖREN-BEECK, MONA	Mönchengladbach	2016
3.	STIPANDIC, BOJAN	MG	
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net

Hinweis zum Datenschutz: Abgesehen von der Übersendung der Unterschriften an den Adressaten findet eine Weitergabe der Daten an Dritte nicht statt. Stand 18.02.2016

PC-055

Sammeleinwendungen – Keine Castor-Exporte in die USA

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "**Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal** Republic of Germany" **(DEA) dealing with processing of German pebble bed NPP fuel elements at SRS**

Dear Ms. Williams

we are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. Our reasons are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.

The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries.

TRANSLATION/ Übersetzung:

Sehr geehrte Frau Williams

wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung von etwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Die Gründe für unsere Bedenken:

- Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auch nicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
- Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Recht verboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch)von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh). Für beide deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-

Bsup87

Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these Comments on DEA dealing with processing of German pebble bed NPP fuel elements at SRS – final 11.03.16

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Bruders Elias	Münster	[signature]
2.	Bruders, Johannes	Münster	[signature]
3.	Hampe, Silke Sin	Münster	S. Hampe
4.	Jason Franklin	Münster	Jason Franklin
5.	Buch, Georg	Münster	[signature]
6.	M. [illegible]	Münster	M. [illegible]
7.	R. [illegible]	Münster	R. [illegible]
8.	J Schl[illegible]	Eitorf	J. [illegible]
9.	Knipfer, Anne	Münster	A Knipfer
10.	Bruders, Milan	Münster	M. Bruders

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:

Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,

V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net Stand 06.02.16

Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these Comments on DEA dealing with processing of German pebble bed NPP fuel elements at SRS – final 11.03.16

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Thiel, Stefan	Münster	
2.	Kraubäck, Sandra	Eitorf	
3.	Schnell, Anneke	Kassel	
4.	Kim Schöllner	Köln	K. Schöllner
5.			
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net Stand 06.02.16

Bsup89

Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these Comments on DEA dealing with processing of German pebble bed NPP fuel elements at SRS – final 11.03.16

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Schaa, Wolfram	90513 Zirndorf	
2.	Walter Schäfer	90513 Zirndorf	
3.	Timo Ehrmann	90522 Oberasbach	
4.	Thomas, Claudia	90513 Zirndorf	
5.	Schaa, Angelika	90513 Zirndorf	
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:

Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,

PC-055

Sammeleinwendungen – Keine Castor-Exporte in die USA

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS

Dear Ms. Williams

we are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. Our reasons are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.

The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries.

TRANSLATION/ Übersetzung:

Sehr geehrte Frau Williams

wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung von etwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Die Gründe für unsere Bedenken:

- Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auch nicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
- Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Recht verboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch)von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh). Für beide deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-

Bsup91

Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

PC-055

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these Comments on DEA dealing with processing of German pebble bed NPP fuel elements at SRS – final 11.03.16

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Antelmann, Dietrich	Berlin	
2.	Birker, Mag.	Berlin	
3.	Blume, Hannelore	Berlin	
4.	Nickel, Elfriede	Berlin	
5.	Antelmann, Robert	Berlin	
6.	Jaschke, Brigitte	Berlin	
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:

Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net Stand 06.02.16

Bsup92

PC-055 Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signatur, I support these Comments on DEA dealing with processing of German pebble bed NPP fuel elements at SRS – final 11.03.16

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Lucas, Birgit	91757 Treuchtlingen - Gräfenberg	Birgit Lucas
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:

Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296 Claudia.Baitinger@bund.net Stand 06.02.16

Bsup93

PC-055

Sammeleinwendungen – Keine Castor-Exporte in die USA

To: Ms. Tracy Williams, NEPA Compliance Officer, U.S. Department of Energy, P.O. Box B Aiken, South Carolina 29802. e-Mail: GermanSpentNuclearFuelEA@leidos.com

Comments on "Draft Environmental Assessment for the Acceptance and Disposition of Used Nuclear Fuel Containing U.S.-Origin Highly Enriched Uranium from the Federal Republic of Germany" (DEA) dealing with processing of German pebble bed NPP fuel elements at SRS. Final date for comments: 11.03.16.

Dear Ms. Williams

we are deeply concerned about the US/German plans to reprocess and store about 200,000 kg of commercial German pebble fuel elements from the nuclear power plants AVR Juelich (15 MWel) and THTR-300 (300 MWel) at SRS. The reasons for our comments are:

- European Union and German laws do not allow the export of nuclear waste, except for proliferation relevant waste from neutron generating research reactors. The reasonable general rule is that the waste has to remain in the country of its origin. AVR and THTR are obviously no research reactors and are not listed as research reactors by the International Atomic Energy Agency, but as nuclear power plants. There are several legal expertizes, which underline this position. For that German environmental organisations as BUND (friends of the earth) and Greenpeace have announced legal actions in case of a transport of the German fuel to SRS.
- Reprocessing of fuel elements is prohibited by law in Germany for commercial fuel elements. Both, AVR and THTR were both owned and operated by commercial utilities (and THTR still is) and produced electricity (4.4 bn kWh) to the grid. For both German NPPs sister plants existed in the US: Peach Bottom HTGR for AVR and Fort St. Vrain HTGR for THTR, and these US plants are considered as commercial in the US. The very poor performance of these German pebble bed NPP may not be taken as argument for non existing commercial intentions: They were commercial NPPs.
- There is no significant proliferation risk for the AVR waste, as several expertizes (e.g. from the NNSA 2013) indicate. In average the spent AVR waste does not contain HEU. A conditioning and final storage in Germany is possible.
- The fuel elements were mainly (96 %) fabricated in Germany at Nukem, US origin is only the HEU content (830 kg).
- As an independent official experts group outlined 2014, there were several severe accidents in AVR reactor (which were hushed up for decades). The fuel elements are thus in a very bad shape. Their reprocessing will probably produce huge amounts of secondary waste, which will hinder the intended cleaning of the SRS site. About 4 % of the THTR fuel elements are broken with probably similar consequences.
- The German government has officially announced here in the past years that there are no plans to export the waste from THTR to the US, but only for the AVR and that they wonder about an "Draft Environmental Assessment" (DEA) by DOE for THTR waste. Having in mind that it seems that the German side has officially supported the DEA for THTR waste too, we guess that the German export plans for the AVR waste are only the first step of an ecologically highly problematic export of all German nuclear waste to other countries. Russia has already made similar offers.

TRANSLATION/ Übersetzung:

Sehr geehrte Frau Williams

wir sind zutiefst besorgt über die amerikanisch-deutschen Pläne zur Lagerung und Wiederaufarbeitung von etwa 200 000 kg kommerziell genutzter deutscher Kugelbrennelemente aus den Atomkraftwerken AVR Jülich (15 MW eL) und THTR-300 (300 MW eL) in Savannah River Site. Wir haben folgende Einwende gegen diese Pläne:

- Die deutschen Gesetze und die der Europäischen Union erlauben den Export von radioaktiven Abfällen nicht, mit Ausnahme von proliferationsgefährliche Abfällen aus Neutronen erzeugenden Forschungsreaktoren. AVR und THTR sind aber offenkundig keine Forschungsreaktoren und sind auch nicht als solche gelistet bei der IAEA, sondern es sind kommerzielle Atomkraftwerke.
- Die Aufarbeitung von Brennelementen aus kommerziellen Reaktoren ist nach deutschem Recht verboten. Sowohl der AVR als auch der THTR wurden betrieben und waren im Besitz (der THTR auch jetzt noch)von kommerziellen Betreibern; sie produzierten Strom für das öffentliche Netz (4,4Mrd. kWh). Für beide deutschen Anlagen existierten Schwesteranlagen in den USA: PEACH Bottom HTGR für den

Bsup94

AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signature I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Pönicke, Rita	Dortmund	Rita Pönicke
2.	Pönicke, Peter	Dortmund	Peter Pönicke
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de
www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net Stand 14.02.16

AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signature I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Großefeste, Regina	Moers	
2.	Eimess, Patricia	Düsseldorf	
3.	Bennett, Daniel	Düsseldorf	
4.	Zerbübel, Michael	Moers	
5.	Madani, Maria	Moers	
6.	Hartmann, Birgit	Moers	
7.			
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de
www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net Stand 14.02.16

AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/□les/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signature I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Heinen Hanne	Waldfeucht	H. Heinen
2.	Meyer Denis	Wegberg	D.
3.	Dick Gerti	Wegberg	G. Dick
4.	Anke Herzogenrath	Wegberg	A. Herzogenrath
5.	Jessica Roegels	Wegberg	J. Roegels
6.	Özlem Ceylan	Wegberg	Ceylan
7.	X ENNE Geisl	Wegberg	
8.			
9.			
10.			

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum 01.03.2016 an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net Stand 14.02.16

Bsup97

AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/files/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signature I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Klages, Torben	Lüchow	[illegible]
2.	Berkemeier, Falko	Prezelle	[illegible]
3.	Rudek, Kerstin	Pretzetze	[illegible]
4.	Hafner-Reckers, Elisabeth	Lüchow	E. Hafner-Reckers
5.	Schmidt, Elena	Trebel	Elena Schmidt
6.	Schaarschmidt, Dieter	Göttien	[illegible]
7.	Stern, Henrik	Küsten	[illegible]
8.	Birgit Juhnke	Küsten	[illegible]
9.	Ehmke, Wolfgang	Zernien	[illegible]
10.	Klaus Langmuss	Schletau	[illegible]

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum **01.03.2016** an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net Stand 14.02.16

AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltverträglichkeitsstudie:
http://energy.gov/sites/prod/□les/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signature I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Schmidt, Marlies	41844 Wegberg	M. Schmidt
2.	DR. JAESEN, DIETER	33102 PADERBORN	Dr. Jaesen
3.	Lenz, Reinhold	41812 Erkelenz	Lenz
4.	Schäfer, Ingrid	41239 M-Gladbach	I. Schäfer
5.	Barb Horst	41239 M.-Gladbach	H. Barb
6.	Lies, Annedore	41844 Wegberg	A. Lies
7.	Lies, Manfred	" "	M. Lies
8.	Tlapp-homeyer, H.	52525 Heinsberg	Tlapp-homeyer
9.	VENEDEY, JOSEF	41812 ERKELENZ	J. Venedey
10.	Birmann, Rüdiger	41844 Wegberg	

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum 01.03.2016 an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net Stand 14.02.16

Bsup99

AVR und Fort St. Vrain HTGR für den THTR; diese Anlagen werden auch in den USA als kommerzielle betrachtet. Die miserable Leistungsbilanz der deutschen Kugelhaufen-Reaktoren kann nicht als Argument gegen deren kommerzielle Intentionen dienen: Sie waren kommerzielle Reaktoren!

- Es besteht kein signifikantes Proliferations-Risiko für den AVR-Müll, wie verschiedene Gutachten (z.B. auch von NNSA, 2013) darlegen. Im Allgemeinen enthält der AVR-Müll kein HEU. Eine Konditionierung und Endlagerung in Deutschland wären somit möglich.
- Die Brennelemente wurden hauptsächlich (zu 96%) in Deutschland von der NUKEM hergestellt, lediglich der HEU-Anteil (830 kg) stammt aus den USA.
- Wie eine unabhängige Expertengruppe 2014 darlegte, gab es verschiedene Unfälle im AVR, die über Jahrzehnte verschwiegen worden waren. Die Brennelemente sind daher in einem sehr schlechten Zustand. Ihre Wiederaufarbeitung wird vermutlich große Mengen sekundären Mülls erzeugen, die die beabsichtigte Säuberung der SRS behindern dürften. Ungefähr 4% der THTR-Brennelemente sind zerbrochen, mit vermutlich ähnlichen Konsequenzen.
- Die deutsche Bundesregierung hat in den vergangenen Jahren offiziell erklärt, dass es keine Pläne für den Export der THTR-Brennelemente in die USA gäbe, sondern nur für die des AVR. Ausgehend von der Annahme, dass die deutsche Seite nun doch die Umweltverträglichkeitsprüfung des amerikanischen DOE für die THTR-Brennelemente offiziell unterstützt, vermuten wir dass die deutschen Exportpläne für den AVR-Müll nur der erste Schritt eines ökologisch höchst problematischen Exports allen deutschen Atommülls in andere Länder darstellt. Es gibt bereits entsprechende Angebote durch Russland.

DRAFT ENVIRONMENTAL ASSESSMENT / Umweltvertraglichkeitsstudie:
http://energy.gov/sites/prod/□les/2016/01/f28/Draft%20DOE%20EA%201977_FOR%20PUBLIC.pdf

With my signature I support these comments against the DEA concerning the processing of German pebble bed NPP fuel elements at SRS.

	Nachname, Vorname Name, prename	Wohnort city	Unterschrift signature
1.	Friehoff, Susanne	Wegberg 41844 Germany	S. Friehoff
2.	Berder, Sabrina	Wegberg 41844 Germany	S. Berder
3.	Hafelhuß, Mark	Peschkorschenbroich 41352 Germany	M. Hafelhuß
4.	Knippenberg, Iris	Vorsemla 41812 Erkelenz	I. Knippenberg
5.	Rögels, Iris	Fainweg 4 Wegberg	I. Rögels
6.	Hesselfeld, Rebecca	[redacted] Jüchen 41363 Germany	R. Hesselfeld
7.	Hafelhuß Marita	41352 Korschenbroich Peschstr. 82	M. Hafelhuß
8.	Friehoff, Julia	Wegberg 41844 Germany	J. Friehoff
9.	Friehoff, Alex	Wegberg 41844 Germany	A. Friehoff
10.	Friehoff, Jörg	Wegberg 41844 Germany	

Eine Aktion des Bündnisses gegen Castor-Exporte (Buegece), Zusammenschluss aus landes- und bundesweiten Anti-Atom-Initiativen und dem BUND NRW www.bund-nrw.de www.westcastor.de

Bitte bis zum 01.03.2016 an den BUND NRW e.V. senden:
Merowingerstraße 88, 40225 Düsseldorf, Fax: 0049 211 302005-26,
V.i.S.d.P.: Buegece, c/o Claudia Baitinger, T 0049 2369 24296
Claudia.Baitinger@bund.net Stand 14.02.16

Bsup100