SRS WATCH

Savannah River Site Watch

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Comments by Tom Clements, Director, Savannah River Site Watch, on
***Draft Versatile Test Reactor Environmental Impact Statement (VTR EIS; DOE/EIS-0542)* -**
https://www.energy.gov/nepa/downloads/doeeis-0542-draft-environmental-impact-statement

These scoping comments are being formally submitted for the record in support of the "No Action Alternative" by Savannah River Site Watch (https://srswatch.org/) , a non-profit 501(c)(3*)* organization incorporated in South Carolina, in response to the Federal Register notice on the draft EIS on the Versatile Test Reactor (VTR). I expect that there will be a response in the final Environmental Impact Statement, if it were to be prepared, to each and every comment below. Thank you in advance for that.

I request that all documents referenced in the EIS be made available on line and be made easily available for public review, including via links in references sections.

I also request that all "data call" documents solicited to prepare the EIS be made part of the public record and be made available via the internet. For example, please provide a link to this document and please provide it to me via email: "2020, Savannah River Site Data Call Response for the Versatile Test Reactor Fuel Fabrication Facility*,* SRNS-RP-2020-00286, Rev. 2, Aiken, South Carolina, July 22."

Further, I request that all Critical Decision-0 (*Approve Mission Need*) and Critical Decsion-1 documents related to the VTR be made part of the public NEPA record.

Additionally, I request that all comments be published in the EIS, along with the responses to them.

Please acknowledge receipt of these comments, which are being emailed and, due to poor handling of emailed comments during the plutonium pit NEPA process, are also being mailed.

It is recognized that the VTR project has not garnered the financial support hoped for by boosters. Though $295 million was requested by DOE of Congress for Fiscal Year 2021, only $45 million was appropriated for Fiscal Year 2021. The estimated overall cost as DOE stated in the FY 2021 budget request that the VTR has "an estimated cost range of $3.0B to $6.0B and an estimated schedule completion range of 2026 to 2030." Especially given flaccid financial support by Congress, and no private financial supporters, there is no way the project will be completed on that schedule.

And, the budget request holds evidence of looming cost overruns: "The VTR is anticipated to follow a design-build project delivery method utilizing a cost plus incentive fee contract, with the incentives contingent upon successfully meeting project deliverables." Plus, low levels of annual funding will mean the overall cost will increase

Please explain how the VTR can be constructed by the end of 2025 and what impact such an unrealistic timeline will have on project costs as well as on the safety of design and construction. How far is the schedule projected to slip given the low federal financing level and, apparently, no funding from private entities? Is the project even finically viable at this point?

If a final EIS is issued, I support the "No Action Alternative." But, I request that no final EIS be issued. Given severe shortcomings with the project and no justification for it, I request that the entire NEPA process for the VTR be terminated and the project as presented be canceled.

Use of Other Facilities Must be Reexamined, Need for VTR not Established

The need for a VTR is ill-defined in the draft EIS and unconvincing concerning "need." The DOE claims to need a fast-neutron reactor for experimentation purposes, but little documentation is presented that public or private entities would are clamoring for it. Likewise, I am not aware of private entities offering financial support for the VTR. In the event there is a research need for a reactor with the presented VTR capabilities, DOE could modify existing facilities to meet such need. That option must be fully reviewed in the EIS and not dismissed in a few words.

The EIS must thoroughly reevaluate use of the Advanced Test Reactor or the High Flux Isotope Reactor to generate an adequate flux of fast neutrons for user needs. The draft EIS states on page S-17: "Modifying either of these reactors would create some fast flux testing capability, but could compromise the United States' ability to regain and sustain a technology leadership position. Therefore, these two reactors were dismissed from further evaluation in this EIS." But there is no presentation of facts that other missions will fully occupy these reactors or that they could serve the role that some are pitching for the VTR. Use of these reactors must be reexamined.

Please provide a discussion about processed spent fuel meeting the "waste acceptance criteria" for disposal in a geologic repository. Please confirm the irradiated material is high-level nuclear waste under US law.

Please provide documents in the references sections, with links to them that demonstrate a thorough science-based and unbiased review of non-VTR options.

First Step: Final EIS, if it were to be Issued, is Premature as PEIS First Needed on Plutonium Disposal from all DOE Plutonium Projects

Issuance of a final EIS would be premature. A Programmatic EIS on transuranic waste from the VTR project is needed before any VTR EIS is completed. That PEIS would also analyze other TRU streams going into the Waste Isolation Pilot Plant, including large amounts from plutonium pit production and from the plutonium disposition project. To not to fully review WIPP capacity in a PEIS could be setting up projects, like the VTR, for failure for lack of space to dispose of TRU.

On the matter of TRU waste generation, the draft VTR EIS says this:

> Annually, about 710 to 880 cubic meters of LLW, 40 to 42 cubic meters of MLLW, 200 to 400 cubic meters of TRU waste, and 8.2 to 9.2 cubic meters of hazardous and TSCA wastes would be generated The characteristics of most of these wastes would be similar to wastes currently generated from existing activities and would be managed within the current waste management system. The project would provide preparation and packaging capabilities for the 200 to 400 cubic meters of TRU waste that would be generated from fuel production. All wastes would be shipped off site for treatment and/or disposal. Treatment and disposal of these wastes are well within the current capacities of existing offsite facilities. (page S-24)
>
> The Waste Isolation Pilot Plant (WIPP) is currently the only disposal option for TRU waste. WIPP's Land Withdrawal Act total TRU waste volume limit is 175,564 cubic meters. As of the reporting date for the 2019 *Annual Transuranic Waste Inventory Report* (ATWIR), 67,400 cubic meters of TRU waste were disposed of at the WIPP facility. The alternatives and options evaluated in this EIS would generate an estimated 24,000 cubic meters of TRU waste. TRU waste volume estimates such as those provided in NEPA documents, cannot be used to determine compliance with the WIPP Land Withdrawal Act TRU waste volume capacity limit. These wastes and waste from other actions will be incorporated, as appropriate, into future ATWIR TRU waste inventory estimates. Any GTCC-like waste (e.g., non-defense TRU waste not eligible for disposal at WIPP) generated from the proposed action would be stored at the generator site in accordance with applicable requirements until a disposal capability is available. (page S-40)

If 34 MT are to go to VTR fuel fabrication, what amount of this, in percentage, weight and cubic meters ends up as waste?

The National Academies of Sciences is supportive of a PEIS on plutonium disposal in WIPP, as recommended in *Review of the Department of Energy's Plans for Disposal of Surplus Plutonium in the Waste Isolation Pilot Plant (2020)*, by the Committee on Disposal of Surplus Plutonium at the Waste Isolation Pilot Plant, Nuclear and Radiation Studies Board, Division on Earth and Life Studies). See pertinent recommendation on page 101 of the report:

> RECOMMENDATION 5-5: The Department of Energy should implement a new comprehensive programmatic environmental impact statement (PEIS) to consider fully the environmental impacts of the total diluted surplus plutonium transuranic (DSP-TRU) waste inventory (up to an additional 48.2 MT) targeted for dilution at the Savannah River Site and disposal at the Waste Isolation Pilot Plant (WIPP). Given the scale and character of the diluted surplus plutonium inventory, the effect it has on redefining the character of the WIPP, the involvement of several facilities at several sites to prepare the plutonium for dilution, a schedule of decades requiring sustained support, and the environmental and programmatic significance of the changes therein, a PEIS for the whole of surplus plutonium that considers all affected sites as a system is appropriate to address the intent and direction of the National Environmental Policy Act and would better support the need for public acceptance and stakeholder engagement by affording all the opportunity to contemplate the full picture.

The *Final Environmental Impact Statement for Plutonium Pit Production at the Savannah River Site in South Carolina (SRS Pit Production EIS)* (DOE/EIS-0541) states this about the significant volume of TRU from pit production for nuclear weapons at SRS and Los Alamos:

> TRU Waste: Under the Proposed Action, significant quantities of TRU waste could be generated at SRS and shipped to WIPP for disposal. It is estimated that approximately 22,950 cubic meters (30,000 cubic yards) of TRU waste could be generated over the life of the project (i.e., 50 years) at SRS, assuming a production rate of 50 pits per year. In addition, approximately 5,350 cubic meters (6,998 cubic yards) of TRU waste could be generated over the life of the project (i.e., 50 years) at LANL, assuming a production rate of 30 pits per year. For NEPA purposes, it is assumed that the available volume capacity of the WIPP facility would accommodate the conservatively estimated TRU waste volume from pit production that could be generated over the next 50 years. (page S-32)

If pit production were to produce 28,300 cubic meters of TRU and VTR fuel fabrication were to produce 24,000 cubic meters of TRU, for a total of 52,300 cubic meters, about 120,000 cubic meters remains in WIPP for all other TRU disposal. As the Land Withdrawal Act volume cap may not be increased, or may not be increased without constraints on the license by the New Mexico Environment Department, there may not be adequate space in WIPP for all TRU from

plutonium projects, including the VTR. The EIS on the VTR simply can't assume that more drifts will be added to WIPP to accommodate the vast amount of plutonium slated for disposal in WIPP and can't assume that WIPP volume is endless and that the volume cap under the Land Withdrawal Act (LWA) will be increased.

Taking into account all other TRU planned for disposal in WIPP, the EIS on the VTR, if it goes forward, must decisively prove that there is space for ~6 MT of plutonium waste (TRU) from the VTR in WIPP. Unless the ill-conceived VTR project were to be canceled, which is very possible, or if the proposed and unjustified SRS Plutonium Bomb Plant (PBP) at SRS were to be canceled, a growing possibility, then there may not be volume in WIPP for all the TRU slated for disposal. This underscores the urgent need for preparation of a PEIS addressing all plutonium to WIPP, to be prepared before the final EIS on the VTR goes forward.

To underscore the need for a PEIS on all TRU from plutonium projects (as well as other DOE TRU) going to WIPP, I have include my January 28, 201 "scoping comments" on the plutonium disposition program's NEPA process. Please review this document submitted for the record.

DOE and the draft EIS have ignored the recommendation by the NAS concerning the PEIS on plutonium disposition but it is unknown why the suggested approach has been rejected. Why?

Does DOE, or NE, have a "pecking order" of the various planned plutonium waste streams to WIPP, including from the pit project, the VTR project, surplus plutonium disposition and other TRU? Please discuss.

To reiterate, considering the above, large impacts to WIPP of the three above-named plutonium projects, I request that the PEIS be conducted before any EIS on the VTR is finalized.

A NNSA official has stated that WIPP is a "choke point" for the pit project (for nuclear weapons) and this also may apply to surplus plutonium disposition and disposal of TRU from the VTR project. See Exchange Monitor article of September 10, 2020: *TRU Waste 'Far and Away' Largest Challenge for NNSA Pit Mission, Official Says*: "Far and away the biggest challenge for NNSA is to make sure that the disposal system for transuranic waste is robust enough to not become a choke point for our mission," McConnell said." (James McConnell, NNSA's Associate Administrator for Safety, Infrastructure and Operations) This underscores the need for the PEIS on WIPP volume. Is WIPP also a "choke point" for other TRU-producing projects, like the VTR?

As part of the EIS on the VTR, if it goes forward, a stand-alone review of overall WIPP volume and impacts of other TRU disposal programs must be conducted. An expansion of WIPP to receive more volume that currently specified by the LWA cannot be assumed. Likewise, a New Mexico Environment Department license extension for WIPP, especially with no conditions attached, cannot be assumed. (I note that constraints could be placed on new TRU disposal generated by DOE projects outside New Mexico, as an example.)

Please include documents in the references sections demonstrating a full analysis of WIPP volume as discussed above.

What would happen to the VTR project if disposal space at WIPP is limited? Would it slow down or be halted? If WIPP volume were to be a limiting factor, how would space be assigned to TRU from the VTR project?

The PEIS and VTR EIS must consider the need for a second TRU repository. Is the Office of Nuclear Energy counting on either a second repository of an increase by Congress in the volume cap as legally established by the Land Withdrawal Act? Is DOE counting on no constraining conditions being applied by the New Mexico Environment Department on any WIPP license extension, or not?

I request that the EIS report anticipated TRU waste amounts both in weight and in cubic meters. Thus, how much plutonium in metric tons, would be contained in the projected 24,000 cubic meters of TRU for the VTR project? How much of this is from fuel fabrication and other named processes?

The draft EIS states on page S-30: "The proposed action would provide preparation and packaging capabilities for the 200 to 400 cubic meters of TRU waste that would be generated from fuel production; TRU waste would be shipped to the Waste Isolation Pilot Plant for disposal." Why such a large range in the amount of waste produced by fuel fabrication? This sounds more like a guess than an accurate amount. This must be clarified in the EIS.

How much weight is this and how much plutonium? What percentage of 34 MT of Pu ends up as waste? Around 6 MT?

If plutonium pits stored at Panetx were to be used for VTR fuel, please discuss how such pits will be selected.

If plutonium from Europe were to be used, please discuss details about this material, where it came from, its isotopic content, how it would be transported overland in Europe and how it would be transported by sea to the United states. Which shipping company would be used? Which US ports would be considered for importation? Would military facilities or the public port in Charleston, South Carolina be used? Please discuss more details of potential overland shipments impacts, including accident and terrorist attack or diversion.

Nuclear Proliferation Concerns of VTR – Not Covered in Draft EIS

From page S-12: "Accounting for additional material that ends up in the waste during the reactor fuel production process, up to 34 metric tons of plutonium could be needed for startup and 60 years of VTR operation. " This 34 MT is enough for a minimum of 4350 nuclear

weapons, using the International Atomic Energy Agency's figure of 8 kilograms for a "significant quantity."

The documents states on page S-12 that between 0.4 and 0.54 MT of plutonium would be used annual for fuel fabrication: "Annual heavy metal requirements would be approximately 1.8 metric tons of fuel material (between 1.3 metric tons and 1.4 metric tons of uranium and between 0.4 and 0.54 metric tons of plutonium, depending on the ratio of uranium to plutonium) (INL 2019a; Pasamehmetoglu 2019). Feedstock for this fuel could be acquired from several existing sources." What is the source of this plutonium and could it be used for nuclear weapons?

Would the VTR plutonium be from pits under the control of NNSA? Is a memorandum of Understanding in place about producing such plutonium, or other NNSA plutonium, to NE for the VTR project? Please include any MOU(s) in references.

Where is the risk analysis of handling these amounts of plutonium, from a proliferation perspective, including diversion and the insider threat?

To summarize the proliferation risk of the VTR, which must be analyzed in NEPA documents, Gregory Jones states this in his 2019 report entitled *The Versatile Test Reactor: Wasting Money While Undermining Nonproliferation Goals*, which I am submitting for the record:

> In reality, the VTR will be a waste of money and undermine the broader nonproliferation goals of the U.S. The need for the VTR is doubtful as it is very unlikely that any of these advanced technologies will be deployed on a significant scale even by 2050 and they could easily never be deployed. Further, given the low technological maturity of the technology to be used in the VTR, combined with DOE's desire to build the VTR on what it calls "an accelerated schedule," it is very likely that there will be significant delays and cost overruns. In addition, DOE needs to examine the safety risks of fast reactors, including the VTR, in a realistic and even-handed manner. Finally, the use of plutonium fuel in the VTR will undermine U.S. nonproliferation goals to eliminate the separation of plutonium, plutonium stockpiles and plutonium fuels in non-nuclear weapon states.

The points raised in the paper cited above, which is attached, must be considered in the EIS, if it were to proceed.

Does establishment of facilities for VTR fuel fabrication have implications for future plutonium proliferation? Could such facilities be used for non-VTR programs?

Why is 60 years being presented for the length of operation? Will the U.S. Nuclear Regulatory Commission or any other agency, such as the defense nuclear Facilities Safety Board (DNFSB), provide any oversight at any stage of the VTR project?

DOE has stated that the VTR would not be operated as a plutonium "breeder" reactor. Where is this written into VTR documents, law or regulation? What is to guarantee that the reactor will never be operated in breeding mode? Please provide any document that reviewed the VTR's breeding capabilities. Has operating in a non-breeding mode been made for non-proliferation or other reasons? Please provide documentation analyzing not operating the reactor as a breeder.

It has been stated that the spent fuel would not be reprocessed to remove uranium and plutonium. Is this written into law or regulation? What constraint is there on reprocessing of VTR spent fuel? Please provide an analysis of this and any documents analyzing reprocessing of the spent VTR fuel.

Please see the attached document submitted for the record: "The Versatile Test Reactor: Wasting Money While Undermining Nonproliferation Goals." I requested this document be reviewed and the points raised in it be responded to. Please confirm if NE has prepared a rebuttal to this document or not; if so, please provide it for the record.

Will the DOE's National Nuclear Security Administration (NNSA) have a role in any aspect of VTR fuel fabrication, operation or transport? Will NNSA interface with the IAEA on safeguards issues? Is NNSA reviewing proliferation aspects of the project? If not, why not?

Need for IAEA Safeguards Overlooked in Draft EIS

The draft EIS fails to discuss the issue of safeguards by DOE or the International Atomic Energy Agency of plutonium to be processed into fuel or plutonium to be disposed of as TRU in WIPP. This must be addressed in the final EIS. Please full address safeguards in plutonium handling, processing and disposal.

Is terrorism a risk in the transport, handling or processing of materials for VTR fuel fabrication or in fuel transport? Please fully discuss.

I note that the NAS *Review of the Department of Energy's Plans for Disposal of Surplus Plutonium in the Waste Isolation Pilot Plant* underscores the importance of IAEA safeguards for the processing of plutonium and emplacement in WIPP of plutonium containers, see page 82:

> **5.1.1 Uncertain Protocols for International Inspection and Verification for Emplaced Waste**
> IAEA monitoring and inspections are an important component of the PMDA requirements and they could also provide enhanced public and international confidence that the material is properly accounted for and emplaced in WIPP. As noted in Chapter 2, the director of the Office of International Nuclear Safeguards at the DOE-NNSA reported to the committee that the DOE-NNSA is in the process of working with the IAEA to discuss what role, if any, IAEA involvement might play in

> the disposition of DOE-EM's 6 MT (Veal, 2019). Typical international safeguards (monitoring and verification) use accountancy to ensure that declared nuclear material is present as intended, coupled with a containment and surveillance system to ensure that no changes occur between inspections. Implementation of IAEA protocols for verification and monitoring of materials for pre-disposal are well established, but IAEA verification protocols for material emplacement in any repository are still under development. Inspection and verification protocols for repository emplacement, where access for monitoring may be a challenge and remote devices may compromise required passive safety measures, could have a significant impact on both repository operations and design (Haddal et al., 2014).
>
> The DOE-NNSA dilute and dispose Master Schedule for the 34 MT (see Figure 3-1; DOE-NNSA, 2018a) indicates verification protocols for the activities at SRS are to be in-place in in FY 2022 and for WIPP in FY 2023, yet the DOE-NNSA may emplace DSP-TRU waste with or without IAEA inspection protocols in place. Therefore, substantial uncertainty remains on the applicability and possible implementation of IAEA monitoring and verification protocols. Resolution of this uncertainty holds substantial implications for WIPP operations and future design changes (such as the new shaft and panels now under development), and therefore this issue remains a significant system vulnerability.

DOE is currently engaging a NEPA process on plutonium disposition that focuses on the dilute & dispose method, with disposal of the resulting TRU to undergo termination of safeguards, with disposal of the TRU in WIPP. The draft VTR EIS does not say in what form the TRU from the VTR project will be disposed of in WIPP. The final EIS must discuss this. Will VTR TRU containers go directly to WIPP? Will any VTR TRU undergo dilute & dispose or any other processing? Please give details of preparation of VTR TRU for disposal in WIPP. The final EIS can't dodge this issue given environmental impacts at INL and/or SRS and WIPP in handling and disposal of the VTR TRU.

The VTR draft EIS states on page S-1: "Specifically, "DOE will continue to explore advanced concepts in nuclear energy that may lead to new types of reactors with further safety improvements and reduced environmental and nonproliferation concerns." Where is proof that "nonproliferation concerns" are being reviewed in this NEPA process?

Along with any final EIS, please include a non-proliferation risk assessment for the VTR project. If NE does not prepare such documents this must be tasked to another office in DOE.

Would any plutonium stored at SRS that is under IAEA safeguards be used for VTR fuel? Please discuss.

Risks of Using Sodium as a Coolant" Fires and Explosions

I note what Greg Jones states in his earlier-cited paper on the VTR, about the risks of lower melting point of VTR fuel and potential threat of post-accident criticality. The risks of metallic fuel with a lower melting point, as well as risks posed by use of a sodium coolant, must be more thoroughly analyzed in the EIS.

> A major meltdown in a fast reactor would have consequences more serious than those from a similar meltdown in an LWR. As was discussed above, thermal reactors use a moderator and sustaining the nuclear chain reaction requires that the fuel and the moderator be interwoven. If the fuel in a thermal reactor melts, then the moderator is excluded and the nuclear chain reaction stops. In a fast reactor, the melting of the fuel would lead to the exclusion of the coolant, increasing the rate of the chain reaction complicating efforts to bring the accident under control.
>
> There are a number of other safety concerns. The decrease in the delayed neutron fraction associated with the use of plutonium fuel makes the control of the reactor more delicate. The chemical reactivity of the sodium coolant if it leaks out of the reactor as happened in the accident at Monju, can damage equipment and generate toxic fumes. The fast neutrons in the reactor damage structural materials in a much shorter time than do thermal neutrons.

The risks of using sodium as a coolant are well known, as we can see from breeder reactor accidents at the Fermi plant in Michigan and the problem-plagued Moju reactor in Japan, which suffered a debilitating sodium fire in 1995, leading to its eventual shutdown. Fully discuss the risk of sodium leakage and sodium fires. Please discuss risk of a sodium explosion, with possible criticality. Would a criticality and nuclear explosion be possible in a VTR accident?

Re: "Savannah River Site Reactor Fuel Production Options" & VTR Fuel Risks

The section of fuel fabrication is cursory and speculative at best. Any final EIS must include details so that we can analyze potential worker, public and environmental impacts at SRS or off site.

The draft EIS says:

> Existing sources of U.S. excess plutonium14 managed by DOE and the National Nuclear Security Administration (NNSA) would be sufficient to meet the needs of the VTR project. Potential DOE/NNSA plutonium materials include surplus pit plutonium (metal), other plutonium metal, oxide, and plutonium from other sources (DOE 2015). If the U.S. sources cannot be made available for the VTR project or to supplement the domestic supply, DOE has identified potential sources of plutonium in Europe. (page S-12)

Please explain exactly which NNSA plutonium might be used for VTR fuel. As stated earlier, lease provide for the NEPA record copies of any "memorandum of understanding" (MOU) between NNSA and the DOE's Office of Nuclear Energy concerning plutonium supply. If NNSA were to provide plutonium who would own it - NE or NNSA? What role would the Office of Environmental Management have in any aspect of fuel fabrication or disposal of resulting TRU waste?

Exactly which European plutonium would be considered for VTR fuel fabrication and how much?

How much plutonium would be at SRS or INL at any one time? What would happen if fuel fabrication began and was halted? Would plutonium be stranded at the fuel fabrication sites or returned to the site of origin? Will NE guarantee to the State of South Carolina that no additional plutonium will be stranded in the state?

It is accurate to say that the K-Reactor is used for "material storage," that being plutonium. But it is also designated to be used for "plutonium disposition." That project, currently at the start of an EIS process, is not mentioned in the draft EIS.

See attached document confirming that 11.5 metric tons of plutonium are stored in the K-Reactor at SRS. Would any of this material be used for VTR fuel fabrication? Would plutonium for VTR fuel fabrication be stored in the same manner as the existing plutonium?

Could there be an overlap in any space or equipment between feedstock preparation for the VTR and plutonium preparation for the dilute & dispose technique for plutonium disposition? If so, why isn't this discussed? Could the ARIES process be common to both projects? If so, could ARIES for the VTR be located at Los Alamos or Pantex?

What would be the impact of an accident in the VTR fuel fabrication on facility on other operations at the K-Reactor, especially the dilute & dispose project? Please provide this analysis.

How would much fresh fuel be stored at the fuel fabrication site at any one time and where would it be stored?

Given that SRS has no recent history of fuel fabrication, no history of metallic fuel fabrication, no history of working with sodium-bonded fuel, and little recent experience with plutonium handling and processing (beyond small-scale D&D operations in the K-Reactor), the learning curve for VTR fuel fabrication would be very steep and thus could be problematic. Especially given the lack of experience at SRS, please more fully explain and justify this conclusion in the draft EIS: "DOE has no preferred option at this time for where it would perform reactor fuel production (feedstock preparation or driver fuel fabrication) for the VTR."

The draft EIS states this on page S-18 : “SRS and Savannah River National Laboratory (SRNL) have extensive history in nuclear reactor operation and offer a full range of supporting infrastructure for transportation, construction and operation, safety, security, nuclear material management, and regulatory compliance.” This statement is very misleading, as current SRS staff likely have almost no experience in reactor operation as the last on-going reactor operation at SRS ended in the mid-1980s. Likewise, the “supporting infrastructure” for reactor operation was deactivated. Please clarify this misleading statement in the draft EIS.

The draft EIS says “aqueous or pyrochemical” processes could be used. The document must present a clear chosen option so that it can be fully analyzed.

What is, as the title of this document in references reflects, “*VTR Add-on Processing Capability?”* at SRS? What would be the waste streams form this processing? Please provide a link to this document.

On page S-15 it is stated: “If the aqueous processing were to be selected, an estimated 10 glovebox lines may be necessary. Glovebox lines would be constructed for feed preparation, plutonium dissolution, plutonium extraction, oxide conversion, waste processing, and acid recycling. This scenario considers the most equipment-intensive process under consideration. Other processes would be expected to require fewer gloveboxes and less operational space. All feedstock preparation equipment would be newly installed equipment (SRNL 2020).”

This description of fuel fabrication at SRS is woefully inadequate and speculative and must be fully explained and expanded: “The description that follows assumes installation of reactor fuel production capabilities at K Area. A notional equipment configuration was developed to assess the capability to house the fuel production equipment within the identified structures. But, the equipment layout that would be used has not been determined and would be finalized during the detailed design of the fuel production facility.” (page B-78)

The purification process must be named, not just include in a list of options: “The identified area would be suitable for pretreatment operations like molten salt removal of the americium from plutonium (polishing), electrorefining, and direct oxide reduction to convert fuel compounds (e.g., fuel oxides) into their metallic form.” (page B-78) Which pretreatment of purification option would be used and what are potential health and environmental impacts? What is the criticality risk?

On page S-15, the draft EIS states: “Due to its use as a special nuclear material storage facility, the K-Reactor Building is a Hazard Category 1 nuclear facility. K-Reactor, constructed in the 1950s was shut down in 1996, and subsequently deactivated. Nuclear fuel and equipment needed for reactor operation were removed. The building was later modified for nuclear material storage (DNFSB 2003).” What impact would VTR fuel fabrication have on the hard category of the old K-Reactor?

The draft EIS ill defines where purification and fuel fabrication facilities would be located in the K-Reactor. Likewise, the relationship to other activities in the K-Reactor are not included in the draft EIS, specifically plutonium storage and the dilute & dispose facilities (current or expanded).

Surprisingly, there is no mention of the development of a draft EIS on plutonium disposition and its relationship to the VTR project as far as plutonium purification goes. Could the two projects share purification activities? The relationship must be explained if an EIS goes forward.

What is the relationship between the VTR NEPA process and 1) the pit production EIS and 2) the surplus plutonium disposition NEPA process that is now underway? The overlaps could be numerous. Please discuss in detail.

In conclusion, given the unpredictably high cost of the project, the lack of need for it and the associated environmental and proliferation risks of the VTR, I support the "No Action Alternative." I further request that no final EIS be issued and that, accordingly, no Record of Decision be issued.

Attachments to these comments, to be considered in full in any EIS, if it is issued:

1. SRS Watch scoping comments on plutonium disposition, January 28, 2021, underscores the overlap with the VTR project and other projects with large amounts of plutonium waste and presents the need for PEIS on plutonium waste (TRU) to WIPP; posted on SRS Watch website: https://srswatch.org/wp-content/uploads/2021/01/SRS-Watch-scoping-comments-plutonium-disposition-Jan-28-2021.pdf

2. Paper *The Versatile Test Reactor: Wasting Money While Undermining Nonproliferation Goals*, by Gregory S. Jones, November 19, 2019, https://nebula.wsimg.com/36cfc0b60c4368a263ec13569e054b0e?AccessKeyId=40C80D0B51471CD86975&disposition=0&alloworigin=1

3. Document from SRS, obtained by SRS Watch via a Freedom of Information Act request, documenting 11.5 metric tons of plutonium now stored in the K-Reactor, *2020 Savannah River Site Plutonium Inventory Update*, posted on SRS Watch website: https://srswatch.org/wp-content/uploads/2020/09/plutonium-inventory-SRS-2020-FOIA-rcvd-Sep-22-2020.pdf

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