



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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REGIONAL
ADMINISTRATOR'S
DIVISION

March 2, 2021

James Lovejoy, Document Manager
U.S. Department of Energy
Idaho Operations Office
1955 Fremont Avenue, MS 1235
Idaho Falls, Idaho 83415

Dear Mr. Lovejoy:

The U.S. Environmental Protection Agency has reviewed the Department of Energy's Draft Versatile Test Reactor Environmental Impact Statement (CEQ Number 20200263; EPA Region 10 Project Number 19-0047-DOE) pursuant to our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act.

The DEIS evaluates the potential environmental impacts associated with alternatives for the construction and operation of a versatile reactor-based fast-neutron source facility (Versatile Test Reactor facility or VTR) and associated facilities at a suitable DOE site. As proposed, the VTR will be approximately 300-megawatt thermal, sodium-cooled, pool-type, and uranium-plutonium-zirconium metal-fueled reactor that will help to modernize the U.S. nuclear energy industry and ensure its competitiveness in the global nuclear energy sector. For the VTR facility, DOE will use existing facilities and infrastructure as much as possible to minimize impacts. The DEIS considers reactor construction site alternatives at DOE's Idaho National Laboratory (INL) near Idaho Falls, Idaho; the Oak Ridge National Laboratory (ORNL) near Oak Ridge, Tennessee; and a no action alternative. The DEIS identifies INL as DOE's preferred alternative. DOE is also considering INL Site and Savannah River Site in South Carolina for the proposed reactor fuel production but has no preferred option for where it will perform the feedstock preparation or driver fuel fabrication.

Our review of the DEIS finds that overall, most impacts associated with the proposed action will be due to construction and operation activities, which will generate temporary and permanent impacts related to the project footprint, long-term operation and maintenance of facilities, as well as their decommissioning. Thus, EPA recommends that DOE continue to coordinate with other federal and state agencies, affected tribes, and other impacted entities to ensure that the proposed action is implemented in a manner protective of human health and the environment. We also encourage DOE to include in the Final VTR EIS additional clarifying or missing information on topics in our attached detailed comments.

Thank you for providing this opportunity to comment. If you have questions about our review, please

contact Theo Mbabaliye of my staff at (206) 553-6322 or at mbabaliye.theogene@epa.gov, or you may contact me at (206) 553-1774 or by email at chu.rebecca@epa.gov.

Sincerely,

Rebecca A. Chu, Chief
Policy and Environmental Review Branch

U.S. Environmental Protection Agency Detailed comments on the Draft Versatile Test Reactor EIS

General comments

- This DEIS has been prepared to evaluate the potential environmental impacts of proposed alternatives for the construction and operation of a new test reactor, as well as associated facilities that are needed for performing post-irradiation evaluation of test articles and managing spent nuclear fuel. EPA notes that DOE also examined other technologies and reported findings in its *Analysis of Alternatives, Versatile Test Reactor Project* report.¹ As the public may not be familiar with this report, EPA recommends that DOE summarize those other technologies in the Final VTR EIS and provide easy access to the report in the form of a web site link or an appendix to this EIS.
- This DEIS also summarizes the radiological impacts associated with the VTR in various chapters under the ‘Human Health’ headings. Information in this section relies heavily on key radiological assessment reports for INL and are included in the DEIS as references. EPA recommends that the Final VTR EIS either include a summary of the reports or provide easy access to the reports in the form of web site links or appendices to this EIS.
- The Summary footnote 6 states that other entities could also fabricate test items for placement in the reactor. EPA therefore recommends that the Final VTR EIS include information describing procedures for the acceptance of test items for use in the VTR.²
- The DEIS states that “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.” Accepting and using plutonium feedstock where the composition and purity cannot be confirmed introduces an additional variant into the feedstock process. Even if this ‘stray’ plutonium is converted to oxide and back to metal in an attempt to purify the metal, there will inevitably be impurities in the form of waste gases, waste liquids, or solid wastes that are generated in this treatment process. EPA recommends that the Final VTR EIS briefly describe measures that will be taken to make plutonium obtained from foreign sources suitable for the VTR project.
- The statement that “DOE does not intend to separate, purify, or recover fissile material from VTR driver fuel” appears in several locations in the DEIS. EPA recommends that the Final VTR EIS disclose plans for further analyses if the decision is made to separate, purify, or recover fissile material.

Potential impacts on water resources

The DEIS indicates that water quality may be adversely affected if the project construction activities such as surface grading, excavation, surface pavement, and building roofs alter the hydrology of springs

¹ U.S. Department of Energy, 2019d, *Analysis of Alternatives, Versatile Test Reactor Project*, Office of Nuclear Energy, November 15.

² Draft EIS, p. S-5

and surface runoff such that erosion carries sediment to surface waters and pollutants to local drainages and the underlying aquifers. Additionally, groundwater extraction in the analysis area and vicinity, land disturbance, material storage, waste and wastewater disposal, inadvertent chemical or hazardous liquid spills, and compaction produced by vehicular traffic can all affect recharge to the local aquifer and groundwater quality.

Because of the project, for example, there will be an increase in water discharges, which will increase erosion and sedimentation in receiving facilities and surface waters, and result in an increased amount of water seeping into the perched water zone at the outfall of the discharge facilities and in local aquifers. Water use during construction of the project will also increase over baselines and may exacerbate the seepage and facilitate migration of contaminants (e.g. salts in process wastewater discharges) to local aquifers. Aquifers that could be impacted during the construction of the project include the Snake River Plain Aquifer at INL Site. This aquifer is an EPA designated sole source aquifer vulnerable to contamination from surface activities.

In addition, the DEIS indicates that the proposed project will disturb up to 150 acres and therefore require authorization under the Construction Storm Water Discharge NPDES Permit for construction and industrial activities.³ EPA appreciates the plan to modify the existing permits at INL and ORR-ORNL to address these issues. Please note that after June 30, 2021, DOE will need to discuss directly with the Idaho Department of Environmental Quality about whether coverage under a construction stormwater general permit will be needed for the project at INL.

Recommendations

For protection of water resources at proposed VTR sites, EPA recommends that the Final VTR EIS include information on:

- Anticipated modifications of the existing General Construction Stormwater; measures to be taken to protect water quality; and any required Storm Water Pollution Prevention Plans, reporting, and monitoring.
- How the proposed project will be consistent with the EPA Technical Guidance on Implementing the Storm Water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act of 2007.⁴ Please also include the EISA among other Federal laws and regulations applicable to activities associated with the proposed action.
- How the project will address the application of green construction and management practices, consistent with the federal “green” requirements and opportunities that may apply to design, operation, and maintenance of project-related facilities and equipment.⁵
- Considerations for zero or low impact development techniques in project design due to their potential to reduce storm water volumes, and mimic natural conditions. For example, consider:
 - Minimizing creation of new impervious surface.
 - Using pervious pavement and avoid building over groundwater recharge areas.
 - De-paving areas as mitigation for any new impervious surfaces needed for the project, to achieve no net increase in pollution generating impervious surface.
- Best management practices, erosion and sediment control, and other mitigation measures to minimize impacts.

³ <https://www.epa.gov/npdes/npdes-stormwater-program>

⁴ <http://www.epa.gov/polluted-runoff-nonpoint-source-pollution/stormwater-management-federal-facilities-under-section-438>

⁵ <https://www.epa.gov/green-infrastructure/what-green-infrastructure>

Coordination strategies with each State Department of Environmental Quality (Idaho, Tennessee, and South Carolina) and tribes that may be affected by the project to ensure that state and tribal water resources are protected and used wisely.

Impacts on wetlands and ecological resources

The DEIS discusses the proposed project's impacts to ecological resources and indicates that vegetation removal, habitat fragmentation, and ground disturbance will affect plant communities, migratory birds, and other wildlife species of concern. Most proposed project impacts to these resources will occur during new facility construction. Specifically, there will be habitat alteration for sage grouse (candidate species for listing under the Endangered Species Act) and pygmy rabbits, loss of native grasslands and sagebrush steppe habitats, and potential impacts to nesting migratory birds. Some of the impacts will be indirect, while others will be direct, cumulative, and unavoidable.

EPA appreciates the avoidance measures of limiting the project footprint and using previously disturbed areas. EPA notes that clearing and grading during construction will result in complete removal of vegetation on up to 100 acres at INL and 150 acres at ORNL. Of these acres, less than half will remain permanently developed for facilities and infrastructure. Approximately 25 acres will be converted permanently for industrial use at the INL Site, while 50 acres of vegetated area at ORNL will be cleared and converted permanently for industrial use. In addition, EPA notes that the ORNL VTR Alternative will permanently affect nearly 2 acres of palustrine, forested wetlands associated with tributaries to Bearden Creek and Melton Branch which exist within the operational footprint. The proposed ORNL VTR alternative will impact about 10.5 acres of wetlands, 15,637 feet of streams, conveyances and/or channels associate with creeks (e.g., Melton Branch and Bearden Creek) that flow into major rivers, and 30 seeps and springs. In addition, the temporary construction area includes about 5 acres of wetlands associated with intermittent tributaries to Bearden Creek and Melton Branch. Such habitat loss and fragmentation will have direct impacts on wildlife (loss of cover and food, displacement, increased noise, etc.), tribal resources (ethnobotanical plants, wildlife), soil (exposure, erosion, sedimentation, noxious weeds), and potentially mortality of small mammals, lizards, and raptors that occur in construction locations.

Recommendations

Given the wildlife (e.g., sage grouse) use and occurrence of vegetation of concern (e.g., sagebrush steppe) and aquatic resources in the planning areas, EPA recommends that the Final VTR EIS include:

- Measures to be taken to avoid, minimize, and mitigate impacts on ecological resources of concern.
- An expanded analysis of aquatic resources and impacts associated with the ORNL VTR alternative to include a description of the quality (e.g., functions and values) of the waters that will be impacted, quantification of surface waters and wetlands subject to regulation of Section 404 of the Clean Water Act, and proposed avoidance, minimization, and compensatory mitigation measures to reduce impacts to waters of the U.S..
- Information on work with the U. S. Fish and Wildlife Service and each state (Idaho, Tennessee, and South Carolina) department of fish and wildlife to determine the level of risk to vegetation and wildlife species and identify effective measures to reduce the risks and protect species and biota. We also encourage DOE to include in the Final VTR EIS any new information on the outcomes of the work with the Service and coordination with the other agencies.

Potential impacts on contaminated sites

According to the DEIS, the INL VTR alternative will be constructed in the proximity of Waste Area Group 9 and adjacent to the Materials Fuel Complex. Remediation is ongoing within the MFC and new sites have been identified as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The EIS does not discuss any requirements to coordinate with the clean-up division or that CERCLA activities will not be affected by construction of the VTR.

Recommendation

EPA recommends that the EIS clarify that DOE will coordinate across the agency's NEPA and clean-up programs if the disturbance occurs within a designated CERCLA area and if any waste is encountered during implementation of this project. DOE's activities under the proposed program will need to be consistent with EPA cleanup goals and activities.

Waste generation and management

Information in the DEIS indicates that because of the proposed project, there will be generation of a variety of waste including low-level radioactive waste, mixed low-level radioactive waste, transuranic waste, and hazardous and Toxic Substance Control Act wastes over the life of the program. The DEIS also states that the project will send those wastes to one of DOE's facilities under evaluation and that spent nuclear fuel debris will be securely stored with DOE's spent fuel and spent fuel debris inventory awaiting a future disposal facility.

Recommendations

Because this project may generate impacts from waste generation and management activities, EPA recommends the Final VTR EIS disclose:

- The waste receiving facilities and location(s).
- The capacity of interim onsite VTR spent fuel storage and other waste.
- The duration VTR spent fuel and other waste can be safely stored onsite temporarily, and the expected timeline a suitable offsite location will become available.
- How the possible delay of a suitable and available offsite storage location will affect the VTR proposal and interim management of VTR spent fuel and other waste.
- The regulatory requirements for shipping such wastes to receiving locations.
- Information on impacts related to handling, transportation of the wastes to disposal sites, and long-term storage of the wastes at receiving sites.

Potential impacts to air quality

The DEIS describes current air quality conditions in the planning areas and EPA appreciates data provided, especially on baseline emissions. EPA notes that while the EPA has designated all counties in the areas as attainment for all National Ambient Air Quality Standards, adjacent counties remain in nonattainment and maintenance for particulate matter or PM₁₀. It is therefore possible that the project activities may exacerbate air quality conditions in the areas due to construction-related emissions, even if the impacts will be temporary and short-term (5 years). Air quality may also be impacted due to cumulative impacts from surrounding activities such as road construction and site operations, traffic on unpaved roads, local traffic emissions, use of woodstoves, agriculture, fire, and civilian air traffic.

The DEIS also indicates the INL maybe a major source of hazardous air pollutants or Hazardous Air Pollutants or HAPs due to use of fuel oil-fired boilers to generate steam for heating facilities and diesel engines for emergency electrical power. Other sources of criteria, toxic, and HAPs in the analysis area include miscellaneous small gasoline, diesel, and propane combustion sources, and miscellaneous chemical usage. It also includes information that, for example, during new facility construction, daily traffic to and from the VTR facility will be expected to increase by up to 17 percent and employees, some of whom may be sensitive to air quality conditions, are expected to increase as well.

The DEIS further indicates this project will be associated with hazardous materials and air pollutants which may include potentially toxic pollutants and wastes that may be released during construction, operations, and decommissioning or as the result of an accident.

Recommendations

Regarding air quality impacts, EPA recommends the Final VTR EIS include information on:

- Modeling output data to show that the proposed project will not result in any significant increase in criteria, toxic and Prevention of Significant Deterioration air pollutant emissions. The use of EPA's Motor Vehicle Emission Simulator or MOVES model was referenced in Section 4.4.1.1. but no output data were included in the DEIS.
- Plans to monitor air quality conditions on site and taking corrective actions to prevent local air quality deterioration. Monitoring strategies tailored to local conditions will ensure that localized air quality impacts do not exceed standards when area-wide and/or long-term monitoring data may show compliance with air quality regulatory requirements. This is especially important for the INL Site due to its proximity to nonattainment and maintenance areas for PM₁₀ and the Craters of the Moon National Monument and Preserve – a Prevention of Significant Deterioration Class I area.
- Commitments to maximize implementation of mitigation measures described in the DEIS to reduce emissions associated with the proposed project activities.
- The Clean Air Act §112(r), and, as applicable, the Emergency Planning and Community Right to Know Act, EPCRA § 303, 311, & 312, and related state and county regulatory programs.^{6,7} Please also note that Local Emergency Planning Committees can require a facility to produce an emergency response plan whether or not it is required under other regulations.
- Continued coordination with other entities in the analysis area (states, affected tribes, and air quality boards, etc.) to ensure emissions due to the proposed action are reduced over the proposed project lifespan.

Impacts of Climate Change

The DEIS indicates that because of the proposed action, greenhouse gas emissions (GHGs) may increase due to worker commuting, purchased electricity, operation of construction equipment, and use of diesel generators and fuel oil-fired boilers for heating. In addition, continued climate change may impact the proposed project, posing threats to infrastructure and higher risks to worker health and safety through increased frequency and severity of wildfires, as well as persistent drought leading to power disruptions and increased cooling demands in summer months.

⁶http://www.epa.gov/oem/docs/chem/caa112_rmp_factsheet.pdf

⁷<http://www2.epa.gov/epcra/what-epcra>

Recommendations

Because the proposed project has the potential to contribute to impacts of climate change, EPA recommends the Final VTR EIS:

- Include most current greenhouse gas emissions or GHGs inventories and updated analyses of climate change impacts. As an example, the INL has the potential to emit greater than 100,000 Metric Tons carbon dioxide or CO₂ emissions per year and is, therefore, subject to the mandatory reporting requirements.⁸
- Implement practicable mitigation opportunities for reducing GHGs during the proposed project period, consistent with federal, state, and local requirements to limit GHG emissions.

Monitoring of the projects and adaptive management

The proposed action has the potential to impact a variety of resources for an extended period – up to 60 years and beyond. In addition, as the VTR project is not the first that DOE has undertaken (e.g., Transient Testing of Nuclear Fuels and Materials in operation at INL Site since 1959), it will be beneficial to discuss environmental monitoring results from other similar actions, and discuss implications for the proposed program. EPA expects that lessons learned from past practices and adaptive management efforts, combined with the need to account for new challenges, such as the impacts of climate change, will influence management of the proposed VTR program. For example, EPA is interested in knowing whether existing monitoring systems will meet the American National Standards Institute/Health Physics Society N13.1-1999 requirements or if modifications will be necessary.⁹

Recommendation

EPA recommends the Final VTR EIS include an environmental inspection and mitigation-monitoring program to ensure compliance with all mitigation measures and assess their effectiveness. The Final VTR EIS should describe the monitoring program and how it will be used as an effective feedback mechanism so needed program adjustments are made to meet environmental objectives throughout the life of the program.

⁸Draft EIS for the Recapitalization of Infrastructure Supporting Naval SNF Handling (DOE/EIS-0453-F), p. 3-100.

⁹Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stack and Ducts of Nuclear Facilities