RAS 13341

NRC STAFF EXHIBIT 29

DOE/EIS-0360

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR CONSTRUCTION AND OPERATION OF A DEPLETED URANIUM HEXAFLUORIDE CONVERSION FACILITY AT THE PORTSMOUTH, OHIO, SITE

Volume 1: Main Text and Appendixes A–H

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TABLE 4.2-1 Summary of Major EIS Data and Assumptions

Parameter/Characteristic	Data/Assumption
General	
Portsmouth DUF_6 cylinder inventory	16,109 cylinders; 195,800 t
Portsmouth non-DUF_6 cylinder inventory	2,693 cylinders: 13,500 t (14,900 tons)
ETTP DUF_6 cylinder inventory	4,822 cylinders; 54,300 t (60,000 tons)
ETTP non-DUF_6 cylinder inventory	1,102 cylinders; 26 t (29 tons)
No Action Alternative	No conversion facility constructed; continued long-term storage of DUF_6 in cylinders at Portsmouth and ETTP.
Assessment period	Through 2039, plus long-term groundwater impacts
Construction	None
Cylinder management	Continued surveillance and maintenance activities consistent with current plans and procedures.
Assumed total number of future cylinder breaches:	
Controlled-corrosion case	16 at Portsmouth; 7 at ETTP
Uncontrolled-corrosion case	74 at Portsmouth; 213 at ETTP
Action Alternatives	Build and operate a conversion facility at the Portsmouth site for conversion of the Portsmouth and ETTP DUF_6 inventories; construct a new cylinder storage yard at Portsmouth for ETTP cylinders.
Construction start	2004
Construction period	≈2 years
Start of operations	2006
Operational period	18 years (14 years if ETTP cylinders are converted at Paducah)
Facility footprint	10 acres (4 ha)
Facility throughput	13,500 t/yr (15,000 tons/yr) DUF_6
Conversion products	
Depleted U_3O_8	10,800 t/yr (11,800 tons/yr)
CaF_2	18 t/yr (20 tons/yr)
70% HF acid	2,500 t/yr (2,800 tons/yr)
49% HF acid	5,800 t/yr (6,300 tons/yr)
Steel (empty cylinders, if not used as disposal containers)	1,177 t/yr (1,300 tons/yr)
Proposed conversion product disposition (see Table 2.2-2 for details):	
Depleted U_3O_8	Disposal; Envirocare (primary), NTS (secondary)[a]
CaF_2	Disposal; Envirocare (primary), NTS (secondary)
70% HF acid	Sale pending DOE approval
49% HF acid	Sale pending DOE approval
Steel (empty cylinders, if not used as disposal containers)	Disposal; Envirocare (primary), NTS (secondary)

[a] DOE plans to decide the specific disposal location(s) for the depleted U_3O_8 conversion product after additional appropriate NEPA review. Accordingly, DOE will continue to evaluate its disposal options and will consider any further information or comments relevant to that decision. DOE will give a minimum 45-day notice before making the specific disposal decision and will provide any supplemental NEPA analysis for public review and comment.

Sources: UDS (2003a,b).

For the cylinder transfer option, impacts during construction and normal operations would generally be small and limited primarily to involved workers. It is estimated that at ETTP, the total collective dose to involved workers would range from 410 to 480 person-rem (resulting in less than 0.2 LCF) for cylinder transfer operations, and it would range from 0 to 27 person-rem (resulting in less than 0.01 LCF) for preparing compliant cylinders. The total collective dose to workers preparing all the ETTP cylinders would range from 437 to 480 person-rem (resulting in less than 0.2 LCF). This dose to workers would be incurred over the duration of the cylinder preparation operations (annual doses can be estimated by dividing the total dose by the duration of the operation in years).

In the PEIS, the size of the transfer facility was estimated to be less than about 20 acres (8 ha); such a facility would likely be constructed in a previously disturbed area. Some small off-site releases of hazardous and nonhazardous materials could occur, although such releases would have negligible impacts on the off-site public and the environment. Construction activities could temporarily impact air quality; however, all criteria pollutants concentrations would be within applicable standards.

Impacts on cultural resources would be possible if a transfer facility was built at ETTP. Depending on the location chosen, the K-25 Main Plant Historical District, significant archaeological resources, or traditional cultural properties could be adversely affected. The ORR CRMP has been approved by the Tennessee SHPO. It includes procedures for determining the effect of an undertaking on cultural resources, consulting with the Tennessee SHPO and Native American groups, and mitigating adverse effects (Souza et al. 2001). These procedures, including additional surveys and any necessary mitigation, would have to be completed before any ground-disturbing activities for construction of a new facility could begin.

5.2.5 Transportation

The action alternatives involve transportation of DUF_6 and non-DUF_6 cylinders from ETTP to Portsmouth, in addition to transportation of the conversion products to a disposal site or to commercial users. The ETTP cylinders are expected to be shipped by truck and the conversion products by rail. However, a viable option is to ship some ETTP cylinders via rail and the conversion products by truck. For purposes of this EIS, transportation of all cargo is considered for both truck and rail modes of transport. In a similar fashion, conversion products declared to be wastes are expected to be sent to Envirocare of Utah for disposal; another viable option is to send the products to NTS. Thus, both options are evaluated. If not used as disposal containers for depleted U_3O_8 products, the emptied heel cylinders would be crushed and shipped in 20-ft (6-m) cargo containers, approximately 10 to a container. However, up to 10% of these cylinders might not meet Envirocare acceptance criteria and would be shipped as-is to NTS for disposal (UDS 2003b).

As discussed in Appendix F, Section F.3, the impacts of transportation were calculated in three areas: (1) collective population risks during routine conditions and accidents (Section 5.2.5.1), (2) radiological risks to MEIs during routine conditions (Section 5.2.5.2), and

pollution prevention and waste minimization. The discussion in these sections would also apply if the throughput of the Portsmouth facility was increased 33%.

5.2.8.2 Potential Impacts Associated with Extending the Plant Operational Period

As noted above, the Portsmouth conversion facility is currently being designed to process the Portsmouth and ETTP DUF_6 cylinder inventories over 18 years. There are no current plans to operate the conversion facilities beyond this period. However, with routine facility and equipment maintenance and periodic equipment replacements or upgrades, it is believed the conversion facility could be operated safely beyond this time period to process additional DUF_6 for which DOE might assume responsibility.

The estimated annual environmental impacts during conversion facility operations were presented and discussed previously in Section 5.2.3; these impacts are expected to continue each year for the planned 18 years of operations at Portsmouth. If operations were extended beyond 18 years and if the operational characteristics (e.g., estimated releases of contaminants to air and water) of the facility remained unchanged, the annual impacts would be expected to be essentially the same as those presented in Section 5.2.3. However, continued operations would result in the impacts being incurred over a greater number of years. The total radiation dose to the workers and the public would increase in proportion to the number of additional years that the facility operated. Although the annual frequency of accidents would remain unchanged, the overall probability of a severe accident would increase proportionately with the additional operational time period. In addition, the total quantities of depleted uranium and secondary waste products requiring disposal would increase proportionately, as would the amount of HF or CaF_2 produced. As discussed in Section 5.2.3, the estimated annual impacts during operations are within applicable guidelines and regulations, with collective and cumulative impacts being quite low. This would also be expected during extended operations.

5.2.8.3 Potential Impacts Associated with Possible Future Paducah-to-Portsmouth Cylinder Shipments

As noted above, it is possible that in the future, DUF_6 cylinders could be transferred from Paducah to Portsmouth to facilitate conversion of the entire inventory, particularly if DOE assumes responsibility for additional DUF_6 at Paducah. At this time, it is uncertain whether such transfers would take place and how many cylinders would be transferred if such a decision was made. Therefore, for comparative purposes, this section provides estimates of the potential impacts from transporting 1,000 DUF_6 cylinders from Paducah to Portsmouth by either truck or rail. Shipment of 1,000 cylinders per year roughly corresponds to the annual base design throughput of the Portsmouth conversion facility.

The transportation assessment methodology discussed in Appendix F, Section F.3, was used to estimate the collective population risk for shipment of 1,000 cylinders between Paducah and Portsmouth by both truck and rail. It was assumed that only compliant cylinders that met DOT requirements would be shipped between the sites. The estimated highway and rail route