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SECRETARY

Draft Environmental Impact Statement on 10 CFR Part 61 "Licensing Requirements for Land Disposal of Radioactive Waste"

Appendices A-F

U.S. Nuclear Regulatory
Commission

Office of Nuclear Material Safety and Safeguards

September 1981



U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of Louisiana Energy Services

Docket No. 70-3103-01 Official Exhibit No. NRS/PC 226

OFFERED by: Applicant/Licensee Intervenor NRS/PC

NRC Staff Other

IDENTIFIED on Initials Witness Panel LES Disposal

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk Bethany Engst

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Property of DIANE DARRIGO
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liquid and solid wastes generated as part of milling operations has been already addressed in a separate rulemaking action and is not considered further in this appendix. Additional information can be located in NUREG-0706 (Ref. 3).

Yellowcake produced from milling operations is then shipped to conversion plants that convert U_3O_8 to uranium hexafluoride (UF_6). The conversion process generates liquid and solid waste streams, most of which are recycled to recover uranium prior to storage in onsite ponds or reuse within the plant. Onsite storage at conversion facilities is presently regulated by NRC under 10 CFR Part 40. Small quantities of low-activity wastes contaminated with natural uranium are shipped offsite to licensed near-surface disposal facilities. These wastes are considered further in this appendix. Currently, there are two UF_6 conversion plants in operation in the United States; one plant is located in Region III and one in Region IV.

Following conversion, natural UF_6 is shipped to enrichment facilities for enrichment in fissile U-235. In this process, the U-235 content of the uranium is raised from natural concentrations (about 0.7 weight percent) to about 2 to 4 weight percent. Currently, three enrichment plants using the gaseous diffusio process are in operation and these are located at Portsmouth, Ohio; Paducah, Kentucky; and Oak Ridge, Tennessee. These plants are owned and operated by the federal government and wastes produced from plant operation are not sent to commercial disposal facilities. Hence, waste streams produced from uranium enrichment operations are not considered further in this appendix.

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Enriched UF_6 is then shipped to commercial fabrication plants which convert the enriched UF_6 to uranium dioxide (UO_2) powder, produce UO_2 pellets, fabricate fuel rods containing the UO_2 pellets, and combine the fuel rods into fuel assemblies for use in light water reactors. Most of the liquids, sludges, and other wastes produced during the UF_6 -to- UO_2 conversion process are presently being stored at the fabrication plants, although some wastes in the form of dry solids (principally CaF_2) contaminated with low levels of enriched uranium are being shipped offsite for disposal. Low-activity waste, principally trash, is also generated during the pelletizing and subsequent fabrication processes, and these waste streams are also shipped offsite for disposal. Table D-2 provides a summary of the current LWR fuel fabrication industry.

Fuel assemblies are then shipped to central station nuclear power plants, utilizing light water power reactors (LWR) for production of electrical power through use of the energy released during fission of the uranium fuel. During operations, waste is generated in a number of forms having specific activities ranging from low to moderately high levels. Much, if not most, of the waste is generated as a result of operating and maintaining plant processes which maintain concentrations of radiocontaminants in the reactor coolant and other process systems to low levels and reduce effluent releases from the plant to acceptable levels. The presence of such radiocontaminants in reactor cooling systems can result from activation of corrosion products or from leakage of fission products out of the fuel rods. The treatment and maintenance operations result in wet wastes such as filter sludges, spent resins, and evaporator bottoms, as well as compactible and noncompactible dry wastes. Liquids such