

MAR 01 1991

MEMORANDUM FOR: Charles E. MacDonald, Chief
Transportation Branch
Division of Industrial & Medical Nuclear Safety, NMSS

FROM: B. J. Youngblood, Director
Division of High-Level Waste Management, NMSS

SUBJECT: VIRGINIA POWER PROPOSAL TO THE DEPARTMENT OF ENERGY TO
DEVELOP A UNIVERSAL CONTAINER SYSTEM (UCS)

As you requested, enclosed are suggested disposal-related responses to the questions posed by Chairman Selin, concerning the Virginia Power UCS concept (EDO Control No. 0008608).

B. J. Youngblood, Director
Division of High-Level Waste Management/NMSS

Enclosures:
as stated

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ENCLOSURE

Question A: Do NRC Regulations present any problem with the overall approach to a Universal Container System (UCS)? Do we need rule changes to consider an application for a UCS?

Response: While the Commission's regulations in 10 CFR Part 60 do not specifically address the UCS concept, the regulations do not present any problem with the overall approach to a UCS and no rule changes would necessarily be needed to evaluate the concept. However, the rule currently has no provision for approval of waste package components prior to receipt of an application for a construction authorization.

Question B: What is the Staff's reaction to the concept? ..

Response: From the disposal perspective, the only significant pluses or minuses to adoption of the concept that the staff is aware of is enhancement of safety by (1) standardizing equipment and procedures and (2) reducing the number of fuel assembly handlings and thereby reducing the likelihood of fuel assembly drop accidents. The staff believes that the UCS concept is analogous to the pour canister concept for the vitrification of defense high-level waste in that both are "standardized" canister designs for a canister to be placed inside a waste package.

Question C: What resources would be needed for reviewing and licensing a UCS?

Response: If NRC were to conduct pre-licensing consultation of the ongoing development of the UCS concept from a disposal perspective, it is estimated that resources of about one-fourth staff year per year for the proposed review period would be required. This estimate is based upon our experience in reviewing the analogous waste acceptance process documents for glass/vitrified waste forms and assumption that DOE will continue development of alternative waste package designs. From a disposal perspective, approval of a UCS could be problematic without needed site information. In addition, the current rule (Part 60) has no provision for early approval of waste package components.

No additional resources would be needed to review a license application for a geologic repository that incorporates a UCS than would be required to review a license application for a geologic repository that incorporates a nonuniversal container system.

Question D: What is the feasibility of the proposed schedule?

Response: Virginia Power's proposed schedules deal primarily with storage and transportation issues. However, the staff notes that Virginia Power's proposed development of the UCS concept should be integrated with DOE's existing plans and schedules for development of a repository waste package and engineered barrier system.

Question E: What are the significant issues that must be resolved?

Response: The following significant issues should be resolved for the use of a UCS in a geological repository for high-level wastes:

1. How will criticality control issues in repository disposal (both for the preclosure period and the postclosure period) be considered in designing the UCS?
2. How will the UCS design take into account the performance and design requirements of 10 CFR Part 60?
3. How will Virginia Power integrate their UCS development with DOE's plans and schedules for site characterization, repository design, and design of the waste package and engineered barrier system? Also, how will Virginia Power take into account the repository environment in designing the inner metal container?
4. How will Virginia Power assess the effects of long-term storage and transportation on the integrity of the UCS?
5. What role, if any, does Virginia Power anticipate that NRC will play in the design, testing, and production phases of the UCS project?