

MAR 11 1994

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FROM: B. J. Youngblood, Director
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SUBJECT: MULTIPURPOSE CANISTER DEVELOPMENT PLAN FOR FISCAL YEAR 1994

The purpose of this memorandum is to transmit the enclosed plan for developing the Multipurpose Canister (MPC)/Disposal Review Plan. This review plan will serve as a guide to the staff in performing a review of the MPC concept to minimize the potential for licensing problems related to the MPC upon review of DOE's application for construction authorization.

The NRC and CNWRA Operations Plans for FY94-95 should be amended to reflect development of the MPC/Disposal Review Plan. Individual assignments to develop the review plan will be made after the MPC Review Plan Outline is developed and briefed to management.

The Project Manager for the MPC/Disposal Review Plan is Robert D. Carlson. If you have any questions concerning this subject, please contact him at 504-2435.

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

Enclosure: As stated

cc: W. Patrick, CNWRA
B. Sagar, CNWRA
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PLAN FOR DEVELOPING MPC/DISPOSAL REVIEW PLAN

1. Background

- DOE plans to prepare a Topical Report for submittal to NRC in FY 95 on the burn-up credit issues related to HLW disposal. Transportation and storage topical reports will be submitted by DOE and reviewed by NRC before review for repository disposal issues can be completed.
- DOE has planned several technical exchanges during FY 94-98 with the NRC to facilitate early review of technical concerns in the MPC program.
- DOE is interested in obtaining a strong, positive statement from NRC on the acceptability of the MPC before it makes major financial commitments for design and development of the MPC.
- NRC's review is an opportunity for the staff to show that prelicensing consultation pays-off by NRC willingness to take a position, thus allowing DOE to make decisions about proceeding with the MPC concept.
- CNWRA has prepared a regulatory review of 10 CFR Part 60 requirements that are applicable to the MPC as a basis for the MPC design review.
- In concept, the planned MPC for spent fuel is similar to the planned container for vitrified waste.

2. Purpose

- Prepare an MPC/Disposal Review Plan to guide the staff in performing a review of the MPC concept to minimize the potential for licensing problems related to the MPC upon review of DOE's application for construction authorization.

3. Scope

- Prepare for a broad-based, pre-licensing regulatory review of the MPC concept for Yucca Mountain. This includes a preliminary performance assessment review to the extent limited by current site characterization data, and waste package and repository design information to develop information about the acceptability of the MPC concept.
- Identify limitations of this review (based on DOE preliminary site characterization data, and waste package and repository design information).
- Include issues related to burn-up credit and criticality control.

- Identify conditions that may have potentially adverse effects on the waste package and repository performance.
- The MPC Review Plan will account for DOE design concepts and details related to storage or transportation requirements which also may have repository performance implications. This review plan will not be directed toward storage and transportation aspects of the MPC. However, interaction with NRC NMSS staff responsible for storage and transportation licensing aspects should be necessary to exchange information on the subject and ensure completeness of the staff's review for acceptability of an MPC design.

4. Product

- Prepare a comprehensive MPC/Disposal Review Plan that would allow the staff to perform timely technical reviews of schedule-driven DOE technical products (not a compliance review for approval of the MPC design).
- Prepare an MPC/Disposal Review Plan that can be used in conjunction with the generic Topical Report Review Plan to conduct a Safety Evaluation detailing the staff's review of the MPC concept.
- MPC Review Plan contents will be generally developed for planned integration into the LARP.

5. Approach

- The initial approach will be to take a broad view and look at all EBS review requirements. The staff will interact with DOE to determine the appropriate scope of the planned MPC Topical Report submittals.
- Prepare MPC/Disposal Review Plan, elements of which will be generally developed for planned integration into the LARP.
- Use the LARP development approach under the SRA process to systematically and completely prepare the MPC Review Plan, examining:
 - applicable regulatory requirements
 - information needs/processes (e.g., Format and Content Regulatory Guide level)
 - Key Technical Uncertainties based on applicable Compliance Determination Strategies and discussion of event tree/performance review
 - review strategies
 - review procedures/acceptance criteria
 - outstanding SCP comments
 - pertinent background reference reports related to MPC such as: "Regulatory Procedures and Technical Considerations Related to NRC's Review of the MPC Design Concept" (AD 20-5702-541-005 and its references), "Technical Considerations for Evaluating Substantially Complete Containment of High-Level

Waste Within the Waste Package" (NUREG/CR-5638), and "Characteristics of Spent Nuclear Fuel and Cladding Relevant to High-Level Waste Source Term" (CNWRA 93-006) to identify performance issues beyond burn-up credit and criticality control which can be currently identified.

- example topics for review:

- * consistency with the regulation
- * criticality control issues
- * materials degradation
- * anticipated and unanticipated processes and events
- * burn-up credit issues
- * preliminary evaluation of effects on performance objectives in 60.112/113
- * acceptability of methodology
- * completeness of information and acceptability of parameter ranges
- * thermal loading impacts
- * handling and transportation issues at the repository
- * changes from SCP design bases (e.g., rock temperatures, cladding temperatures)
- * new "issues" to be integrated by DOE to the SCP (e.g., excavation ratio)

- While acceptance (review) criteria are desirable, these may be difficult to prepare currently with constraints related to site characterization, waste package, and repository design data (it should be expected that acceptance criteria will reflect the preliminary state of knowledge, and they should be clearly identified as such).
- Assume zero performance allocation for the MPC shell in EBS performance.
- Identify any potential adverse impacts of the MPC design on the overall waste package performance.

6. MPC Team Composition (pre-reorganization)

PM - R. Carlson, HLPD
Lead BC - R. Ballard, HLGE
Lead Section Ldr. - R. Weller, HLGE
Lead Tech. Staff - D. Dancer, HLGE
Lead PA Staff - D. Codell, HLHP
Lead CNWRA Element Mgr. - P. Nair, CNWRA
Lead CNWRA Tech. Staff - C. Tschoepe, CNWRA
Lead Fuel Cycle Staff - M. Lusardi, IMTB

7. . Activities and Schedules to Prepare MPC/Disposal Review Plan

- Assemble MPC Team (3/94)
- Develop MPC Review Plan Outline and Brief Management (4/94)
- Make Assignments (4/94)
- Develop Draft MPC Review Plan (6/94)
- Conduct Internal Review of Draft MPC Review Plan (7/94)
- Conduct Comment Resolution (8/94)
- Conduct Management Review/Approval (9/94)
- Issue Final MPC Review (9/94)

8. Assignments

- TBD

9. Resource Estimates

- Estimated level of NRC resources:
.3 FTE
- Estimated level of CNWRA support:
50K (includes consultant support)
- Estimated NRC Fuel Cycle Branch support:
1 SW or less

10. Required Collateral Activities - FY 95 (subject to further deliberations during next budget review cycle)

- EBSPAC development
- SOTEC improvement
- TSPA code development