COMPLIANCE DETERMINATION STRATEGY
RRT 3.1.5 INTEGRATED NATURAL RESPONSE TO THE MAXIMUM DESIGN THERMAL LOAD

APPLICABLE REGULATORY REQUIREMENTS:

60.21(c)(1)(i)(A)
60.21(c)(1)(i)(B)
60.21(c)(1)(i)(C)
60.21(c)(1)(i)(D)
60.21(c)(1)(i)(E)
60.21(c)(1)(i)(F)
60.21(c)(1)(ii)(A)
60.21(c)(1)(ii)(B)
60.21(c)(1)(ii)(C)
60.21(c)(1)(ii)(D)
60.21(c)(1)(ii)(F)
60.21(c)(2)
60.21(c)(12)
60.31(a)(1)(i)

TYPES OF REVIEW:

Acceptance Review (Type 1)

RATIONALE FOR TYPES OF REVIEW:

Acceptance Review (Type 1) Rationale:

This regulatory requirement topic is license application-related because, as specified in 10 CFR 60.31(a)(1)(i), it is information that the Commission shall consider in determining if there is reasonable assurance that the types and amounts of radioactive materials described in the application can be received, possessed, and disposed of in a geologic repository operations area without unreasonable risk to the health and safety of the public. As presented in the license application content requirements of 10 CFR 60.21(c) (referenced above) and Section 3.1.5 of regulatory guide "Format and Content for the License Application for the High-Level Waste Repository (FCRG)," this regulatory requirement must be addressed by the U.S. Department of Energy (DOE) in its license application. Therefore, the staff will conduct an Acceptance Review of the license application for this regulatory requirement topic.

Those sections of the license application that rely on descriptive information contained in this section are listed in Table 3.1.5-1. It is assumed that those sections listed in the table encompass all significant technical uncertainties that exist relative to the description of the integrated natural response to the maximum design thermal load. Each section will receive the appropriate level of Safety Review (types 3, 4, or 5).

REVIEW STRATEGY:

Acceptance Review:

In conducting the acceptance review of the response of the natural system (e.g., the hydrogeologic, geochemical, and geomechanical systems) to the maximum design thermal load, the reviewer shall determine if the content of the license application is complete with respect to the information requested by Section 3.1.5 of regulatory guide "Format and Content of the License Application for the High-Level Waste Repository (FCRG)."

The descriptive material provided in Section 3.1.5 of the license application will support detailed Safety Reviews of information contained elsewhere in the license application. Thus, the information contained in Section 3.1.5 will be reviewed in parallel with the information contained in those sections of the license application concerning siting conditions, design, and performance. Therefore, during the Acceptance Review of Section 3.1.5, the reviewer should determine that the appropriate descriptive information needed to support the Safety Reviews has been provided in this section of the license application and that the information is both internally consistent, and consistent from section to section.

The reviewer should determine that the information in the license application is presented in such a way that the staff will not generally need to conduct extensive independent analyses or literature searches. However, independent analyses and literature searches may be needed to verify DOE's conclusions presented in this section of the license application. This independent work, if needed, would be conducted as part of those compliance reviews listed in Table 3.1.5-1. The reviewer should also determine whether an appropriate range of alternative interpretations and models has been described.

Finally, the reviewer should determine if the U.S. Department of Energy (DOE) has either resolved all the NRC staff objections that apply to the applicable regulatory requirements or provided all the information requested in Section 1.6.2 of the FCRG, for unresolved objections. The reviewer should evaluate the effects of any unresolved objections, both individually and in combinations with others, on: (1) the reviewer's ability to conduct a meaningful and timely review; and (2) the Commission's ability to make a decision regarding construction authorization within the statutory three-year period.

If it is determined that the descriptive information in Section 3.1.5 of the license application is inadequate to support the Safety Reviews described above, then additional information will be requested from DOE before these Safety Reviews can begin.

RATIONALE FOR REVIEW STRATEGY:

None

Contributing Analysts:

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CNWRA: R. Manteufel, M. Ahola, D. Turner

Date of Analyses: February 25, 1993

APPLICABLE REGULATORY REQUIREMENTS FOR EACH TYPE OF REVIEW:

Type 1:
60.21(c)(1)(i)(A)
60.21(c)(1)(i)(B)
60.21(c)(1)(i)(C)
60.21(c)(1)(i)(D)
60.21(c)(1)(i)(E)
60.21(c)(1)(i)(F)
60.21(c)(1)(ii)(A)
60.21(c)(1)(ii)(B)
60.21(c)(1)(ii)(C)
60.21(c)(1)(ii)(D)
60.21(c)(1)(ii)(F)
60.21(c)(2)
60.21(c)(12)
60.31(a)(1)(i)

REFERENCES:

Nuclear Regulatory Commission, "Format and Content for the License Application for the High-Level Waste Repository," Office of Nuclear Regulatory Research. [Refer to the "Products List" for the Division of High-Level Waste Management to identify the most current edition of the FCRG in effect.]

Table 3.1.5-1. Sections of the License Application which require input from the "Description of the Individual Systems and Characteristics of the Site: Integrated Natural Response to the Maximum Design Thermal Load" Section of the License Application

License Application Section	*Section Title*
Siting Criteria	
(Favorable Conditions)	
3.2.2.1	Nature and Rates of Hydrogeologic Processes
3.2.2.4	Unsaturated Zone Hydrogeologic Conditions
3.2.3.1	Nature and Rates of Geochemical Processes
3.2.3.2	Geochemical Conditions
3.2.3.3	Mineral Assemblages
(Potentially Adverse Conditions)	
3.2.1.4	Evidence of Dissolution
3.2.2.8	Structural Deformation and Groundwater
3.2.2.9	Changes to Hydrologic Conditions
3.2.2.10	Complex Engineering Measures
3.2.2.11	Potential for Unsaturated Zone Saturation
3.2.2.12	Perched Water Bodies
3.2.3.4	Groundwater Conditions and the Engineered Barrier System
3.2.3.5	Geochemical Processes
3.2.3.6	Not Reducing Groundwater Conditions
3.2.3.7	Gaseous Radionuclide Movement
Performance Objectives	
3.3	Assessment of Compliance with the Groundwater Travel Time Performance Objective
4.5.2	Assessment of Integrated GROA Compliance with the Performance Objectives: Retrievability of Waste
5.4	Assessment of Compliance with the Engineered Barrier System Performance Objectives
6.1	Assessment of Compliance with the Requirement for Cumulative Releases of Radioactive Materials
6.2	Assessment of Compliance with the Individual Protection Requirements
6.3	Assessment of Compliance with the Groundwater Protection Requirements
8.1.2	Performance Confirmation Program for the Natural Systems of the Geologic Setting: Hydrologic System
8.5	Analysis of Changes from Performance Confirmation Baseline
Design Criteria	
4.3	Assessment of Compliance with Design Criteria for Shafts and Ramps
4.4	Assessment of Compliance with Design Criteria for the Underground Facility
5.2	Assessment of Compliance with the Design Criteria for the Waste Package and its Components
5.3	Assessment of Compliance with the Design Criteria for the Underground Facility