COMPLIANCE DETERMINATION STRATEGY

RRT 2.7 NUCLEAR MATERIAL CONTROL

APPLICABLE REGULATORY REQUIREMENTS:

10 CFR 60.21(c)(10)
10 CFR 60.31(a)

TYPES OF REVIEW:

Acceptance Review (Type 1)
Safety Review (Type 3)

RATIONALE FOR TYPES OF REVIEW:

Acceptance Review (Type 1) Rationale:

This regulatory requirement topic is considered to be license application-related because, as specified in the license application content requirements of 10 CFR 60.21 and Section 2.7 of regulatory guide "Format and Content for the License Application for the High-Level Waste Repository (FCRG)," it 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.

Safety Review (Type 3) Rationale:

This topic is considered to be related to radiological safety and waste retrievability, should retrieval be required, and concerns the description of the nuclear material control and accounting program to be employed at the geologic repository operations area (GROA). The nuclear material control and accounting program is intended to account for the physical inventory of wastes being disposed of at the repository. It is a regulatory requirement topic for which compliance is necessary to make a safety determination for construction authorization, as defined in 10 CFR 60.31(a) (i.e., regulatory requirements in Subparts B, E, G, H, and I). Therefore, the staff will conduct a Safety Review of the license application to determine compliance with the applicable regulatory requirements.

Although DOE is not subject to 10 CFR Part 75 (Code of Federal Regulations, Title 10, "Energy") as it is not a "person" licensed by the Commission for purposes of that part, it has independent and equivalent obligations to implement international safeguards agreements. Also, per 10 CFR 70.14(c), DOE is exempt from the requirements of 10 CFR Part 70 (Code of Federal Regulations, Title 10, "Energy") to the extent that its activities are subject to the requirements of 10 CFR Part 60. Therefore, the primary bases for the Safety Review are the regulatory requirements of 10 CFR 60.21(c)(10) and 60.31(a).

There appears to be no lack of certitude as to the methodology needed to determine or demonstrate compliance with this regulatory requirement topic. Factors considered in making this determination are based on the knowledge that technology exists for nuclear material control and accounting programs.

REVIEW STRATEGY:

Acceptance Review:

In conducting the Acceptance Review of the description of the U.S. Department of Energy's (DOE's) nuclear material control and accounting program, the reviewer should determine if the information present in the license application and its references for demonstrating compliance with the applicable regulatory requirements is complete in technical breadth and depth, as identified in the regulatory guide "Format and Content for the License Application for the High-Level Waste Repository (FCRG)." The reviewer should determine that all appropriate information necessary for the staff to review the description of the nuclear material control and accounting program is presented.

The reviewer should determine whether the information in the license application is presented in such a manner that the assumptions, data, and logic leading to a demonstration of compliance with the regulatory requirements are clear. The reviewer should also determine that controversial information and appropriate alternative interpretations and models have been acceptably described and considered.

Finally, the reviewer should determine if DOE has either resolved all NRC staff objections related 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 related 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.

Safety Review:

This regulatory requirement topic is limited to consideration of DOE's plans and procedures for inventory control and accounting of the high-level radioactive waste (HLW), which includes spent nuclear fuel and other radioactive waste forms, that may be disposed of at the geologic repository. It is not concerned with the related subjects of safeguards certification or plans intended to prevent radiological sabotage. These subjects will be, respectively, addressed in Sections 1.4 ("Certification for Safeguards") and 1.5 ("Physical Security Plan") of the license application and their attendant review plans. Normally the nuclear material control and accounting program is primarily concerned with the theft and diversion of special nuclear material, for the production of atomic weapons. As a portion of the Safety Analysis Report of the license application, however, the function of this Safety Review will be focused on only those aspects of the nuclear material control and accounting program that have a safety significance. Accordingly, the Safety Review is not concerned with those aspects of the program associated with common defense and security, but will assess the adequacy of the DOE's program regarding the physical location of each type of HLW for the entire operational period, which may include retrieval.

In conducting the Safety Review, the reviewer should determine if the information presented in the license application and its references is an acceptable demonstration of compliance with the applicable regulatory requirements. At a minimum, the reviewer should assess the adequacy of data and information presented in the license application to support DOE's demonstration of compliance with the applicable regulatory requirements. The specific aspects of the license application on which the reviewer will focus are discussed below and the Acceptance Criteria are identified in Section 3.0 of this review plan.

In general, the reviewer will assess the adequacy of DOE's plans and procedures of control and accounting of the physical inventory of HLW to be disposed of at the geologic repository. The information in the license application should provide reasonable assurance that the physical inventory of HLW[1] can be received, handled, and stored in a manner that permits accountability and thereby assures public health and safety. Specifically, the scope of this review plan should include:

(1) recordkeeping showing the receipt, inventory (including location), disposal, acquisition, and transfer of all HLW that is stored or emplaced;

(2) records of the shipper, the estimated quantity of radioactive material per item, item identification and seal numbers, storage location, emplacement location, and removal from the site, if necessary;

(3) periodic physical inventory of the HLW on site;

(4) written material control and accounting procedures that are sufficient to enable DOE to account for the HLW on site and assure that unauthorized changes in the records will not occur;

(5) records associated with material control are kept in duplicate and in sufficiently separate locations, so that a single event would not destroy both the original and duplicate sets of records;

(6) retention of records associated with material control and inventory after license termination;

(7) material status, nuclear material transfer, and physical inventory reports; and

(8) any other details specified in Section 2.7 of the FCRG.

In order to conduct an effective review, reviewers will rely on staff expertise and independently acquired knowledge, and information in addition to that provided by DOE in its license application. For example, the reviewer should have knowledge and experience in the area of nuclear material control and accounting practices at comparable nuclear facilities. Accordingly, the reviewer should be able to identify those variables that may significantly influence the program at the geologic repository operations area (GROA). It is incumbent upon the reviewer to have acquired a body of knowledge regarding these and other critical considerations in anticipation of conducting the review to assure that DOE's nuclear material control and accounting program is sufficient in scope and depth to provide the information to resolve these concerns.

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[1] It should be noted that the accounting procedures described in this section of the license application will be applied to the physical inventory of HLW described in Section 2.5 ("Radioactive Material Description") of the license application.

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Date of Analyses: May 20, 1993

APPLICABLE REGULATORY REQUIREMENTS FOR EACH REVIEW TYPE:

Type 1:

10 CFR 60.21(c)(10)
10 CFR 60.31(a)

Type 3:

10 CFR 60.31(a)

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 in effect.]

Code of Federal Regulations, "Domestic Licensing of Special Nuclear Material," Part 70, Chapter I, Title 10, "Energy."

Code of Federal Regulations, "Safeguards on Nuclear Material -- Implementation of US/IAEA Agreement," Part 75, Chapter I, Title 10, "Energy."