MEMO LINEHAN

OCT 2 0 1989

MEMORANDUM TO: John J. Linehan, Director
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management

FROM: Joseph O. Bunting, Chief
Engineering Branch
Division of High-Level Waste Management

SUBJECT: REVIEW OF DRAFT FORMAT AND CONTENT REGULATORY GUIDE (FCRG)

As requested by your October 13, 1989 note, the Engineering Branch has reviewed the draft FCRG. We feel that the draft FCRG has been developed according to the guidance given by yourself and your staff, however, we can not concur or approve this guide as written for the purpose of publication as a draft of the final guide.

As discussed in the August 31, 1989 meeting, the level of detail of the draft FCRG is not commensurate with the technical complexity of some specific safety issues. In order to receive from DOE a "high quality application," one that contains the information needed by the staff to complete a review without numerous requests for additional information, a sufficient level of detail must be provided in the FCRG. Additionally, the level of detail as outlined in the current draft FCRG would not readily allow the NRC to make a determination as to whether the license application is reasonably complete. Merely requesting DOE to describe systems, facilities, and interfaces will not result in the NRC receiving a "high quality license application" to review.

Additionally, we feel Appendix A, the FCRG Regulations Crosswalk, is incomplete. For example, 10 CFR 60.131(a), Radiological Protection, is crosswalked to FCRG Sections 3.2.1 and 3.2.2 (assessment of compliance for surface facilities and shafts/ramps) and 2.3.5 (integrated natural system effectivenss in meeting performance objectives). 10 CFR 60.131(a) states that the GROA shall be designed to maintain radiation doses, levels, and concentrations within specific limits. We believe this section of the regulation should be crosswalked with FCRG Sections 3.1.1.1 Waste Handling System. 3.1.1.2 On-Site Radioactive Waste Treatment System, 3.1.1.9 Ventilation System, 3.1.1.3 Ventilation System (underground), 3.1.3.4 Waste Emplacement System, 3.1.3.5 Waste Retrieval System, and other systems which would have a role in radiological protection. It appears the crosswalk has, in many cases, only referenced the performance assessment section of the FCRG. We believe the crosswalk should encompass any section of the FCRG which is applicable to the regulation.

The CNWRA is currently using a process that will culminate in the development of the License Application Review Plan (LARP) and information to be included in the FCRG. The Center is developing the Program Architecture consisting of Elements of Proof (EOPs) and Technical Review Components (TRCs) to which DOE

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must demonstrate compliance. There appears to have been insufficient coordination between the NRC and the Center in the development of the Regulatory Crosswalk which is evident by the missing cross-references.

In summary, we believe that the current draft FCRG is acceptable for publication as a draft interim guide, with the clear indication that future revisions will address issues to the level of detail needed by the NRC to obtain data required to perform a comprehensive and timely review of the license application. Enclosed is a sample of the level of detail the Engineering Branch envisions the final FCRG will contain. The sample addresses the fire detetion and protection section and was developed by extracting applicable portions of text from other FCRGs and by addressing issues specific to a high-level waste repository. The FCRG would still be separated into two sections - description and compliance. The description section will encompass a general description of the system, facility, or interface. It will outline information to be provided by DOE. The compliance section will include the information to be provided by DOE to prove the EOPs have been met (TRCs). The added level of effort by the staff to address the issues in more detail will in the long run save time and effort in the review process. In our view, such detail is absolutely required as a prerequisite to receiving a "high quality application," and necessary if the NRC is to meet the three year statutory time period for a licensing decision.

/s/ Bunting

Joseph O. Bunting, Chief
Engineering Branch
Division of High-Level Waste Management

Enclosure: As stated

cc: R. E. Browning
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3.1.1
(3) Fire Detection and Protection

Description

Provide a general description of the fire protection system, including the physical characteristics of the installation location and outlining the fire prevention and suppression systems to be installed in all parts of the geologic repository operations area associated with structures, systems, and components important to safety. This should include a description of the auxiliary fire protection capability, the portable equipment capability, and the personnel protective equipment. Describe the function and operation of the fire protection system.

Compliance

Describe the design of the fire protection system. Areas to be addressed include: the facility's structural design features (fire barriers), the design features of the detection systems, alarm systems, automatic fire suppression system, and the manual, chemical, and gas systems for fire detection, confinement, control, and extinguishing.

Identify the fires that could indirectly or directly affect structures, systems, or components that are important to safety. Describe and discuss those fires that provide the bases for the design of the fire protection system. The most severe fire should be postulated for each area of the geologic repository operations area which contains structures, systems, or components important to safety.

Discuss the basic requirements used for the design of the fire water supply and distribution systems.

Provide engineering drawings and plans and a list of equipment and devices that adequately define the principal and auxiliary fire protection systems and contain a sufficient level of detail. Noncombustible and fire-resistant material used in construction should also be discussed.

List the codes and standards used for the design and construction of the facility and fire protection systems, including published standards of the National Fire Protection Association.

Discuss the relationship of the fire protection system to the normal and emergency power supply.

Provide an estimate of the presence and amount of the dangerous and hazardous combustibles at the geologic repository operations area. Discuss storage of the combustibles.

Discuss fire characteristics, such as maximum fire intensity, flame spreading, smoke generation, production of toxic contaminants, and the contribution of fuel to the fire for all individual installation areas that have combustible materials and are associated with structures, systems, and components that are important to safety.
Discuss smoke, heat, and flame control, combustible and explosive gas control, and toxic contaminant control (including the interaction with the ventilation and exhaust systems) during fire extinguishing and control.

Describe electrical cable fire protection and detection and the fire confinement, control, and extinguishing systems provided. Describe the provisions made for protection of essential electrical circuitry from the effects of fire-suppressing agents.

Discuss the installation, testing, and inspection planned during construction of the fire protection systems to demonstrate the integrity of the systems as installed. Describe the test and inspection program to be used to determine performance capabiltiy. The discussion should include planned tests and inspections, test and inspection frequency, test and inspection methods, acceptance criteria, and action to be taken if the acceptability criteria are not met.

Describe the instrumentation used to monitor and actuate systems in the geologic repository operations area. If different types of actuation systems are used, provide a discussion. Design details and logic should also be discussed.

Provide the compliance demonstration procedures (safety evaluation) for the fire protection system design, including margins of safety. The discussion should include an evaluation of the design bases fires, consider the quantities of combustible materials present, the installation design, and the fire protection systems. Provide a failure mode and eifects analysis to demonstrate that operation of the fire protection system would not produce an unsafe condition. Include an analysis of the fire detection and protection system with regard to design features to withstand the effects of single failures. Include an analysis which addresses the operability of the system in response to natural phenomena such as tornadoes, earthquakes, fires, explosions.