August 17, 2005

MEMORANDUM TO: ACNW Members

FROM: Michael L. Scott, Chief */RA/*
Technical Support Branch
ACRS/ACNW

SUBJECT: TRIP REPORT FOR JULY 20, 2005 DOE/NRC TECHNICAL EXCHANGE ON INFORMATION TO SUPPORT 10 CFR PART 63 ANALYSES, IN LAS VEGAS, NEVADA

On July 20, 2005, Leah Spradley, Intern for the ACNW, and I attended an NRC/DOE technical exchange in Las Vegas, Nevada on the subject of information needed in DOE's potential Yucca Mountain license application (LA) to support 10 CFR Part 63 analyses.

During this meeting, the NRC and DOE attendees discussed NRC expectations and DOE plans for LA design content, aspects of preclosure safety analysis (PCSA), DOE's functional discipline design process, and availability of information to support and be included in the LA.

ABSTRACT

The NRC staff emphasized that they expect to get, "up front" at LA submittal, all the design information needed to support both the construction authorization and the license to receive and possess radioactive materials. The NRC staff also stated that DOE should have a goal of no requests for additional information (RAIs) after LA submittal. The discussion made clear that, while DOE is developing additional design information to address the NRC's expectations, differences in the NRC's expectations and DOE's plans may still exist. Additional meetings are planned to discuss design details to identify such differences.

NMSS PRESENTATION

Tim Kobetz, Mahendra Shah, and Robert K. Johnson from NMSS presented the staff's perspective on information needed to support safety decisions for 10 CFR 63 Analysis. The presentation summarized past interactions on LA content and the applicable regulatory framework. The presenters also covered examples of analyses of aircraft crash hazards, transport trolleys, and the spent fuel transfer machine to illustrate the general level of detail that is expected. It was emphasized that design and operation requirements alone may not be enough to demonstrate ability of systems, structures, and components (SSCs) to perform their intended safety functions.

DOE PRESENTATIONS

Joe Ziegler, DOE Director, Office of License Application and Strategy, made opening remarks. He discussed the layout of and development process for the LA. He stated that the LA is as complete as possible in light of information "reasonably available" at time of docketing. He stressed that DOE plans to use consensus industry standards as a major source of design requirements for SSCs important to safety and to waste isolation. He concluded his talk with a discussion of proposed dates (months) for future DOE/NRC technical exchanges on preclosure issues.

Richard L. Craun, DOE Office of Repository Development, presented an overview of the functional discipline design process. This presentation stated that the LA will contain sufficient information to demonstrate the ability of SSCs to perform their intended safety and functions in accordance with 10 CFR 63.112. At the time of LA submittal, information will be available to demonstrate each structure's and system's ability to perform its intended safety functions by using either or a combination of standard engineering practices (codes and standards) and/or additional analyses. The additional analyses include analytical techniques as well as scoping, bounding, similarity, or detailed analyses. The discussion on level of detail included "lumped mass" vs. "finite element" analyses, as well as DOE's potential use of "not reasonably available" in 10 CFR 63.21(a) to limit level of detail provided in the LA.

The DOE asked whether reliability of passive components designed to a consensus standard must be considered, to which the NRC staff responded in the affirmative. DOE stated that it proposes that the following principle be accepted: committing to designing, procuring, and constructing to code will be sufficient to show design requirements will be met. They added that this practice is precedented in NRC reactor licensing experience. The NRC staff responded that there is no precedent in Part 63 licensing space. They added that the staff would not say generically that applying a code or standard will by itself provide reliability.

DOE noted that they do not plan failure modes and effects analyses for non-Category I equipment. For equipment such as trolleys, the LA will describe functions and features, but not subcomponents. Component reliability will be discussed, but not subcomponent reliability. Also, DOE believes that some passive systems (e.g., walls) do not have a critical failure mechanism. The NRC staff responded that the waste package is an example of a passive system for which reliability analysis is performed.

DOE also stated that it plans to avail itself of 10 CFR 63.102(f), which allows credit for probabilities other than 1 in 1000. The staff responded that this rule applies to initiating events, not reliability. They again emphasized that all safety information needed for the staff to make a safety decision must be provided "up front" in the LA.

Richard J. Tosetti of DOE's Yucca Mountain Management and Operating Contractor (M&O) presented additional details on the functional discipline design process. This presentation gave examples of standard equipment and non-standard equipment. Examples of standard equipment are piping and duct supports. For these types of equipment, DOE stated that the combination of consensus codes and standards, historical data, design precedent, and proven technology and methods would ensure adequate analysis and design. Examples of non-standard equipment are cranes, trolleys, the spent nuclear fuel handling machine, and the waste package tilting machine. For these types of equipment, additional bounding, scoping, similarity analyses, gap analysis, etc. would ensure adequate analysis and design.

Donald A. Beckman, M&O Manager of Licensing and Nuclear Safety, presented the topic of availability of information. This presentation reviewed the two general methods of proving a component's safety: the use of standards and codes alone and the use of some level of specific bounding analyses in addition to standards and codes. Codes and standards will be applied for standard equipment, and additional analyses will be performed for non-standard equipment. Gap analyses are applied to areas that are not directly covered by a code or standard for which more specific information is necessary. He stated that, to date, only 10 components have been identified to need supplemental design requirements. These requirements are documented in the project's design development plans. This presentation covered examples of two hazards: seismic and load drop. These examples were given to illustrate the adequacy of both codes and standards and additional analyses to support the LA.

When asked how they plan to address human reliability in the LA, DOE responded that they would determine the answer to the question and respond to the NRC.

There was also a discussion regarding supporting document availability. DOE stated that not all supporting documents for the LA will be on the docket, but all will be available for the staff's inspection.

The NRC staff said that the recent DOE reports on heating, ventilation, and air conditioning (HVAC) "appear to be going in the right direction."

The staff asked why, if lumped mass analysis is adequate to demonstrate safety as asserted by DOE, the DOE would choose to do a lumped mass analysis for LA and a finite-element analysis later. DOE responded that the finite-element analysis is needed to support detailed design. If such analyses reveal the need to change the description in the LA, DOE stated it would notify the NRC of proposed changes.

Steve Frishman, State of Nevada, expressed concern over availability of a recent DOE report describing the handling of fuel in air. DOE took an action item to make the report available to the public.

After caucusing at the conclusion of the meeting, the staff said that DOE's goal should be no RAIs. They concluded by acknowledging that DOE has made significant progress in the area of design sufficiency in the last six months, though they believe there is still a "delta." DOE responded that it would attempt to minimize RAIs, but they were clearly skeptical of the chances of having none. The staff emphasized that the NRC will ultimately decide what is "reasonably available" at the LA stage.

The staff noted that it plans to meet with DOE in fall or winter to discuss the staff's licensing process leading to decision on issuance of construction authorization. The staff also stated that there needs to be a better system for technical exchanges, including defining objectives for the meetings.

COMMENTS

There was much discussion on reference to "consensus codes and standards." DOE would like to limit the LA level of detail on design to a commitment to such standards where they are available. The staff clearly expects more than codes and standards for proving the reliability of some of the standard components.

Based on observation of this exchange, it is apparent that DOE has had to make significant adjustments to their plans for LA design detail to address the staff's expectations. It is likely that a concentrated DOE effort in the area of preclosure design will be ongoing, informed by this meeting and others likely to occur in the near future that will discuss details of DOE's plans for particular design features.

The ACNW staff will continue to follow preclosure design discussions to support the Committee's potential review of the subject.

Attachments:

1. 10 CFR Part 63
2. DOE/NRC Technical Exchange on Information to Support 10 CFR Part 63 Analyses

There was also a discussion regarding supporting document availability. DOE stated that not all supporting documents for the LA will be on the docket, but all will be available for the staff's inspection.

The NRC staff said that the recent DOE reports on heating, ventilation, and air conditioning (HVAC) "appear to be going in the right direction."

The staff asked why, if lumped mass analysis is adequate to demonstrate safety as asserted by DOE, the DOE would choose to do a lumped mass analysis for LA and a finite-element analysis later. DOE responded that the finite-element analysis is needed to support detailed design. If such analyses reveal the need to change the description in the LA, DOE stated it would notify the NRC of proposed changes.

Steve Frishman, State of Nevada, expressed concern over availability of a recent DOE report describing the handling of fuel in air. DOE took an action item to make the report available to the public.

After caucusing at the conclusion of the meeting, the staff said that DOE's goal should be no RAIs. They concluded by acknowledging that DOE has made significant progress in the area of design sufficiency in the last six months, though they believe there is still a "delta." DOE responded that it would attempt to minimize RAIs, but they were clearly skeptical of the chances of having none. The staff emphasized that the NRC will ultimately decide what is "reasonably available" at the LA stage.

The staff noted that it plans to meet with DOE in fall or winter to discuss the staff's licensing process leading to decision on issuance of construction authorization. The staff also stated that there needs to be a better system for technical exchanges, including defining objectives for the meetings.

COMMENTS

There was much discussion on reference to "consensus codes and standards." DOE would like to limit the LA level of detail on design to a commitment to such standards where they are available. The staff clearly expects more than codes and standards for proving the reliability of some of the standard components.

Based on observation of this exchange, it is apparent that DOE has had to make significant adjustments to their plans for LA design detail to address the staff's expectations. It is likely that a concentrated DOE effort in the area of preclosure design will be ongoing, informed by this meeting and others likely to occur in the near future that will discuss details of DOE's plans for particular design features.

The ACNW staff will continue to follow preclosure design discussions to support the Committee's potential review of the subject.

Attachments:

1. 10 CFR Part 63
2. DOE/NRC Technical Exchange on Information to Support 10 CFR Part 63 Analyses

DOCUMENT NAME: E:\Filenet\ML052640497.wpd

OFFICE	ACNW/ACRS	ACNW/ACRS
NAME	MScott	JLarkins
DATE	8/15 /05	8/17/05

OFFICIAL RECORD COPY