

**SUMMARY OF THE  
U.S. NUCLEAR REGULATORY COMMISSION / U.S. DEPARTMENT OF ENERGY  
QUARTERLY MANAGEMENT MEETING  
LAS VEGAS, NEVADA  
December 19, 2007**

**Introduction**

The U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) held a public Quarterly Management Meeting (QMM) on December 19, 2007, to discuss the overall progress of the Yucca Mountain Project (YMP) at the proposed geologic repository site at Yucca Mountain, Nevada. The meeting was held at the NRC's Atomic Safety and Licensing Board hearing facility in Las Vegas, Nevada, with video and audio connections to the Center for Nuclear Waste Regulatory Analyses (CNWRA) in San Antonio, Texas, and the NRC Headquarters in Rockville, Maryland. Others in attendance included Nuclear Energy Institute (NEI), State of Nevada, Nye County, Clark County, and members of the public. Teleconference connections were also made available to interested stakeholders.

**NRC Program Update**

NRC opened by focusing on 3 major topics: (1) NRC's readiness for review of the license application, (2) plans for involving the public in the review process, and (3) completing preparations for the licensing review process. NRC stated that it would be ready to commence its review of the application by April 2008. NRC reminded everyone that the agency's strategic goals are safety and security. With that in mind, the NRC is finalizing its review procedures and criteria, interaction protocols, review tools and models, and staffing.

It is the NRC's intent to enhance communications with the public, other Federal partners, State, local, and tribal governments, international stakeholders, non-governmental organizations, the media, and the Congress. NRC will host public meetings prior to and following submission of the license application, including workshops to assist stakeholders. The staff is exploring what can be done to make some public meetings accessible via webstreaming. Recommendations to the Commission are due back in time for the development of budget for fiscal year 2010, including adjustments to the fiscal year 2009 budget.

Two weeks earlier, the hearing facility was used for the Pre-license Application Presiding Officer Board to hear oral arguments on Nevada's motion to strike DOE's certification of the Licensing Support Network. The NRC's Office of Public Affairs made arrangements with the local Cox channel to broadcast and webstream this hearing. This represents another step in enhancement of public involvement in NRC's regulatory process.

Finally, the NRC is finalizing its plans and schedules for remaining meetings and technical exchanges with DOE. This Quarterly Management Meeting and one planned for March 2008 represent the final opportunities to meet before the license application is tendered.

### **DOE Program Update**

DOE opened by stating that progress has been made on the technical adequacy and nuclear safety culture of the project as demonstrated by two independent assessments discussed in detail later in the meeting. The DOE certification of the Licensing Support Network (LSN) on October 19, 2007, was upheld by the Pre-License Application Presiding Officer (PAPO) Board. Lessons learned from the previous LSN certification were used to ensure that the current certification was performed in compliance with the regulations. DOE also reached a milestone for engineering design by completing the design required to support a high quality License Application (LA) on December 1, 2007. As outlined in 10 CFR Part 63, the repository design is risk informed and performance based, so that the Preclosure Safety Analysis (PCSA) feeds back into the engineering design as part of the iterative process.

A Draft Repository Supplemental Environmental Impact Statement (SEIS), a Draft Nevada Rail Corridor SEIS, and a Draft Rail Alignment Environmental Impact Statement (EIS), were released and a series of meetings were held to allow for public comments. The public comment period ends in January 2008 and the responses to the public comments will be finalized by the end of May 2008.

Currently the LA is on schedule to meet the June 30, 2008, submission date. However, the recent budget reductions may affect this schedule in one of the following ways:

- The LA may be submitted on or before June 30, 2008, as originally intended,
- The LA submittal may be delayed until the end of Fiscal Year (FY) 2008 and possibly until FY 2009, or
- The LA submittal may be indefinitely delayed.

DOE is currently assessing the impact of the reduced budget on the LA submittal date.

Two independent assessments on Engineering and Quality Assurance (QA), mentioned previously, were released and submitted to the NRC on Thursday, December 12, 2007. The assessment teams reviewed the historical problems on the Yucca Mountain Project (YMP) and compared them to present operations at YMP and in the nuclear industry, with generally favorable results. The results are publicly available.

DOE noted that the final Environmental Protection Agency (EPA) Standard, 40 CFR Part 197, has not yet been promulgated, and DOE is not in a position to project when the standard will be finalized. Also, DOE is required to report to Congress by 2010 on the need for a second repository. Because the seventy thousand metric ton limit for the Yucca Mountain repository is

projected to be met in early 2010, some alternative is required. This report is scheduled to be delivered in the middle of 2008.

DOE then introduced William Boyle as the newly appointed Director for the Regulatory Authority Office, and thanked April Gil for her dedicated service as acting director.

### **Level of Design Detail at License Application**

DOE delivered a presentation which summarized the extent of the repository design, which will be completed to support the License Application. This presentation explained how the planned level of engineering design will be fully sufficient to support the Preclosure Safety Analysis (PCSA), and meets the requirements of 10 CFR Part 63. To illustrate that the planned level of engineering design is adequate, examples were provided that showed the specific engineering design required to adequately perform a PCSA and to contrast this with the more detailed level of design that will be required to construct the repository. Thus, according to DOE, the level of design which will be described in the LA will be 100 percent of what is needed to support the PCSA and to satisfy the relevant provisions of 10 CFR Part 63.

Specifically, DOE indicated that the LA will meet the requirements of 10 CFR 63.21, and also be responsive to the regulatory guidance in NUREG-1804. DOE added that the level of design contained in the LA will demonstrate compliance for the preclosure safety analysis (10 CFR 63.112), performance assessment (10 CFR 63.114), multiple barriers (10 CFR 63.115), and provide reasonable assurance for performance objectives for the Geologic Repository Operations Area (GROA) through the preclosure and postclosure periods (10 CFR 63.111 and 63.113, respectively). DOE further explained that this level of detail will also be in accordance with the NRC's Interim Staff Guidance, HLWRS-ISG-02 *Preclosure Safety Analysis – Level of Information and Reliability Estimation*, in which Structures, Systems, and Components (SSCs) that are Important to Safety (ITS) will have greater design detail than non-ITS SSCs. DOE then identified the facilities that are ITS, and also gave examples of non-ITS facilities. For non-ITS facilities, DOE explained that the level of design detail in the LA will be sufficient for PCSA to analyze hazards and calculate dose assessments from normal operations and event sequences.

NRC asked if event sequence controls will be stated or demonstrated in the LA. DOE responded that the controls for event sequences will be demonstrated in the LA and details of the event sequences, such as the fault trees, will be contained in LA reference documents. DOE added that appropriate general reference documents will be submitted on the docket with the LA.

The NRC asked if a license amendment will be required, after Construction Authorization, due to changes in vendor supplied equipment, such as the Transportation, Aging, and Disposal (TAD) canister or the Transport and Emplacement Vehicle (TEV). DOE responded that because the equipment specifications are based on the requirements imposed by the PCSA and the vendor will be required to build the equipment in accordance with the specification, license amendments

are not expected due to equipment changes. For those situations, after Construction Authorization, where the vendor is unable to meet the specifications, the 10 CFR 63.44 process will be used to determine if NRC approval and the associated Safety Analysis Report (SAR) change is required. DOE noted that the personnel involved with developing equipment specifications have fabrication and operational experience, and the NRC indicated that this was a constructive step. DOE further noted that the PCSA accounts for any uncertainties in the engineering design by use of conservative assumptions. NRC cautioned that being too conservative can adversely affect the NRC review of the SAR by requiring DOE to change the analysis because of subsequent determinations that the design does not fulfill the PCSA requirements. They noted that this situation is occurring at the Louisiana Energy Service (LES) enrichment facility.

### **Quality Assurance Management Assessment**

DOE presented the results of the Quality Assurance Management Assessment (QAMA) review that was commissioned by the Director of the Office of Civilian Radioactive Waste Management (OCRWM) and was conducted between May and September 2007. DOE described the experience of the team members and stated that the scope of the assessment was to analyze the technical adequacy and timeliness of the LA, the effectiveness of the Corrective Action Program (CAP) and Self-Assessments, the effectiveness and compliance with training and personnel qualifications, and management issues that affect quality. The assessment team noted many significant improvements and successes pertaining to the YMP Quality Assurance (QA) management and implementation of the QA program.

The QAMA team is confident that OCRWM will submit a comprehensive and technically adequate LA on time. They determined that the YMP CAP has yielded clear improvement over time and is a maturing program that is achieving the intended effect of identifying, tracking, and correcting conditions adverse to quality. In addition, the team recommended additional refinements for the CAP program. The QAMA team found that line management has not effectively utilized the self-assessment process or satisfied commitments to improve self-assessment performance, and added that there is no evidence that any significant progress has been made to address this issue. The team reported that the training programs on the YMP are comprehensive and well administered, but noted that OCRWM has self-identified challenges in the overall training and qualification programs as compared to the commercial nuclear industry. It was noted that DOE currently relies on Bechtel SAIC Company, LLC (BSC) as the Design Authority; however, this will change as DOE gradually assumes the responsibilities of the Design Authority. This is clearly in accord with the successful model used by the Architect Engineer/Nuclear Utility until the utility acquires the necessary resources to act as a Design Authority. The example of Bechtel/Peach Bottom for design of that nuclear facility was offered by DOE as an illustration of that successful model.

The QAMA team stated that the OCRWM Director has provided strong leadership with a focus on nuclear quality, and that the Office of Quality Assurance (OQA) has improved the overall QA performance, but these improvements have not yet been well communicated.

DOE stated that the issues identified in the QAMA report will be resolved through the CAP with the Principal Deputy Director being assigned the responsibility to ensure that the corrective actions that address these issues are effectively implemented. DOE added that OQA will conduct an independent assessment of the effectiveness of the corrective actions. DOE concluded by stating that the QAMA team's overall conclusion is that the YMP QA management is effective and the YMP organization is developing a technically sound and compliant LA. Because the YMP organization has had a history of QA effectiveness issues, continued improvement is warranted.

NRC asked if the YMP organization is already in place to produce a quality LA or if the recommendations made by the QAMA team are needed to be able to produce a quality LA. DOE responded that the YMP organization already in place is adequate to produce a quality LA, and that the QAMA recommendations are viewed as additional improvements.

The NRC asked if DOE was considering the appointment of a senior nuclear manager. DOE responded that this recommendation was under consideration. YMP is new ground for DOE with respect to being an NRC licensee.

NRC asked DOE to clarify the statement that the department is unfamiliar with the role of an NRC licensee. DOE stated that, traditionally, the department self-regulates their nuclear operations, and that becoming an NRC licensee under an independent regulatory agency is new territory to the DOE organization. Therefore, for the YMP, DOE needs to establish a regulated nuclear culture, as compared to the nuclear industry, and can help achieve this culture by observing industry operations in well run nuclear plants. As an initiative to help achieve this goal, DOE is sending selected staff members to high-performing commercial nuclear sites to observe and interact with experienced, capable personnel. Their first hand observations will assist in fostering a culture of continuous improvement, self-identification, and accountability of DOE's performance as an NRC licensee. The NRC acknowledged the value of this initiative.

NRC asked DOE if the QAMA report's observation that DOE's training and qualification programs are not as yet matured would impact the quality of the LA. DOE stated that the Design Authority (BSC) and the Lead Laboratory have training and qualification programs and processes that are currently in compliance with regulations. In addition, DOE has a strategic plan to achieve the needed training and qualification programs of an NRC licensee which will enable DOE to ultimately assume the responsibilities of the Design Authority.

## **DOE/NRC Licensing Management Process**

DOE opened the presentation by summarizing the recent interactions between DOE and NRC. The Drift Degradation and Seismic Consequence Appendix 7 meeting involved discussions on the analyses contained in the Drift Degradation Analysis Model Report (AMR), which clarified NRC's questions about DOE's approach to these issues. Other interactions were on Security and Safeguards, and criticality relating to the Naval Nuclear Propulsion Program (NNPP) fuel. These interactions were closed to the public due to the security issues involved. DOE added that eight public hearings were conducted to facilitate public participation and comments on the recently released environmental impact statements. DOE then reviewed proposed future NRC/DOE interactions to be held prior to submittal of the LA.

NRC asked if expected budget reductions would put any constraints on future interactions. DOE responded that presently scheduled interactions should be conducted as planned, and if funding does present a challenge, then DOE and NRC would respond accordingly. NRC and DOE agreed that in order to minimize costs due to travel and because the project's technical expertise is largely located in Las Vegas, it may be advantageous to hold interactions locally.

## **Independent Assessment of Engineering Process**

DOE stated that an independent review of engineering processes and procedures was conducted by Longenecker and Associates. The assessment team had significant experience in the nuclear power industry as well as in transportation and storage cask design and fabrication. The team found that engineering processes and procedures are sufficient and adequate to support a quality LA. The assessment noted that the engineering personnel are well trained in engineering procedures and are effectively adhering to them. The team identified opportunities for improvement, such as providing timely resolution to issues and improving integration across organizations. As a result of the assessment, 14 Condition Reports (CRs) were issued to formalize resolution of these opportunities for improvement. DOE concluded by stating that they will need to have better engineering capability when they become a licensee and therefore, they are working towards enhancing the capabilities of the DOE design organization.

## **Quality Assurance Program**

DOE stated that the independent review of the QA Program was commissioned by the Director of OCRWM. It was conducted contemporaneously with the QAMA and consisted of document reviews and observations. The scope of the assessment focused on programmatic elements, such as consistency of the QA Program related to the nuclear industry and implementation of QA requirements. The team found that the QA program implementation is consistent with the nuclear industry and that data analyses are transparent, traceable and well documented. However, they found that since there are three separate QA programs and four QA policy

documents, the process is complex. The team also noted that QA tends to assume the responsibility for quality products that normally is assigned to line management in the commercial nuclear industry. The team recommended that the process could be streamlined and that the nuclear industry standard NQA-1 (*Quality Assurance Program Requirements for Nuclear Facilities*, American Society of Mechanical Engineers) would be beneficial, if adopted. The question of the timing of applicability of 10 CFR Part 21 to YMP has been evaluated by DOE to assure compliance will be achieved when required. DOE stated the Quality Assurance Requirements Document (QARD), Revision 20, will integrate the three separate QA Programs and also adopt the ASME NQA-1 standard.

NRC asked DOE to clarify the difference between the QAMA and the QA assessment. DOE stated that the QAMA was an assessment on QA management, while the QA assessment focused on the flow down of project requirements.

### **Status of NRC On-site Representative (OR) Open Items**

DOE stated that the closure packages for OR-OI-06-04 and OR-OI-06-10 were delivered on December 19, 2007. NRC stated that the next OR Quarterly Report will be issued in January 2008. NRC management requested the On-Site Representative to determine if this report will address the closure of OR-OI-06-04 and OR-OI-06-10.

### **Action Item Status**

No new action items were identified. DOE committed to send the Key Technical Issues (KTI) crosswalk with the LA and Action Item MM 0709-01 was closed. The status of the remaining action items is provided in the table attached to these minutes.

### **Public Comments**

The representative from Clark County (Irene Navis) thanked the NRC and DOE for focusing on QA and asked the NRC and DOE to have future interactions in Las Vegas, Nevada. Ms. Navis also requested that the issues raised in the Nuclear Waste Technical Review Board's (NWTRB) recent report on infiltration be discussed in the NRC/DOE Technical Exchange on Infiltration. Mrs. Judy Treichel asked the NRC to confirm the dates of future interactions. The dates were confirmed with Ms. Treichel.

### **Closing Remarks**

NRC thanked DOE and stated that the meeting was very productive and that the presentations were very informative. NRC stated that providing the LA reference material with the LA is a major step forward, and that the use of 10 CFR Part 63 to govern the preparation of the LA is appropriate. NRC noted the positive progress indicated in the assessments of the QA program

and engineering and added that self-initiating independent assessments is a constructive element of preparing to be a licensee. NRC also noted that including staff with operational experience in the design effort is a positive step. NRC acknowledged that progress is being made in producing a quality LA and welcomed DOE continued progress in this area. NRC stated that future meetings would generally be held in Las Vegas.

DOE agreed that the meeting had been very productive and stated that significant progress has been made in the last year. The LA is currently on schedule for the June 30, 2008, submittal to the NRC; however, because of budget reductions the schedule may be challenged. DOE is confident in the design detail in the LA and stated that the program is improving, and this improvement is recognized by independent assessments. The DOE Director concluded by stating he is confident that the culture of continuous improvement will carry on even after he leaves his position because of organizational and management changes that are being institutionalized. This conclusion is based on his confidence in his senior managers and the management structure.

NRC closed the meeting by expressing its appreciation for DOE's presentations. NRC will be prepared to review the LA and is assessing how to maximize public involvement.

 Date: 23 June 2008

Lawrence E. Kokajko, Director  
Div. of High Level Waste Repository Safety  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission

 Date: 1/16/08

William J. Boyle, Director  
Regulatory Authority Office  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy