Enclosure 1-A

Minutes of the March 8, 2000, DOE/NRC Technical Exchange on Classification Analysis and Graded QA

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Rockville MD - 3/8/2000

Staff from the U.S. Department of Energy (DOE) and the U.S. Nuclear Regulatory Commission (NRC) held a technical exchange on March 8, 2000 in the NRC offices at White Flint. (See Attachment-1 for a copy of the Agenda and Attachment-2 for the list of Attendees.) The purpose of the meeting was to explain the basis for the Quality Assurance (QA) Classification Process and Grading Program being proposed by the DOE. The DOE presentation topics were: (1) Previous Meeting Summary - Historic Perspective (Paul Harrington - DOE), (2) Risk-Informed Classification Process, (Don Beckman - Management & Operating Contractor (M&O)) (3) Hazards Analysis and Accident Sequence Development (Ken Ashe - M&O), (4) Design Basis Events (Ken Ashe - M&O), (5) QA Strategy for Site Characterization (Don Beckman - M&O), and (6) Quality Assurance Requirements Document (QARD) Concerns on Classification (Ram Murthy - DOE). (See Attachment-3 for a set of briefing charts used during the meeting.) The main focus of the meeting was on the Risk-Informed Classification Process presentation and considerable progress was made in gaining mutual understanding of the classification process and the graded QA approach being proposed by the DOE. As agreed upon in the closing statements, the presentations made the Classification process transparent and the NRC gained confidence that all applicable criteria from the 18 Appendix-B criteria will be applied to each Quality Level.

Specific items discussed during the meeting were:

1) As a result of the discussions during the meeting, the DOE agreed to review the procedure controlling the classification process for Structures, Systems, and Components (SSCs) Important to Safety and Engineered and Natural Barriers Important to Waste Isolation. DOE agreed to make necessary modifications to the procedure to reflect what was presented during the Technical Exchange.

2) DOE agreed that several slides in the presentation material did not clearly agree with the verbal descriptions provided during the meeting. The specific examples are as follows:

   - Second presentation (Beckman), slide 21, the second sub-bullet of the second bullet indicated grading of design codes when in fact it should have stated selection of design codes.
   - Second presentation, slide 23, the QL-2 criteria discussion did not explicitly state that the SSC being evaluated has already gone through the determination that it is not QL-1. This appeared to allow SSCs to be classified as QL-2 yet still have an impact on QL-1 systems. In the verbal discussions it was made clear that for any SSC to be classified QL-2 it would have already been determined that it was not QL-1 (by either being beyond design basis $< 10^{-6}$ or the resulting dose would be less than the regulatory limits). This was also discussed in relation to QL-3 SSC versus QL-1 and QL-2 SSCs (slide 26).
   - Second presentation, slides 25 and 31, the material on the slides discussed multiple failures as potential QL-2 SSCs. This created confusion until it was

clarified that multiple failures are beyond design basis and are included only as a result of defense in depth.

Any minor discrepancies in presentation materials will be superceded by formal project documentation. It is expected that the NRC will use formal project documentation to evaluate the adequacy of the classification and grading processes and that this project documentation will form the basis for any NRC decisions. DOE also agreed that revisions to project procedures and programs would be provided to the NRC as necessary.

3) During the meeting discussions, it was not clear that items that are identified as Quality Level (QL) 2 had already gone through the procedural steps for determination that they were not QL-1. The discussion implied that QL-2 SSCs could have a direct impact on QL-1 systems. However, the discussion should have stated that the impact was not significant enough to cause the QL-1 system to fail and ultimately the dose criteria to be exceeded. DOE agreed to review the wording in the procedure to ensure clarity in the procedural steps to arrive at the appropriate classification. This will ensure that no SSC would be classified as QL-2 if it has the possibility of preventing a QL-1 system from performing its functions under a postulated credible event scenario, such that the dose criteria are exceeded.

4) NRC noted that in the DOE classification process, worker safety requirements are distinct from public safety requirements. NRC acknowledged that 10 CFR Part 20 allows higher annual doses to workers than the annual exposure permissible to the public. However, NRC expressed a concern that a generic QL-3 classification for all Part 20 activities was not adequate. Particularly, the rationale provided by DOE for classifying monitoring systems as QL-3 was weak in the absence of a convincing calculation of risk significance. In an effort to reduce the NRC's concern, the DOE pointed out that the classification procedure (QAP-2-3) determines the classification of items (e.g., system, structure, or component) based on their safety significance (i.e., the item's role in meeting safety requirements). Therefore, based on an item's safety significance, appropriate design criteria, codes & standards, and QA controls can be identified to provide reasonable assurance that there is no adverse impact to the health and safety of the public and/or workers. For items classified as QL-3, based on industry experience, it is expected that the safety focus will be on programmatic controls (e.g., radiation protection program, ALARA committees, worker training, administrative procedures) that will be present and there will be less focus on the actual SSC. In addition, the worker will be trained to recognize the radiological hazards present and to respond appropriately to alarms. The worker will also be using procedures that will require the worker to stop operations, assess the situation and take appropriate actions if an SSC identified as important to radiological worker safety is not present or operating properly. These are all industry tested and proven concepts for protecting the worker from radiological hazards. In addition, to the procedural controls discussed, it is expected that the DOE will include more restrictive administrative

limits on the workers in order to minimize the potential of exceeding the 10 CFR 20 limits. In most cases, worker exposure is the result of chronic exposures rather than one acute exposure. Therefore, as part of the facility radiation protection program, the workers will be required to verify the amount of regulatory (and administratively) allowed exposure remaining for the year, before entering an area where the worker may receive any additional dose. Regardless of the quality level, there will be an appropriate balance between SSC controls and activity controls. Classifying an item as QL-3 does not suggest the Project thinks that worker safety or monitoring systems are not important. As was discussed during the presentations, QL-3 is important to safety and the appropriate QARD criteria will be applied.

5) DOE believes that the Quality Level categorization approach proposed for the YMP is risk-informed and generally consistent with the intent of the NRC regulatory guides (RG. 1.174 and RG. 1.176). However, DOE is not committing to adopting these RGs. and NRC said that it did not expect such a commitment.

6) DOE stated that the LA design would reflect greater design details for those SSCs categorized as QL-1 and sequentially less for those categorized as QL-2 and QL-3. DOE anticipates eventually developing all necessary design details and providing details on the grading controls that will be applied.

7) NRC staff stated that it understands the DOE categorization process, but needs to further evaluate the criteria and advise DOE if it agrees with the risk measures (based on dose as indicators of risk) for the three quality levels identified by the DOE during the meeting.

8) NRC discussed its expectations that the DOE QARD would need to be revised should DOE decide to apply graded QA to design, construction, or pre-closure activities. The NRC believes a revision would need to address, at a high level, the elements of the graded QA process such as: the risk categorization process, the risk categorization levels, the graded controls applied to the different levels, provisions for corrective action and feedback, etc. DOE agreed that the QARD would be revised at a high level, after agreement is reached with the NRC.

9) NRC stated and DOE agreed that all applicable criteria from the 18 criteria of Appendix-B would need to be applied to the SSCs identified as important to safety and barriers important to waste isolation categorized under the three quality levels, namely, QL-1, QL-2 and QL-3.

10) DOE stated that the QA controls for waste isolation barriers would not, at this time, be classified into the three quality levels. Barriers would be classified as either important to waste isolation or not important to waste isolation. However, the DOE may consider further classification of waste isolation barriers at a future date and provide the necessary rationale for such classification..

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11) DOE stated it is not grading the QA controls related to the current design activities, performance assessment and site characterization. DOE has an approved process that applies to preparing and reviewing reports, developing models, and conducting analyses, regardless of the risk significance of such activities.

12) DOE stated that data used to support its safety case for SR and LA will be qualified in accordance with the QARD. Data qualified prior to June 1999, however, will be subject to the following re-verification: (a) Data related to the seven principal factors or the disruptive events in the Repository Safety Strategy (RSS) will be re-verified under the category VL-1 (higher risk significance); and (b) Data related to other RSS factors is being tagged as VL-2 (lower risk significance) and is being used "as-is" subject to continued low failure rates of VL-1 data verification efforts. VL-2 data will only be re-verified if high VL-1 failure rates are encountered as described in the Data Management Development Plan. This process has been subject to previous and ongoing evaluation by the NRC staff.

13) A clarification was presented regarding the NRC's recent acceptance of the DOE QARD, Revision 9. (See Attachment-3 for the text explaining the clarification).

14) DOE clarified its position with respect to the preclosure period. For all probability of occurrence calculations, a preclosure period of 100 years will be used. If an extension is sought for keeping the repository open for any additional period, it is expected that a request for license amendment will be made and NRC will consider all available and pertinent information before granting an extension.

15) DOE agreed to share Q-List updates, as they become available. DOE also assured the NRC that they would be provided opportunities to review DOE's supporting analyses and provide feedback as required.

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