CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

TRIP REPORT

SUBJECT: Staff Exchange of Osvaldo Pensado between the U.S. Nuclear Regulatory Commission (NRC) and the Center for Nuclear Waste Regulatory Analyses (CNWRA)
Project Numbers 20.06002.01.111 and 20.06002.01.112

DATE/PLACE: July 27–August 9, 2004, Rockville, Maryland

AUTHOR: Osvaldo Pensado

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PERSONS PRESENT: Osvaldo Pensado (CNWRA) and NRC staff

BACKGROUND AND PURPOSE OF TRIP:

The purpose of the staff exchange was to participate in activities related to the review of the final environmental impact statement version of the total system performance assessment model developed by the U.S. Department of Energy (DOE) implemented in the GoldSim software. The DOE may submit a license application as early as December 2004. The license application version of the DOE performance assessment model (referred to as Total System Performance Assessment–License Application model) will be evaluated as part of the license application review. Acceptance review is scheduled to be completed within three months of the receipt of the license application. Therefore, time will be limited to perform an evaluation of the performance assessment model. Because the Total System Performance Assessment—License Application model will not be available for review during the prelicensing interaction period, the NRC and CNWRA staffs are using the Total System Performance Assessment—Final Environmental Impact Statement model as a surrogate model to prepare for the license application acceptance review. Although the size of the Total System Performance Assessment–License Application model is anticipated to be larger than the Total System Performance Assessment–Final Environmental Impact Statement model, the flow of information and basic conceptual models are expected to be similar. The specific objectives met during this staff exchange are the following: (i) enhance information exchange between NRC and CNWRA staffs on the Total System Performance Assessment–Final Environmental Impact Statement model, (ii) deliver a presentation on the Total System Performance Assessment–Final Environmental Impact Statement model review activities to the Yucca Mountain team, and (iii) explore available technology to effectively accomplish remote discussions on the Total System Performance Assessment–Final Environmental Impact Statement model between NRC and CNWRA.

SUMMARY OF PERTINENT POINTS:

- The author participated in several telecons with the DOE to plan for a quality assurance audit on the Total System Performance Assessment—License Application model during August 30–September 16, 2004. Attending this audit was expected to provide additional opportunity to learn the structure of the Total System Performance Assessment—License Application model and differences with respect to the Total System Performance Assessment—Final Environmental Impact Statement model.

- The author worked with Keith Compton, NRC lead for the review of the Total System Performance Assessment—Final Environmental Impact Statement model, sharing insights on the structure of the code and developing methods to run model components and dynamically linked libraries in isolation. Dynamically linked libraries are computer codes external to the GoldSim framework, designed to perform specific computations. Inspecting computations by the external codes could be accomplished by isolating and correctly interpreting relevant outputs. The objective of inspecting parts of the Total System Performance Assessment—Final Environmental Impact Statement model in isolation is to gain further understanding on the flow of information within the performance assessment model.

- A presentation on review activities of the Total System Performance Assessment–Final Environmental Impact Statement model was developed and delivered to the Yucca Mountain team on August 4, 2004. The presentation generated a discussion on independently executing the DOE performance assessment model. During the presentation, it was pointed out that caution should be exercised in interpreting results from the NRC and CNWRA staffs execution of the model because analyzing results without thorough knowledge of the effect of model changes could yield misleading conclusions. On the other hand, it was recognized that independent runs by NRC and CNWRA staffs can help NRC make more informed requests for additional detailed, quality controlled runs from the DOE.

- The author facilitated at NRC the review of various chapters in the Integrated Issue Resolution Status Report including scenario analysis and the quantity and chemistry of water contacting waste packages and waste forms. The author discussed programmatic reviews of these Issue Resolution Status Report chapters with Andrew Campbell, James Rubenstone, and Gregory Hatchett. Discussions with Dennis Galvin, Brett Leslie, and Richard Codell were carried out to address programmatic comments in the criticality section.

- The author participated in discussions with Richard Codell, Aladar Csontos, and Yi-Ming Pan on possible analyses to yield additional insights on the relevance of stress corrosion cracking of the waste package to radionuclide release rate and dose estimates.

PROBLEMS ENCOUNTERED:

None.

PENDING ACTIONS:

None.

ACCOMPLISHMENTS:

Participation in this staff exchange reinforced team building, as well as collegial interactions between CNWRA and NRC staffs. The trip fulfilled the objective of enhancing information exchange on the Total System Performance Assessment–Final Environmental Impact Statement model between NRC and CNWRA staffs; thus, successfully preparing for any future interactions with the DOE on the total system performance assessment model. The trip enhanced visibility among the NRC staff of activities supported by CNWRA, especially in the

area of the DOE total system performance assessment model review. The author gained a better understanding of the functioning of the NRC and better appreciation of client needs, which will result in effective interactions with the NRC.

RECOMMENDATIONS:

Future participation in exchanges by other staff is strongly encouraged.

SIGNATURES:

Osvaldo Pensado
Senior Research Scientist

9-10-2004
Date

Sitakanta Mohanty
Element Manager

9-13-2004
Date

Concurrence Signature and Date

Budhi Sagar
Technical Director

9-14-2004
Date