UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 11, 1998

See Reports

Dr. Stephan J. Brocoum
Assistant Manager for Licensing
U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P. O. Box 30307
North Las Vegas, Nevada 89036-0307

SUBJECT: ISSUE RESOLUTION STATUS REPORT (KEY TECHNICAL ISSUE: TOTAL SYSTEM PERFORMANCE ASSESSMENT AND INTEGRATION)

Dear Dr. Brocoum:

As you know, the staff of the U.S. Nuclear Regulatory Commission (NRC) has developed a new program for early resolution of technical issues at the staff level. In the past, staff-level issue resolution has been achieved by responding to the U.S. Department of Energy's (DOE's) proposed closure of specific NRC open items, or through response to topical reports. The new program addresses groups of open items related to NRC Key Technical Issues (KTIs) and documents resolution through the use of issue resolution status reports (IRSRs). All IRSRs also contain acceptance criteria and review methods that the NRC staff will use in subsequent reviews of DOE submittals and closure of open items. The enclosed IRSR focuses on the total system performance assessment (TSPA) methodology.

The TSPA Methodology IRSR is composed of three subissues: model abstraction, scenario analysis, and transparency and traceability of the TSPA. These subissues have been identified as essential parts of a defensible TSPA used in compliance demonstration. This version of the TSPA Methodology IRSR contains acceptance criteria and review methods for the subissue of model abstraction. Acceptance criteria and review methods for the other two subissues will be addressed in succeeding versions of the TSPA Methodology IRSR.

It is important to note the relationship of the TSPA Methodology IRSR to other KTI IRSRs. The TSPA Methodology IRSR is the integrating IRSR that provides the framework and context for other KTI IRSRs. The TSPA Methodology IRSR has as its overall goal, delineating staff's systematic approach for determining compliance with an overall system performance objective. Other KTI IRSRs support the TSPA Methodology IRSR and the overall compliance determination by describing the information needed in key performance areas and pursuing issue resolution in those areas so that prelicensing interactions and prelicensing reviews can be conducted efficiently and effectively. For the model abstraction subissue, all IRSRs, including the TSPA methodology IRSR, are keyed to the same approach for determining compliance that is depicted in Figure 1 of the TSPA Methodology IRSR. This figure defines what NRC considers, at this time, to be the important elements of a TSPA for licensing a facility at the Yucca Mountain (YM) site and, therefore, constitutes the approach that the staff will use to independently evaluate DOE's TSPA. All other KTI IRSRs reference this diagram and relate

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how the reviews associated with the particular KTI support NRC's independent evaluation as depicted in Figure 1.

Acceptance criteria and review methods for the model abstraction portion of this IRSR are organized by the key elements of abstractions, as illustrated in the bottom tier of Figure 1 in the enclosed IRSR. The relationships between these key elements of abstraction and subissues identified in other KTI IRSRs were noted in Section 3 of the IRSRs that the Department has received. In the enclosed IRSR, the link between the various KTI subissues and TSPA is further highlighted at the beginning of the discussion for each key element of abstractions. It should be noted that as data are collected and iterative assessments of repository performance are completed, the key elements of abstraction may change. These changes will be reflected in future revisions to the IRSRs.

Concurrent with the development of this IRSR, NRC has initiated development of implementing regulations for the YM site with the expectation that, in the near future, the U.S. Environmental Protection Agency will issue standards for the YM site. As this rulemaking activity progresses, the results may necessitate changes to conform the TSPA Methodology IRSR to the rulemaking approach. Any changes that result from the rulemaking activity will be addressed in succeeding versions of the IRSR. Similarly, in the current version of the IRSR, the staff has used information on DOE's program that was available at the time of original writing of the IRSR. DOE's viability assessment (VA) activities have resulted in numerous changes in approach, not all of which are captured in this version of the IRSR. Changes in DOE's approach not documented in this version of the IRSR will be incorporated in succeeding versions of the IRSR.

Consistent with NRC regulations on prelicensing, consultations and a 1992 agreement with DOE, staff-level issue resolution can be achieved during the prelicensing consultation period. However, such resolution at the staff level would not preclude the issue being raised and considered during the licensing proceedings. Issue resolution at the staff level during prelicensing is achieved when the staff has no further questions or comments (i.e., open items) at a point in time, regarding how DOE's program is addressing an issue. There may be cases where resolution at the staff level is limited to documenting a common understanding regarding differences in NRC and DOE points of view. Pertinent additional information could raise new questions or comments regarding a previously resolved issue. In this IRSR, NRC has made an initial effort to identify those open items relevant to TSPA. These open items, including their status of resolution, are listed in Section 5 of the IRSR. As part of our respective staffs' continuing interactions to resolve our differences during the prelicensing consultation phase, the discussion points that were raised during the last three TSPA Technical Exchanges (i.e., July 1997, November 1997 and March 1998) are summarized and included in Section 5. These discussion points are not open items at this time and are so designated. NRC will continue to evaluate these discussion points and will interact, as needed, with DOE to better understand the DOE approach in these areas prior to the department's issuance of TSPA-VA.

The forthcoming TSPA-VA will be the most current and comprehensive analysis that integrates all of the Department's site characterization activities and modeling effort. Therefore, NRC intends to use the acceptance criteria and review methods in the enclosed IRSR as the framework for reviewing DOE's model abstraction approach in TSPA-VA. The outcome of this review will be used to rebaseline the list of unresolved open items and discussion points

Dr. S.J. Brocoum

Letter to S. Brocoum from M. Bell dated: May 11, 1998

cc: S. Rousso, OCRWM
R. Loux, State of Nevada
B. Price, Nevada Legislative Committee
J. Meder, Nevada Legislative Counsel Bureau
R. Dyer, YMPO
C. Einberg, DOE/Washington, DC
N. Slater, DOE/Washington, DC
A. Brownstein, DOE/Washington, DC
M. Murphy, Nye County, NV
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
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T. Manzeni, Lander County, NV
L. Fiorenzi, Eureka County, NV
J. Regan, Churchhill County, NV
L. Bradshaw, Nye County, NV
W. Barnard, NWTRB
R. Holden, NCAI
A. Collins, NIEC
R. Arnold, Pahrump County, NV
N. Stellavato, Nye County, NV
J. Lyznicky, AMA
R. Clark, EPA
F. Marcinowski
A. Gil, YMPO
R. Anderson, NEI
C. Henkel, NEI
S. Frishman, Agency for Nuclear Projects
J. Kessler, EPRI

identified in Section 5; i.e., the staff may close one or more existing open items, keep some or all the existing open items, or create new open items. The list of rebaselined open items will identify those areas in a TSPA that NRC staff believe need further attention and improvement by the Department prior to submitting a License Application (LA) for the YM site. NRC will continue to interact with the Department and attempt to achieve resolution of these rebaselined open items prior to the LA.

As stated previously, this IRSR will be updated and revised in the future as additional information becomes available and the rulemaking activity progresses. In addition, future revisions of the IRSR will attempt to further document and explain the vertical integration of NRC's program including providing more detail on issue resolution and a description of the level of information needed to address unresolved issues. We welcome a dialogue on this subject with DOE and other interested parties. If you have any questions about this letter, please contact Christiana Lui of my staff at (301) 415-6200, or via Internet mail service (cxl@nrc.gov).

Sincerely,

[Original signed by:]

Michael J. Bell, Acting Chief
Performance Assessment and High-Level
Waste Integration Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

cc: See attached list

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Sincerely,

Michael J. Bell, Acting Chief
Performance Assessment and High-Level
Waste Integration Branch
Division of Waste Management
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