



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 18, 1997

Dr. Robert G. Baca, Manager
Performance Assessment Program Element
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SUBJECT: REVIEW OF INTERMEDIATE MILESTONE 5708-762-710 ENTITLED "SOFTWARE REQUIREMENTS DOCUMENT FOR TPA"

Dear Dr. Baca:

On January 28, 1997, the Center for Nuclear Waste Regulatory Analyses (CNWRA) transmitted the Intermediate Milestone entitled "Software Requirements Document for TPA." Tim McCartin and I have reviewed the Software Requirements Document (SRD) and have carried out numerous discussions with you and your staff regarding the SRD and the expectations regarding the Total System Performance Assessment (TPA) 3.0 code. Based on these discussions and pending some minor corrections identified below, we find the document programmatically acceptable. Our understanding of the TPA 3.0 code and our expectations as to what the code will achieve starting on March 17, 1997, when it is delivered to NRC, are outlined below.

The SRD briefly describes the content and functionality of the TPA 3.0 code. Although the descriptions of the various modules in the document are non-specific, discussions between the NRC and CNWRA staff have extended our understanding of the code. We consider it important to specify our understanding and expectations of the TPA 3.0 code in three key areas: 1) extent of output; 2) relationship of code functionality and approach for testing the software; and 3) portability of the software to other computing environments. With respect to the output, the SRD is explicit that annual individual dose and integrated release will be output by the TPA code. In order for the NRC to fully analyze potential exposures, it is expected that the time history, as well as the peak dose, will be output for the annual individual dose output. Additionally, the existing 10 CFR Part 60 requires a calculation of subsystem performance (similar to what was done in the IPA Phase 2 code). Calculation of subsystem performance is an important part of evaluating and understanding total system performance under the existing regulatory framework and is considered an important aspect of the functionality of the TPA code. Therefore, we expect that the TPA 3.0 code will allow for the calculation of subsystem performance.

The approach for testing the TPA code must be compatible with the design of the software. For example, the Phase 2 code was designed to allow modules to operate in a "stand-alone" mode which provided analysts with the capability to test a module separately from the system code. Our understanding of the current TPA code is that "stand-alone" operation may not be possible for a number of modules resulting in the need for the output of intermediate results

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to test individual modules. It is our expectation that intermediate output, as needed, will be present to allow testing of modules and the TPA code will be sufficiently flexible to allow additional outputs that may be identified during testing and use of the TPA code. It is recognized that some additional limited effort would be required to provide outputs that may be identified in the future.

Concerning the portability of the 3.0 code, the SRD states the TPA code will be developed to operate on a SUN machine and other systems such as the CRAY. Based on discussions with the CNWRA staff, it is expected that the TPA code will be developed in a manner to limit any machine dependency and the TPA code will be easily transferrable to the PC environment with limited additional effort.

Our review did identify one specific comment regarding the EBSFAIL discussion on page eight of the SRD. The discussion should be revised to delete extraneous statements (e.g., statements such as "Possibly, EBSFAIL should evaluate..." are too ambiguous to be useful and statements such as "EBSFAIL and SEISMO analysts need to negotiate this detail.").

Finally, as noted in the CNWRA Operations Plans, the TPA code must be sufficient to conduct sensitivity analyses for the KTIs. Our finding on the acceptability of the SRD is done with the expectation that the SRD will result in the development of a code that will allow sensitivity analyses to be performed, to some extent, for each KTI.

If you have any questions regarding the contents of this letter, please contact me at (301) 415-7289.

Sincerely,

[Original signed by:]

Keith I. McConnell, Element Manager
Performance Assessment & HLW
Integration Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

cc: S. L. Fortuna, PMDA
B. D. Meehan, CAB

Ticket: CNWRA 97-0007

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