

# Center for Nuclear Waste Regulatory Analyses

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January 28, 1997

Contract No. NRC-02-93-005

Account No. 20-5708-762

*Des*  
*Submittal*  
*Jan 28 1997*

U.S. Nuclear Regulatory Commission  
ATTN: Mr. Timothy J. McCartin  
Office of Nuclear Material Safety and Safeguards  
Division of Waste Management  
Performance Assessment and Hydrology Branch  
Mail Stop T-7 D13  
Washington, DC 20555

Subject: Submission of Intermediate Milestone 5708-762-710, "Software Requirements Document for TPA"

Dear Mr. McCartin:

The subject Software Requirements Document (SRD) is a milestone in the CNWRA Operations Plans for the Division of Waste Management for the Total System Performance Assessment and Integration KTI. The subject document was prepared to comply with the CNWRA Technical Operating Procedure TOP-018. The report contains a general description of the software design characteristics of the TPA version 3 code. As can be noted from the SRD, major revisions and improvements to the TPA code were required to meet new Total System Performance Assessment (TSPA) needs. These new needs are the result of:

- Recommendations of the National Academy of Sciences (which suggests the calculation a new performance measure and longer compliance period)
- Significant changes in the DOE repository design
- Expanded knowledge base, improved models, and additional data compiled by NRC/CNWRA
- Enhanced capabilities needed for the planned KTI sensitivity analyses.

Certain aspects of the software design evolved through interactions with the various KTI teams. In addition, recent CNWRA applications of the original TPA code (version 2) for the Audit Review of the DOE TSPA-95 identified some software QA shortcomings and calculational restrictions that required modification. Enclosed is a short write-up that provides the rationale for the transition from TPA Version 2 to Version 3.

The final SRD is consistent with the approaches outlined in the draft provided to NRC in mid-October. Since giving the briefing to NRC staff on the SRD in early November, we have proceeded to develop the TPA Version 3 code building on algorithms and modules in the TPA Version 2 code, to the extent practicable. The new version is highly modular and is being written in a manner consistent with software engineering practices.

In developing the new version, we interacted with the NRC staff to seek input on decisions regarding module modification and replacement. In retrospect, a greater degree of interaction and NRC concurrence in code implementation changes should have occurred. We plan to provide the NRC with a beta version of the TPA version code to foster better interaction with the NRC staff in the TPA code development and testing.

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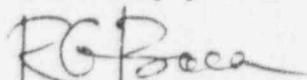


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Mr. Tim McCartin  
January 28, 1997  
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The subject document fulfills IM 5708-762-710 and is submitted for your review and acceptance. If you have any questions on this document, please contact me at (210) 522-3805.

Sincerely yours,



Robert G. Baca, Manager  
Performance Assessment

RGB/PM/cg

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