MEMORANDUM FOR: Paul Lohaus, Chief
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Division of Low-Level Waste Management
and Decommissioning, NMSS

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THRU: Michael Tokar, Section Leader
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FROM: Mark Thaggard, Hydrogeologist
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SUBJECT: TRIP REPORT ON ATTENDANCE AT DEPARTMENT OF ENERGY PERFORMANCE ASSESSMENT TASK TEAM MEETING, AUGUST 27-28, 1991

On August 27 and 28, 1991, I attended the Department of Energy's (DOE's) Performance Assessment Task Team (PATT) meeting, held in Idaho Falls, Idaho. Enclosed is a summary of salient points of the trip. The enclosed comments show that DOE's PATT is working on resolving some of the same issues that the Performance Assessment Working Group (PAWG) is working on in the Regulatory Guide; namely, how to handle source term and determining the appropriate period for compliance. In addition, largely due to differences in performance objectives, the PATT is working on a number of issues not being considered by the PAWG under Phase I of the Regulatory Guide development. One of the primary areas of concern for the PATT is the large differences in intruder scenarios and dose modeling parameters being used in the Performance Assessments (PAs) at the various sites.

If you have any questions about the enclosed information, or any aspect of the trip, please let me know.

ORIGINAL SIGNED BY

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Enclosure: Trip report

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TRIP REPORT
DEPARTMENT OF ENERGY'S PERFORMANCE ASSESSMENT TASK TEAM MEETING,
AUGUST 27-28, 1991

Background:

The Department of Energy's (DOE's) Performance Assessment Task Team (PATT) was formed to integrate the performance assessment activities for the six DOE Low-Level Waste (LLW) disposal facilities. A performance assessment (PA) is required at each DOE LLW disposal facility under DOE-Order 5820.2A. The PATT has met eight times, beginning in July 1990, to recommend policy and guidance to DOE on issues relating to PA. The overall goal of the PATT is to create consistency in PA approaches among the six LLW disposal sites.

The PATT consists of a chairman, a technical secretary, members from each of the six DOE disposal sites, members from DOE, and a liaison from the Peer Review Panel (PRP) (i.e., the group responsible for reviewing the PA activities).

Summary of PATT Meeting:

The latest PATT meeting, which I attended, was held in Idaho Falls, Idaho, on August 27-28, 1991.

The morning of August 27, 1991 was used to go over the fifth draft of the "Draft Progress Report". The progress report identifies issues being addressed by the PATT. Fifteen issues have been identified to be addressed. Of the 15 issues, nine issues have been considered resolved. A complete consensus of PATT members is required in order to resolve an issue. The nine issues that have been resolved include the following:

1. Incorporating "reasonable assurance" into the performance objectives.
2. Allowing the consideration of passive controls as a deterrence for intruders.
3. Requiring consistent dose limit terminology in DOE-Order 5820.2A.
4. Defining "Special-Case Waste".
5. Determining the level of controls and testing required for software to be used in PA analyses.
6. Establishing the level of data quality for performance assessment.
7. Determining the level of standardization of groundwater computer codes for the various sites.

ENCLOSURE

8. Apportioning doses from several sources.

9. Determining whether or not the point of compliance well for the groundwater pathway should be set at a particular location.

The issues that are still unresolved, include the following:

1. Determining whether or not a specific groundwater compliance limit should be set for PAs.

2. Determining appropriate methods of volume averaging and waste acceptance criteria.

3. Determining how best to handle intruder protection.

4. Determining the degree to which long-term changes and effects should be incorporated into the PA analysis.

5. Determining how to handle the source term.

6. Determining the time period for compliance.

The afternoon of August 27 was used to tour the Idaho National Engineering Laboratory (INEL) LLW disposal facility. During the tour, we witnessed one of the disposal cells, disposal vaults, and the waste certification facility. Touring the waste certification facility consumed the bulk of the tour. In this facility, we witnessed equipment used for screening out liquids and aerosols, assaying equipment, equipment for detecting flaws in containers, and stored waste. Of special interest was how well organized the waste is stored and emplaced in the disposal cell. The waste containers are emplaced according to a gridded system which allows for easy recovery (if needed).

August 28 was used to allow various subteam committees to give reports. I was also asked to give a briefing on the Nuclear Regulatory Commission's (NRC's) PA activities.

The subteam committees gave reports on the following areas:

1. Benchmarking intruder scenarios.

2. The PATT's involvement at the recent International Atomic Energy Agency (IAEA) meeting.

3. Acceptance criteria for the Savannah River Plant site.

4. Point of compliance.

5. Volume averaging.

6. Source term.

7. Intruder protection.

8. Time period of compliance.

Some of the key points brought out from the various reports include:

1. Comparative analysis using PATHRAE and GENII gave unacceptable differences in results. This large difference occurred even after adjustments were made in the input data to compensate for differences in the assumptions made in the two models. Several of the PATT members believe that there may be some problems with the PATHRAE formulations; however, the exact cause of the problem is unknown. Some of the doses predicted by PATHRAE were considered questionable.

2. There were considerable concerns about trying to incorporate long-term environmental changes into the PA. However, it was concluded that the potential effects of these changes cannot be simply dismissed. No conclusion was reached on how to handle this. It was recommended that it be handled in a qualitative fashion.

3. It was recommended that a program be instituted to benchmark the various groundwater transport codes being used at the various sites. Benchmarking would be done using a common database and simple analytical or quasi-analytical models.

4. For assessing doses to the public, from all pathways, it was recommended that the assumption be made that a well is located immediately down-gradient at the edge of the buffer zone, but no greater than 100m from the disposal facility. Some concern was raised as to whether or not the assessment should only be applied to aquifers that are useable as drinking source; however, this suggestion was rejected.

5. It was suggested that inventory characterization and radionuclide release rates be treated as separate issues. While it is common to lump both under source term, the true definition of source term only relates to the release of radionuclides. It was felt that these items should be treated separately because intentory characterization will not be done by the PA people.

6. Intruder protection is handled differently under the DOE-Order 5820.2A than the NRC Part 61. The DOE-Order 5280.2A uses a dose limit, whereas the NRC uses a concentration limit. The issue is to what extent should DOE conform to the NRC. It was generally felt that the NRC's concentration limit method of providing intruder protection was difficult to follow; however, if intruder protection is not defined in terms of concentration limits, the intruder scenarios become very important.

7. It was recommended that a time of compliance period of 10,000 years be arbitrarily chosen a priori. It was reasoned that no confidence could be placed in analyses performed beyond that period. Further, precedent had been set in using 10,000 years in other PA analyses. A consensus could not be reached on using 10,000 years as a cut-off; therefore, this issue remains open.

Future plans for the PATT include having an interface meeting with DOE management, in October, in Denver. The interface meeting will bring DOE management and the PRP up to speed on what the PATT is doing. At that meeting, the source term and compliance period issues will also be discussed in greater detail. The next official PATT meeting will be held in Savannah in January 1992. At that meeting, the PATT plan to invite several people involved with accepting waste at the various facilities; it is hoped that a dialogue will be formed on how PA will affect their activities. The PATT has also indicated that the issue of uncertainty will also have to be addressed at some point, and this may become an additional open issue for consideration.

Attendees:

Donald E. Wood, Westinghouse Hanford Co. - PATT Chair
Robert U. Curl, EG&G Idaho, Inc. - PATT Technical Secretary
Robert G. Baca, EG&G Idaho, Inc. - INEL Representative
James R. Cook, Westinghouse Savannah River Co. - SRP Representative
Max R. Dolenc, Reynolds Electric & Engineering Co. - NTS Representative
David C. Kocher, ORNL - ORNL Representative
Bruce Napier, PNL - Hanford Representative
Marc I. Wood, Westinghouse Hanford Co. - Hanford Representative
Roger R. Seitz, EG&G Idaho, Inc. - INEL Representative
Elmer L. Wilhite - Westinghouse Savannah River Co. - PRP Representative
Sheila R. Gehrman, EG&G Idaho, Inc.
Gary W. Roles, DOE
Mark Thaggard, NRC
David Thorne, ORNL