

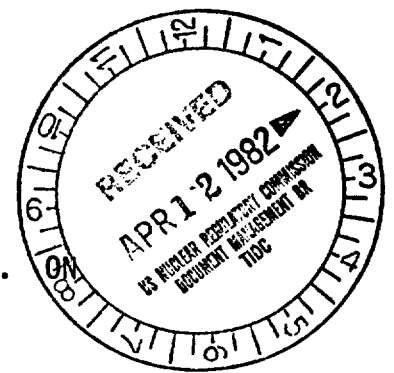
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MEMORANDUM TO: Those on Attached List
FROM: Hubert J. Miller, Chief
High-Level Waste Technical
Division of Waste Management
SUBJECT: NOTES OF NRC/DOE/PNL MEETING IN RICHLAND, WA.
JANUARY 12-13, 1982.



Attached are the above notes.

The substance of the notes has been reviewed with the Department of Energy, and their suggestions are incorporated.

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Hubert J. Miller, Chief
High-Level Waste Technical
Division of Waste Management

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See attached sheet
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NAME : R. Wright : : : : : (F) (H)
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Addressees - Meeting Report, January 12-13, 1982

M. Bell, NRC
Section Leaders, NRC
BWIP Review Team, NRC
W. Ballard, DOE
R. Stein, DOE
H. Smedes, DOE
C. Newton, DOE
J. Anttonen, DOE
R. Goranson, DOE
D. Squires, DOE
R. Deju, RHO
J. Martin, NRC
J. Bunting, NRC
P. Altomare, NRC

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MEETING REPORT

NRC/DOE/RHO, January 12-13, 1982

On January 12 and 13, 1982, members of the NRC and consultants met in Richland, WA with members of the Department of Energy (DOE) and Rockwell International (RHO). The purpose was to discuss developments at the Basalt Waste Isolation Project (BWIP), in response to concerns raised by NRC arising from a site visit in September 1981. By prior agreement, emphasis was placed on hydrogeologic matters.

The NRC group consisted of Linda Lehman, Hubert Miller, and Robert J. Wright. Accompanying consultants were Adrian Brown, Mark Reeves, and Roy E. Williams. Charles Wilson attended as an observer.

The following summarizes the major points of discussion and agreement.

Developments in Project Activities

In response to concerns expressed by NRC in the report on the September 1981 site visit, RHO discussed the present thinking and planning on several aspects of project activities. A number of developments reflect technical interchanges during and after the September visit.

1. Hydrologic test plan

The present plan involves clusters of wells, each cluster with one test well and multiple observation wells. An extended volume of rock both within (to a level below the Umtanum unit) and above the Grande Ronde would be investigated. One hole in a cluster would be cored. One cluster of wells is planned to the west. One or two additional clusters are planned at other locations, to be determined later. One or two single well tests may also be undertaken in wells located north of the RRL. The scheme will be documented in a drilling and test plan, due in March.

NRC noted that: (1) hydrologic testing is the most important issue in the site characterization program; (2) the drilling and test plan (for testing from the ground surface), together with the Phases I and II exploratory shaft test plans, will constitute most of what is expected in

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the SCR for hydrologic testing; (3) in conceptual terms, the plans reviewed January 12 and 13 substantively addressed the hydrologic test concerns of September 1981; (4) the plans were presented only in broad terms; and (5) therefore, it is essential that a follow-up discussion of the overall integrated hydrology test program be held, as soon as practicable.

2. RHO/ PNL/ USGS modeling discrepancies

RHO is now working with PNL and will be contacting the U. S. Geological Survey to resolve outstanding differences in modeling of the groundwater regime of the Pasco Basin. A task force is being organized and a workshop will be held. Resolution of modeling matters is expected by October 1982.

NRC expressed the position that its participation in these efforts, together with discussions on hydrology test plans, would work toward resolution of these issues.

3. Exploratory Shaft

The Phase I test plan of September 1, 1981 was provided to NRC. The Phase II plan is expected to be released in June. Both Phase I and Phase II will be included in the SCR. Under the present DOE schedules, DOE indicates expanded underground testing (which would require a second shaft) cannot be conducted until after the construction authorization application has been filed.

NRC pointed out that effective shaft and borehole sealing is crucial to repository performance. Therefore, consideration by NRC of the construction authorization application will entail careful analysis of proposed shaft and borehole sealing methods and the verification thereof. Since the timing of expanded underground testing will not permit in situ verification of sealing procedures before construction authorization application, other verification means should be sought by DOE.

4. Stress field

Progress has been made by RHO in examining the consequences of the probable high horizontal stress field, as indicated by core diking. Shortage of time precluded presentation of results. A technical interchange on the subject will be accomplished by a telephone conference between RHO and NRC, possibly by the end of January.

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5. Geophysics

A contract has been let for reprocessing of seismic reflection data around the RRL, to determine whether additional knowledge of subsurface structure can be gained. Seismic refraction data may also be reassessed. A seismic net has been established in the Cold Creek syncline with geophones in drill holes.

6. Site characterization report

RHO indicated that the SCR will cover the investigations needed during site characterization to close out the site suitability questions of draft 10 CFR 60. Concern was expressed that the SCR is being prepared in accordance with the format of the April 1981 draft of the Format and Content Guide. Additional work would be needed to bring the SCR into the format suggested in the current draft.

NRC indicated that the SCR content is more important than the format. If significant time is involved in a switch in format, the April 1981 format is okay. Most of the changes in format were, in fact, made in response to DOE comments on the April 1981 draft.

Developments in Information Exchange

- 1. RHO/DOE is considering whether newly developed technical data can be provided to NRC via the engineering release system, within 45 days after receipt by RHO. This will apply to test results from hydrologic testing, as well as testing in the Near Surface Test Facility (NSTF) and the planned Explanatory Shaft (ES).
- 2. RHO proposed a series of topical meetings on the SCR over the next several months, as well as periodic coordination meetings. Possible topical meetings are: waste package, repository performance assessment, site and exploratory shaft. Proposed dates for coordination meetings are: March 3, May 12, July 14.
- 3. RHO/DOE will consider the possibility of the following.
 - (1) Mechanics for early release of reports to NRC (at the time of release for review within the DOE organization).
 - (2) Release of draft SCR materials to NRC for early review.

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- (3) Attendance by NRC at peer review meetings.
 - (4) Participation by NRC in the groundwater modeling workshop.
4. Specific documents and data to be provided to NRC were identified as shown below:

(1) Items to be mailed or provided during the meeting:

- ST-94 sensitivity studies
- Hydrostratigraphic charts
- Composite measurements of hydrologic properties
- ST-14
- LD-14
- LD-26
- ST-9
- ST-10
- ES Phase 1 test plan

(2) Items to be provided when cleared for release:

- "Cooling of Columbia River Basalts"
- Drilling and test plan
- GSA paper by Price et al
- Temp., pressure, and geochemical data with depth, by well
- Corrected head measurements

Outstanding Matters

During the two-day presentations and discussions, several hydrologic questions emerged that were not resolved at the time. In addition, certain topics represent differences in understanding or viewpoint between RHO and NRC.

- o Perceptions as to the probable groundwater yield rate of the entire basalt section, down through the Umtanum, vary widely. Rough estimates were prepared by NRC consultants, using RHO and PNL parameters presented in the RHO vugraph "Nominal Material Properties." With RHO numbers the estimated yield is 30 gpm. With PNL numbers the estimated yield is 30,000 gpm. In contrast to both these figures the estimate developed by (for?) Kaiser, when methods

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of shaft sealing were under consideration, is 170,000 gpm.

Clearly, the range of figures denotes different perceptions of the nature of the groundwater regime in the basalt hydrostratigraphic section. What is important now is not the "correct" figure but, rather, a recognition of the need for more accurate representation of the hydraulic properties of the hydrostratigraphic units and of the hydrostatic heads therein.

- o Some information on water chemistry and water temperature in various wells was presented. Preliminary inspection of the data suggests that careful evaluation may yield useful insights into possible groundwater flow paths. The importance of the two data sets, as an adjunct to the other hydrologic data, is the following. Considering the complexity of the groundwater system, the relatively few deep test wells, and the limitations of time and resources on future testing, it is likely that uncertainties about groundwater flow will remain at the time for licensing. Therefore, it is prudent to get the most from all relevant data sets and integrate the results into the best obtainable, unified picture.
- o NRC has several reservations about the present state of the groundwater modeling effort.
 - (a) The release path(s) for groundwater from the RRL is highly sensitive to the hydrologic boundary conditions of the groundwater model. Present boundary conditions used by RHO contain several inconsistencies and are not consonant with boundary conditions used by PNL. The PNL boundary conditions appear more realistic to NRC because they are based on regional hydrology.
 - (b) A main goal of hydrologic testing is the improvement of the groundwater flow model. The information needs for modeling should, therefore, be helpful in the design of the hydrologic test program, for example, in the location of test wells. Although RHO shares this view, there is little evidence of active integration between modeling and hydrology within RHO for development of testing plans.
- o Several questions remain as to the level of detail for subjects in the SCR. One of these is the description of computer codes to be used in groundwater modeling and performance assessment.

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Consultants' Trip Reports

Attached as appendices are trip reports by NRC consultants:

- Appendix A - Adrian Brown, Golder Associates, Inc.
- Appendix B - Mark Reeves, Intera Environmental Consultants Inc.
- Appendix C - Roy E. Williams, independent consultant

Prepared by
NRC Division of Waste Management
March 12, 1982

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