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NOTE TO: John T. Greeves, Acting Chief
Engineering Branch
Division of Waste Management

FROM: David Tiktinsky
Project Manager
Engineering Branch
Division of Waste Management

SUBJECT: REVIEW OF DESIGN RELATED ASPECTS ~~TRANSCRIPT~~ TRANSCRIPT OF THE
MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS HELD IN
RICHLAND, WASHINGTON ON SEPT. 8-9, 1983

As per your request, I have summarized the important points made about design
of a high-level waste repository at BWIP from the transcript of the
meeting of the Advisory Committee on Reactor Safeguards held on Sept. 8-9
at Richland, Washington. If you have any questions about this summary
please call me at 427-4131.

Original Signed By:

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Summary of important points on design from ACRS meeting,
September 8-9, 1983 in Richland, Washington

- 1) pages 99-100, It is the opinion of DOE staff that some method other than multiple horizontal waste emplacement will be chosen because of retrieval and technological problems.
- 2) page 100, Engineering studies and a comprehensive effort to upgrade the exploratory shaft phase 1 and 2 test plan are underway.
- 3) page 101, Preliminary test plans have been prepared to assess development needs in the area of shaft construction, tunnel excavation and roof support, canister emplacement and in situ instrumentation.
- 4) pages 101-102, DOE said that they need to substantially expand their geomechanical data base and particularly their knowledge of in situ stress and rock mass properties.
- 5) page 102, DOE said that the scope of tests previously planned for the exploratory shaft in the geomechanics area were not adequate.
- 6) Major Concerns
 - A) pages 102-103 opening stability of subsurface openings
 - 1) high stress ratio
 - 2) insitu testing to assess room stability needs improved definition and a reassessment of the relationship between repository room shape, orientation and room stability.

Geomechanic sensitivity studies will be initiated in the immediate future to meet the concerns about stability of openings

Non-linear stress capability will be used in future designs rather than linear elastic analyses as was used for the conceptual design.

- B) pages 103-105, waste emplacement concept (200ft long horizontal holes)
 - 1) retrieval methods had not been adequately defined
 - 2) impact of emplacement concept on canister integrity needs further evaluation
 - 3) method of placing canister backfill questionable
 - 4) stability of long canister boreholes

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An engineering study to reevaluate multiple horizontal waste emplacement with emphasis on retrievability and related concerns has been initiated.

Development test planning has been initiated to demonstrate waste emplacement construction and operation techniques (including retrieval)

- C) pages 105-106, repository constructability concerns
 - 1) constructability of long horizontal emplacement holes
 - 2) excavation of tunnels using tunnel boring machines
 - 3) underground exploration and contingency plans not adequately covered in SCR
 - 4) stability of less competent rock zones during shaft construction not adequately addressed in the SCR

Engineering studies are now underway for these areas.

- D) pages 106-108, repository sealing
 - 1) design basis, designed construction and performance for seals was not adequately defined

Hydrologic studies which will provide input into the seal development program relative to the conditions that the seals will have to endure over a period of time have been initiated.

- E) pages 103-104, design process
 - 1) concern over past use of single values in the design rather than a range of geomechanics parameters.
 - 2) the factors that determine optimum shaft locations were not adequately defined.
 - 3) waste containment barriers and shielding requirements were not defined for each point in the design process.

Engineering studies in FY84 will reevaluate the functional design criteria.

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