



Department of Energy

Washington, DC 20585

OCT 16 1991

Mr. John J. Linehan, Acting Director
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Linehan:

A peer review of the Yucca Mountain Site Characterization Project
unsaturated zone hydrology program was conducted between March
1990 and May 1991, by consultants from outside the program. The
peer review process followed the requirements of project Quality
Management Procedure-03-01.

The panel was composed of seven internationally known
hydrologists who have not been involved in the program. They
were: R. Allan Freeze, Chairman, Lorne G. Everett, Gerald E.
Grisak, James W. Mercer, R. William Nelson, Stavros S.
Papadopoulos, and M.T. (Rein) van Genuchten. The peer review
scope was limited to flow in the unsaturated zone. Consequently,
the review only addressed in a limited fashion the issues of
saturated zone travel time and transport processes.

After reviewing a limited amount of information on the
hydrogeologic setting of Yucca Mountain, the team was asked to
spend four days at Las Vegas, Nevada; first discussing the
mechanisms of flow which might operate at the site, then
developing a set of questions for the project Principle
Investigators (PIs) which could be used to evaluate the
unsaturated zone program against the team's concepts of what such
a program should encompass. Following the development of this
list of questions and topics, the team was given a large volume
of literature describing the work that had been done or was
planned at Yucca Mountain. That material formed the basis for a
later meeting with the project PIs, where the PIs were questioned
directly on their work. Finally, the team produced a report (the
Peer Review Record Memorandum) outlining their evaluation of the
unsaturated zone program. The U.S. Department of Energy, in
turn, responded to the team's recommendations and proposed a
number of follow-on actions. The team evaluated those responses
and gave their final acceptance in June of this year.

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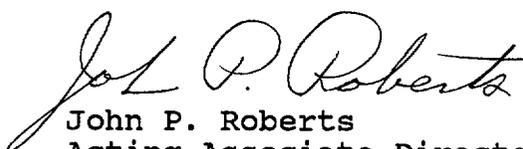
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In general, the team was very complimentary of the project program. In fact, most of their comments reflected a concern that the PIs have not been able to do enough work at the site, that the program should be more aggressive in pursuing permits, and that there should be additional testing at the level of the Paintbrush Tuff.

Enclosed are fifteen copies of the final report of the unsaturated zone hydrology peer review team, ten copies are also being provided to the Advisory Committee on Nuclear Waste.

Any questions you may have on the peer review process should be directed to Corinne Macaluso at (202) 586-2837 or FTS 896-2837.



John P. Roberts  
Acting Associate Director  
Office of Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

Enclosure:  
Unsaturated Zone Hydrology Peer  
Review Record Memorandum,  
June 24, 1991 (15)

cc w/enclosure:  
ACNW

*see enclosure on shelf*

cc: w/o enclosure:  
C. Gertz, YMPO  
R. Loux, State of Nevada  
K. Whipple, Lincoln County, NV  
M. Baughman, Lincoln County, NV  
J. Bingham, Clark County, NV  
D. Bechtel, Clark County, NV  
S. Bradhurst, Nye County, NV  
B. Raper, Nye County, NV  
P. Niedzielski-Eichner, Nye County, NV  
R. Campbell, Inyo County, CA  
R. Michener, Inyo County, CA  
G. Derby, Lander County, NV  
P. Goicoechea, Eureka, NV  
C. Schank, Churchill County, NV  
C. Jackson, Mineral County, NV  
F. Sperry, White Pine County, NV  
L. Vaughan, Esmeralda County, NV  
K. Hooks, NRC