



The Honorable Richard H. Bryan

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MAR 08 1988

As we have indicated to you and your staff, we are prepared to meet with representatives of the State and its contractors to discuss the content and technical issues of the SCP/CD or any of its reference materials.

**ORIGINAL SIGNED BY  
CARL P. GERTZ**

Carl P. Gertz, Project Manager  
Waste Management Project Office

WMPO:CPG-1403

Enclosures:

1. Report from Brookhaven  
National Laboratory
2. List of Fourteen  
Documents

cc w/o encls:

V. J. Cassella, HQ (RW-222) FORS  
M. P. Kunich, WMPO, NV

bcc:

WMPO (R)  
WMPO (RF)  
MGR (RF)

cc w/encls:

Ralph Stein, HQ (RW-23) FORS  
M. B. Blanchard, WMPO, NV

*Final*

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ORIGINATOR: *Lertz*

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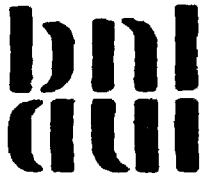
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LETTER NO: *1403*

**ENCLOSURE 1**

**D. G. Schweitzer, Brookhaven National Laboratory, letter to Ralph Stein, DOE Office of Geologic Repositories, 11/6/87, questioning the waste package strategy for the Yucca Mountain repository site.**



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Department of Nuclear Energy

November 6, 1987

HQX.871109.0166

Mr. R. Stein  
U. S. Department of Energy  
Code RW-23  
Washington, D.C., 20585

Dear Mr. Stein:

The purpose of this letter is to alert you to the accumulation of a significant quantity of independent and consistent information that seriously contradicts the central philosophy of the NNWSI licensing strategy.

As you are aware NNWSI has stated repeatedly:

"The central point of the NNWSI Project licensing arguments will be the near absence of liquid water in contact with the waste package during the containment period and the limited quantities of liquid water available to contact, enter, and exit from breached waste packages during the controlled release period."

"The limited amount of water available to contact waste packages results in limited ability for transport of radionuclides from the waste packages even if the packages contain breaches through the metal barrier. Thus, for a site in the unsaturated zone, 'substantially complete containment' can be achieved without having to show that a substantial fraction of the waste package containers are intact."

Ever since the early 1980's, NNWSI, DOE-WMPO, NRC, USCS, SAIC, Los Alamos, Sandia, State of Nevada representatives, and DOE headquarters staff have been involved in trying to identify the origin of the calcite-silica deposits in a trench located between the east slope of Yucca Mountain and Exile Hill which cross-cuts the Bow Ridge fault.

From 1984 to the present, a series of workshops and reviews have not been able to determine whether the deposit was formed from surface water running down (pedogenic), or springwater ascending (hydrothermal). The problem has received a great deal of publicity through NRC comments on the EAs, through a recent (4/13/87) letter from NRC Chairman Zech to Senator B. Johnston, through

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stories in a series of publications such as the Nevada Nuclear Waste Newsletter, through NRC trip reports and memoranda, and through the recent GAO report "Status of DOE's Nuclear Waste Site Characterization Activities."

From an NRC memorandum "Appendix 7: Attendance At DOE Peer Review Committee Meeting For Veins Deposits" (6/17/87) it appears that as of April 1987 no convincing evidence has been obtained identifying the source of the deposit. The additional work proposed is expected to take 30 to 39 months with no guarantee that the problem will be resolved.

By this time it is well known that almost all parties agree that the existence of "hydrothermal activity" causes serious problems in determining groundwater travel times and precludes acceptable defense of controlled release.

I wish to emphasize the following points:

1. The potential existence of hydrothermal activity is sufficiently serious so that the consequences of the deposit originating through pedogenic processes have been mentioned only superficially in these workshops. Nevertheless, it has been recognized that even under the most favorable conditions of origin of the deposits (i.e., surface water running down), "substantial quantities of water may be involved."\*
2. If hydrothermal activity cannot be excluded, the regulatory significance will likely be determined by the NRC, the DOE, the USGS, etc. You may recall from comments on the draft EAs that the NRC stated that the Wahmonie NTS site was eliminated because

"local surface deposits from recent warm springs indicate upward seepage of groundwater, possibly from great depths."

At present, I believe the DOE can do little in the geology-hydrology portions of the draft SCP other than explicit acknowledgement of the problem.

3. Under the more favorable assumption that eventually it may be possible to show that the calcite-silica deposits have pedogenic origins, the NNWSI claims on limited water over 10,000 years still will be considered indefensible.

\*DOE-WMPO presentation quoted in a letter from LLNL to the NRC (3/6/86).

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In summary, I believe the evolution of information over the past several years has made defense of controlled release more and more difficult for all the projects. In the case of NNWSI, these particular problems may require that 10,000-year containment is the only acceptable alternative.

Since the NNWSI SCP states that its licensing strategy will be based on "near absence of water" and "limited water" you may wish to consider how these claims will be received in view of the recent highly publicized events.

Sincerely,



Donald G. Schweitzer, Associate Chairman  
Head, DOE Radioactive Waste Management

DCS:gfa

cc: H. Frei  
A. Berusch  
S. Gomberg  
D. Alexander