



**Department of Energy**  
Office of Civilian Radioactive Waste Management  
Office of Repository Development  
1551 Hillshire Drive  
Las Vegas, NV 89134-6321

QA: N/A  
Project No. WM-00011

**MAR 23 2005**

Mr. Jack D. Parrott  
U.S. Nuclear Regulatory Commission  
P. O. Box 371048  
Las Vegas, NV 89137

Dear Mr. Parrott:

Yucca Mountain Project workers recently observed some seepage in the South Ramp area of the Exploratory Studies Facility (ESF), more specifically the region between ESF stations 75+00 and 76+00. This is an area outside of the repository block, which our models show is an area where fast flow through fractured rock is to be expected. Contributing factors to this occurrence likely are: (1) the record-setting precipitation in the vicinity of Yucca Mountain, Nevada, this winter; and (2) the presence of a relatively thin layer of pervasively fractured welded tuff (with no layer of non-welded tuff which serves to moderate water percolation) over the ESF in this area.

My staff has evaluated the observations under procedure AP-REG-009, *Reportable Geologic Condition*, and have determined that this occurrence is of "non-technical significance" (see enclosure).

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph D. Ziegler".

Joseph D. Ziegler, Director  
Office of License Application and Strategy

Enclosure:  
Office of Civilian Radioactive Waste  
Waste Management Report of Unexpected  
Geologic Condition - South Ramp of the ESF

MAR 23 2005

cc w/encl:

C. W. Reamer, NRC, Rockville, MD  
T. J. Kobetz, NRC, Rockville, MD  
D. S. Rom, NRC, Rockville, MD  
D. D. Chamberlain, NRC, Arlington, TX  
D. B. Spitzberg, NRC, Arlington, TX  
R. M. Latta, NRC, Las Vegas, NV  
M. P. Lee, ACNW, Rockville, MD  
M. T. Ryan, ACNW, Rockville, MD  
W. C. Patrick, CNWRA, San Antonio, TX  
Budhi Sagar, CNWRA, San Antonio, TX  
J. R. Egan, Egan, Fitzpatrick, Malsch & Cynkar, Vienna, VA  
J. H. Kessler, EPRI, Charlotte, NC  
M. J. Apted, Monitor Scientific, LLC, Denver, CO  
Rod McCullum, NEI, Washington, DC  
W. D. Barnard, NWTRB, Arlington, VA  
Pat Guinan, State of Nevada, Carson City, NV  
R. R. Loux, State of Nevada, Carson City, NV  
Alan Kalt, Churchill County, Fallon, NV  
Irene Navis, Clark County, Las Vegas, NV  
George McCorkell, Esmeralda County, Goldfield, NV  
Ron Damele, Eureka County, Eureka, NV  
Michael King, Inyo County, Edmonds, WA  
Andrew Remus, Inyo County, Independence, CA  
Mickey Yarbrow, Lander County, Battle Mountain, NV  
G. T. Rowe, Lincoln County, Pioche, NV  
Linda Mathias, Mineral County, Hawthorne, NV  
Dave Swanson, Nye County, Pahrump, NV  
Mike Simon, White Pine County, Ely, NV  
R. I. Holden, National Congress of American Indians, Washington, DC

cc w/o encl:

M. G. Bailey, NRC, Rockville, MD  
F. D. Brown, NRC, Rockville, MD  
Jack Guttman, NRC Rockville, MD  
G. P. Hatchett, NRC, Rockville, MD  
N. K. Stablein, NRC, Rockville, MD

MAR 23 2005

bcc w/encl:

A. L. Capoferri, DOE/HQ (GC-52), FORS  
G. W. Hellstrom, DOE/HQ (GC-52), Las Vegas, NV  
BSC CCU Administrator, BSC, Las Vegas, NV  
CMS Coordinator, BSC, Las Vegas, NV  
D. P. Irwin, Hunton & Williams, Richmond, VA  
G. L. Smith, DOE/ORD (RW-50W), Las Vegas, NV  
OLA&S Library  
Records Processing Center = "12"

bcc w/o encl:

T. J. Garrish, DOE/HQ (RW-1), FORS  
A. B. Brownstein, DOE/HQ (RW-1), FORS  
C. A. Kouts, DOE/HQ (RW-20E), FORS  
Richard Goffi, BAH, Washington, DC  
Donald Beckman, BSC, Las Vegas, NV  
S. J. Cereghino, BSC, Las Vegas, NV  
E. A. Mueller, BSC, Las Vegas, NV  
B. E. Reilly, BSC, Las Vegas, NV  
M. R. Wisenburg, BSC, Las Vegas, NV  
R. B. Bradbury, MTS, Las Vegas, NV  
R. P. Gamble, MTS, Las Vegas, NV  
R. C. Murray, MTS, Las Vegas, NV  
W. J. Arthur, III, DOE/ORD (RW-2W), Las Vegas, NV  
A. B. Benson, DOE/ORD (RW-2W), Las Vegas, NV  
W. J. Boyle, DOE/ORD (RW-40W), Las Vegas, NV  
R. D. Brown, DOE/ORD (RW-3W), Las Vegas, NV  
D. H. Coleman, DOE/ORD (RW-40W), Las Vegas, NV  
R. L. Craun, DOE/ORD (RW-60W), Las Vegas, NV  
J. R. Dyer, DOE/ORD (RW-2W), Las Vegas, NV  
A. V. Gil, DOE/ORD (RW-40W), Las Vegas, NV  
T. C. Gunter, DOE/ORD (RW-40W), Las Vegas, NV  
C. L. Hanlon, DOE/ORD (RW-40W), Las Vegas, NV  
N. K. Hunemuller, DOE/ORD (RW-40W), Las Vegas, NV  
R. E. Lupton, DOE/ORD (RW-2W), Las Vegas, NV  
W. B. Miller, DOE/ORD (RW-31W), Las Vegas, NV  
C. M. Newbury, DOE/ORD (RW-40W), Las Vegas, NV  
K. W. Powers, DOE/ORD (RW-2W), Las Vegas, NV  
S. L. Rives, DOE/ORD (RW-2W), Las Vegas, NV

Mr. Jack D. Parrott

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MAR 23 2005

bcc w/o encl: (continued)

P. F. Sanchez-Bartz, DOE/ORD (RW-2W), Las Vegas, NV

E. T. Smistad, DOE/ORD (RW-40W), Las Vegas, NV

M. C. Tynan, DOE/ORD (RW-40W), Las Vegas, NV

S. A. Wade, DOE/ORD (RW-50W), Las Vegas, NV

H. C. White, Jr., DOE/ORD (RW-70W), Las Vegas, NV

J. D. Ziegler, DOE/ORD (RW-40W), Las Vegas, NV

OLA&S Records Coordinator, Las Vegas, NV

MFR: OLA&S:DHC-0848

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
REPORT OF UNEXPECTED GEOLOGIC CONDITION**

QA: N/A  
Page 1 of 3

**SECTION 1. INITIAL RESPONSE**

Initiator Drew H Coleman	Phone 702-567-1705	Date 03/03/2005	Time 12:40PM AM/PM
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Location  
South Ramp of the Exploratory Studies Facility between stations 75+00 and 76+00

Description  
On February 28, 2005, I was engaged in observing some CI-36 sampling work planned for the Sundance fault area. A UNLV PI, and some of the TCO group were to accompany me to discuss this work and some other planned CI-36 sampling sites. In the afternoon, it was reported to me by Dick Kovach that some "seepage or dripping" had been observed in the South Ramp between stations 76+00 and 75+00. I examined photos and e-mail write-ups and discussed with Doug Weaver and other ~~members~~ members of TCO on Tuesday March 1, 2005. On Wednesday, March 2, 2005, I visited the site and examined the seepage areas for myself.

the  
1/4/05

Study Plan Number (if applicable) N/A	Configuration Item Number (if applicable) N/A
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Evaluation  
I examined the cross-sections, maps, and photos of the area. I also read carefully AP-REG-009. It is my opinion that the seepage event was not "inconsistent with current conceptual models", and therefore is not a "Technically Significant Condition" as defined by the AP-REG-009. I base this evaluation on the fact that project conceptual models include seepage and infiltration of water into the fractured bedrock comprising Yucca Mountain.

Recommendation of technical significance, non-technical significance, or non-significance  
Non-technical significance

Justification  
As stated above, upon examination of cross sections and the photos and the descriptions of the seepage, along with the personal visit, it was my opinion that the seepage event was not "inconsistent with current conceptual models", and therefore is not a "Technically Significant Condition" as defined by the AP-REG-009. The basis is that project models include fast pathways and infiltration of water in fractured bedrock, the seepage observed is in the South Ramp in strata lying above the Ptn, where fast flow is expected; there have been no reports of seepage into the repository area. The Project has technical work plans and active tests (e.g. Sealed Bulkhead Test in the Cross Drift) that are looking for seepage at the repository level.

Recommendation of additional data needs and/or delay or work  
In my opinion, the event does not warrant a delay of ongoing work as no impact to the seepage is anticipated from continued

Justification  
Although not "technically significant" under the procedural definition the event is of technical interest in that the field observations could be compared to current models. Assumptions about the infiltration and seepage can be compared to the observations. Seepage threshold could possibly be related to precipitation amounts.

Actions taken  
Photographic documentation of the event has been undertaken and should continue.  
The site is visited during the work day to document changes in location size and drip patterns.  
Collection of water samples for analysis.  
The area has been looked at and evaluated by a field geologist from the USGS.  
An evaluation by the UZ process modeling group and possibly PA has been started:  
Quick examination of the station locations and reconnaissance investigation based on the Geologic Framework Model and Earthvision software done by Tim Vogt provided the following information:  
Station 77+41 (m) 128 ft of overburden Eormations Encountered Tpcp (Tiva Canyon Tuff)  
Station 76+06 (m) 198 ft of overburden Eormations Encountered Tpcp (Tiva Canyon Tuff)  
Station 75+62 (m) 243 ft of overburden Eormations Encountered Tpcp (Tiva Canyon Tuff)  
Background Information: The south portal of the ESF is located at 78+77 (m).

FTC or Designee (Printed Name and Signature) Drew H Coleman	Date 03/03/2005	<b>ENCLOSURE</b>
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## **Addenda**

### **Recommendation of additional data needs and/or work (continued from Page 1)**

train traffic or activities in the South Ramp. I don't see how the seepage could represent a safety concern for workers.

The recommendations are covered in the "Actions taken" section.

### **Actions taken (continued from Page 1)**

BSC "Point of Contact" developed: Ming Zhu.

I have asked that the entire ESF including North Ramp, Main and Cross Drift, be examined for further evidence of seepage; consideration is being given to entering the sealed bulkheads to look for seepage.

I have recommended that meteorological data be compiled and examined.

I have recommended that water levels be examined for anomalies.

I have solicited further recommendations from knowledgeable persons: Bob Andrews, Ming Zhu, Jean Younker.

The event has been entered into the CAP system.

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
REPORT OF UNEXPECTED GEOLOGIC CONDITION

QA: N/A  
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SECTION 2. REVIEW OF ACTIVITIES AND RESPONSE CLOSEOUT (to be completed by the OLAS Director or designee with concurrence from the FTC or designee)

Review of FTC evaluation

This geologic condition has been evaluated and determined

- Technically Significant and Reportable per AP-REG-009
- Non-technically Significant or Non-significant

If technically significant and reportable:

1. Additional data needs are indicated  Yes  No

Description: (data needs, responsible persons, etc.)  
N/A

2. Delay of work is indicated:  Yes  No

Description: (extent of delay, hold points, affected organizations, affected activities, etc.)

Persons notified of decisions and course of action

Russ Dyer,

OLAS Director or Designee (Printed Name and Signature)

CLAUDIA M. NEWBURY

Date

3/3/05

FTC or Designee (Printed Name and Signature)

Drew H Coleman

Date

03/03/2005

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
REPORT OF UNEXPECTED GEOLOGIC CONDITION

QA: N/A  
Page 3 of 3

SECTION 3. NOTIFICATION OF NRC ORs (to be completed by the OLAS Director or designee)

NRC ORs by telephone:

NRC Contact *for P.M. Lott* Date *3/1/05* Time *10:55*  AM  PM  
Jack Parrot  
Printed Name and Signature

NRC ORs by Letter:

NRC Contact Date Time AM/PM

Procedure completed

*Ch...*  
OLAS Director or Designee (Printed Name and Signature)

Date  
*3/1/05*