

WM Record
101.2

WM Project 10
Docket No. _____

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MAR 27 1986

PDR ✓
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1
Gorn

(Return to WM, 623-SS)

Mr. O. L. Olson
Director
Basalt Waste Isolation Division
U.S. Department of Energy
P.O. Box 550
Richland, WA 99342

Dear Mr. Olson:

On February 25, 1986, a teleconference between the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy Richland Operation (DOE/RL) was held to discuss geological, seismological and geophysical aspects of the BWIP site. During the course of the teleconference, DOE/RL agreed to provide NRC several items of information which will assist the NRC in their review of the forthcoming Site Characterization Plan. The information requests are detailed in the attached conversation record and are highlighted in blue for your convenience.

In addition to the attached information requests, NRC also requests a compilation of available dynamic and ambient temperature logs from boreholes drilled at the Basalt Waste Isolation Project (BWIP) site. These logs will assist the NRC staff in determining the magnitude and significance of vertical groundwater flow and in correlating geothermal gradient anomalies with other borehole data.

We would appreciate a response to this request at your earliest convenience. Should you have any questions, please contact Paul Hildenbrand of my staff at FTS 427-4672 or Harold Lefevre at FTS 427-4532.

Sincerely,

"ORIGINAL SIGNED BY"

John J. Linehan, Acting Chief
Repository Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

8605140211 860327
PDR WASTE
WM-10 PDR

Enclosure:
Telephone Conference Record

*See previous concurrence

| | | | | | | | |
|------|-----------------|-------------|---|---|---|---|---|
| OFC | : WMRP:rs | : WMRP | : | : | : | : | : |
| NAME | : PHildenbrand: | : JJLinehan | : | : | : | : | : |
| DATE | : 03/25/86 | : 03/27/86 | : | : | : | : | : |

1785

CONVERSATION RECORD

TIME

2:00

DATE

February 25, 1986

TYPE

 VISIT CONFERENCE TELEPHONE INCOMING OUTGOING

ROUTING

NAME/SYMBOL

INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU
Bruce Hurley (DOE); Sue Price, Ann Tallman, et al (RHO)ORGANIZATION (Office, dept., bureau, etc.)
DOE/RHO/BWIP

TELEPHONE NO.

SUBJECT

Multiple. Among others it includes: Near-RRL current seismicity;

seismic data reports; relevance of recent professional reports; etc.

SUMMARY

SEE ATTACHMENT

ACTION REQUIRED DOE is to be notified (through letter from RP) of the NRC requested and of DOE's commitments to provide the NRC with certain information products. Near-RRL seismic activity is to be monitored.

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

Harold E. Lefevre/WMG

*Harold E. Lefevre**March 7, 1986*

ACTION TAKEN A follow-up to the Feb. 25, 1986 telecon was made on Feb. 27, 1986 to obtain additional information regarding the two recent earthquake swarms.

SIGNATURE

TITLE

DATE

Harold E. Lefevre

Engineering Geologist

March 7, 1986

50271-101

* GPO : 1981 O - 361-526 (7227)

CONVERSATION RECORD

OPTIONAL FORM 271 (12-76)
DEPARTMENT OF DEFENSE

DISTRIBUTION

WM s/f (101.)
WMGT, r/f
PHildenbrand
REBrowning
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MFlieg~~er~~^e
KJohnson
FRCook, On-site,
Representative-
for BWIP ^b
BWIP Team members ^{ers}

Telephone Conversation Record
February 25, 1986
BWIP

A teleconference took place on this date regarding the current status of a number of RRL-related items including:

1. On-going seismic activity within 4-6 miles south and west of the RRL.
2. An NRC request that DOE provide raw data derived from RRL-specific seismic networks.
3. A current Borehole Status Chart and Location Map-availability of.
4. NRC query on the capability of DOE's Accession List.
5. A request by NRC to be appraised of DOE's planned activities resulting from a recent (December, 1985) technical paper dealing with an integrated approach to utilizing various geophysical data sets for developing a Columbia River Basalt Plateau tectonic model.
6. DOE's program plan for addressing the impact on DOE's present structural model(s) of several 1985 technical papers dealing with the Columbia Plateau crustal structure.
7. Status of DOE's program which is developing geosciences-related data set maps.
8. Request that DOE provide to NRC documents that have been officially released, but have not yet appeared on the BWIP Accessions List.

The purpose of the call was to enable DOE/RHO to provide to the NRC information regarding the status of a number of matters that had been identified by the NRC over a period of several weeks. The following individuals participated in the teleconference:

| | |
|-------------------------------------|-----------------------------------------------------------------------|
| <u>NRC</u> : | M. Blackford, P. Hildenbrand, A. Ibrahim, H. Lefevre, K. McConnell |
| <u>DOE</u> : | B. Hurley |
| <u>Rockwell</u> : | F. McDonald, S. Price, N. Rasmussen, A. Rohay, A. Tallman |
| <u>NRC On-Site Representative</u> : | F. R. Cook |

Additional details regarding the above eight items follow:

1. Seismic Activity

A series of earthquakes, the first of which occurred in late January and continuing to the present, have been reported within four to six miles south and west of the reference reporting location. Additional details regarding these events which are confined to two general locations are:

| <u>Area</u> | <u>Location</u> | <u>Magnitude</u> | <u>Number of events</u> | <u>Depth</u> |
|-------------|-----------------------------------------------|------------------|-----------------------------|--------------|
| 1 | T12N,R25E,SEC 26 (4 miles south of RRL) | 1.6 Max | 14 | 1-3km |
| 2 | T13N,R24E,SEC 33&34 (6 miles west of RRL) | Less than 1.0 | 6 | 6-7km |

The location of the area #1 events (swarm) is coincident with that of a 1979 "swarm". No events are known to have occurred previously in the vicinity of the area #2 swarm.

RHO is uncertain as to the source (causative mechanism) of the events.

2. Seismic Data

Since data derived from the RHO seismic network is normally unavailable to the NRC for an extended period of months following that particular event, the NRC requested that the raw (uninterpreted) data be provided at regular, established time intervals. It is our understanding that BWIP agreed to provide the following:

1. For each report on earthquakes within the RHO network,
 - a. A station list
 - b. A crustal velocity model
 - c. Other Hypo 71 parameters

~~NOTE: An example of this output is shown on Attachment A.~~
2. For each earthquake,
 - a. As a minimum, the data indicated by the arrow on Attachment B.
 - b. As a maximum, the data presented on the entire Attachment B.

NRC anticipates receiving this information within three months of the quarter end.

3. Borehole Status Chart

BWIP agreed to provide an update of the January 3, 1985 Borehole Status Chart and Locations Maps to include (1) boreholes completed since that date, (2) boreholes currently underway as well as (3) boreholes approved but not yet occupied by the drill rig.

This chart will be available in the near future.

4. Capability of DOE's Accession List

The question was raised by NRC regarding the ability of the DOE's computer-assisted Accessions List to identify by specific subject or keyword (e.g. geomorphology, Saddle Mountain, volcanology, etc.) those items contained in the list that pertain to that subject. BWIP agreed that such a capability would be desirable and worthwhile, but was not a priority item. The Accessions List system is not capable, at the present time, of identifying BWIP documents by keyword. NRC did not pursue the matter.

5. Integrated Approach to a Tectonic Model Using Geophysical Methods

BWIP is aware of a recent paper appearing in "Geophysics" (December, 1985) entitled "Columbia River Basalt Plateau - An integrated approach to interpretation of basalt-covered areas" by C. Prieto, C. Perkins, and E. Berkman. This paper combines interpretations using aeromagnetic, magnetotelluric, and gravity data into a single geologic model. The integration focuses along an east - west section through and eastward of the Saddle Mountains. The model suggests the presence of the Pasayten Fault, the east boundary fault of the Methow graben (a structure exposed at the Columbia River Basalt Margin some ninety miles to the north of the Saddle Mountains) underlying the basalts. BWIP is aware of the paper and has reviewed it in a cursory manner but considers it non-quantitative and consequently subject to speculation. BWIP has no short-term plans for addressing the integrated approach suggested by this paper. Sometime within the next 1½ years BWIP tentatively plans to address this matter in the form of a work product.

6. Columbia Plateau Crustal Structure

Three abstracts dealing with Columbia Plateau crustal structure based on the August, 1984 U.S. Geological Survey 260-kilometer-long refraction

survey centered on the Pasco Basin were presented in the early part of 1985 at the Eastern Section of the Seismological Society of America meeting. Because of staffing limitations, questioned validity of data and the absence of data (the USGS has not yet open-filed some of the data), BWIP has not yet placed this subject on its six month work agenda.

7. Data Set Maps

On numerous occasions both the NRC and the States of Washington, have recognized the need, because of the sheer volume of data, for consolidating data, such as various geologic (faults, lineaments, etc.) and geophysical (gravity, aeromagnetic, etc.) parameters on separate common-scale transparencies. The BWIP also acknowledges potential benefits from having such data sheets available and kept current as new information is acquired. In fact, BWIP has already been selectively entering various types of data into its computer system and presently has the capability of producing "hard" copies of some geophysical data sets. Bruce Harley of DOE indicated that he would look into the matter of data sheet compilation and would, within two-three weeks, advise NRC as to what data sheets are available. Hopefully such compilation sheets would be made available to the NCR.

8. DOE-Released Documents

Recognizing that an indeterminate delay results between the time DOE's Data/Documents Accessions List is available to the NRC, BWIP committed, on a selected basis, to provide the NRC with one, perhaps two, copies of certain critical documents. Cognizance of site-related activities, in a timely manner, is essential for NRC's review mission. This is achieved principally through acquisition of BWIP-sponsored reports. These documents would be provided to NRC when requested through writing. The request should be made of DOE's Mr. James Mecca. A report, recently-released by DOE but not yet appearing on the DOE Document/Data Accessions List, addresses the test seismic reflection survey conducted by DOE in mid-1985. The NRC requested that this report be provided through Mr. Mecca's office. BWIP agreed to do so.

HANFORD DATA FOR TESTING HYP071 1

PROGRAM HYP071-1 U OF W JAN 76

| STANDARD | TEST(1) | TEST(2) | TEST(3) | TEST(4) | TEST(5) | TEST(6) | TEST(7) | TEST(8) | TEST(9) | TEST(10) | TEST(11) | TEST(12) | TEST(13) |
|----------|---------|----------|-----------|---------|---------|---------|---------|---------|---------|----------|----------|----------|----------|
| | .1000 | 10.0000 | 2.0000 | .0500 | 5.0000 | 4.0000 | -.8700 | 2.0000 | .0035 | 100.0000 | 6.0000 | .5000 | 1.0000 |
| L | STN | LAT | LONG | ELV | DELAY | FMGC | XMGC | KL | PRR | CALR | IC | DATE | HRMN |
| 1 | MOU | 4636.80N | 11945.65W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 2 | SYR | 4651.78N | 11937.07W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 3 | OTH | 4644.34N | 11912.99W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 4 | WAM | 4645.12N | 11934.68W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 5 | CRF | 4649.51N | 11923.09W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 5 | GBL | 4635.86N | 11927.59W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 7 | ETP | 4627.69N | 11933.54W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 8 | RDG | 4614.06N | 11919.05W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 9 | EUK | 4623.75N | 11833.72W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 10 | PRD | 4612.76N | 11941.15W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 11 | PSW | 4536.72N | 11845.77W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 12 | RSW | 4623.47N | 11935.32W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 13 | WGW | 4626.64N | 11855.96W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 14 | WIV | 4625.93N | 11917.29W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 15 | NER | 4550.14N | 11922.85W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |
| 15 | MFW | 4554.16N | 11824.35W | 0 | -.00 | -.00 | -.00-0 | -.00 | -.00-0 | -.00-0 | -.00-0 | -0 | -0 |

CRUSTAL MODEL 1

| VELOCITY | DEPTH |
|----------|--------|
| 3.700 | .000 |
| 4.700 | .800 |
| 5.100 | 1.500 |
| 5.700 | 6.500 |
| 6.700 | 12.000 |
| 7.200 | 24.000 |

ZTR XNEAR X FAR POS 10 KMS KFM IPUN IMAG IR IPKN CODE LATR LONR
 5 50 150 1.78 4 -0 18 -0 1 -0 10°111° -0 -0 -0 -0

ATTACHMENT A

(D)

MANFORD DATA FOR TESTING HYPOT 1

7/1/42

| I | ORIG | LAT N | LONG W | DEPTH | DM | RMS | AVRPS | SKD | CF | ADJUSTMENTS (KM) | | | PARTIAL F-VALUES | | | STANDARD ERRORS | | | ADJUSTMENTS TAN | | |
|---|------|----------|-----------|-------|----|-----|-------|-----|------|------------------|-------|-------|------------------|-------|-------|-----------------|------|-----|-----------------|-------|------|
| | | | | | | | | | | DLAT | DLOV | DZ | DLAT | DLOV | DZ | DLAT | DLOV | DZ | DLAT | DLOV | |
| 1 | 4.13 | 46-36.48 | 119-46.57 | 7.90 | 1 | .19 | -.00 | B0C | 2.00 | .00 | 1.84 | -2.41 | .88 | -2.14 | -5.92 | .00 | 1.26 | .99 | .00 | -1.04 | -.21 |
| 2 | 3.93 | 46-36.48 | 119-46.01 | 10.31 | 1 | .09 | -.01 | A1D | .50 | .36 | .00 | .00 | 1.30 | .42 | -1.00 | .32 | .00 | .00 | .35 | .00 | .00 |
| 3 | 3.93 | 46-36.68 | 119-46.01 | 10.31 | 1 | .05 | -.00 | A1D | .50 | .00 | -1.18 | -.57 | .00 | -2.19 | -1.86 | .00 | .80 | .42 | .00 | -1.18 | .00 |
| 4 | 3.20 | 46-36.68 | 119-46.93 | 10.88 | 2 | .07 | .00 | A3D | .50 | .00 | .00 | -.14 | -1.00 | -1.00 | .22 | .00 | .00 | .30 | .00 | .00 | .00 |
| 4 | 3.81 | 46-36.68 | 119-46.93 | 10.88 | 2 | .07 | -.00 | A2D | 2.00 | .02 | -.26 | .18 | .00 | -.09 | .20 | .36 | .83 | .39 | .00 | -.00 | .00 |

| DATE | ORIGIN | LAT N | LONG W | DEPTH | MAG NO | DM | GAP | M | RMS | ERM | ERZ | O | SD | ADJ | IN | HR | AVR | AAR | NM | AVX4 | SDX4 | NE | AVF4 | SD |
|-------|--------|-------|----------|-----------|--------|------|-----|----|-----|-----|-----|------|----|-------|-------|------|-----|-----|----|------|------|----|------|----|
| 75242 | 3 5 | 3.81 | 46-36.68 | 119-46.93 | 10.88 | 2.65 | 8 | -2 | 235 | 1 | .07 | -1.0 | .4 | C-A+D | -1.31 | 0-12 | .00 | .07 | 0 | .0 | .0 | 3 | -2.7 | .2 |

| STN | DIST | AZM | AIN | PRK | HRM | P-SEC | IPORS | IPCAL | DLY/HI | P-RES | P-WT | ANX | PRX | CALX | K | X-MAG | RMK | FMP | FMAG | SRMK | S-SEC | ISORS | S-RES | S-WT | |
|-----|------|-----|-----|-----|-----|-------|-------|-------|--------|-------|------|-----|-----|--------|---|-------|-----|-----|------|------|-------|-------|-------|------|-----|
| MDW | 1.7 | 82 | 171 | C | 3 5 | 5.86 | 2.05 | 2.14 | -.00 | -.08 | 1.17 | 39 | 0 | -.00-0 | | | | | 50 | 2.5 | | | | | |
| W44 | 22.1 | 45 | 109 | D | 3 5 | 8.59 | 4.78 | 4.70 | -.00 | -.08 | 1.17 | 25 | 0 | -.00-0 | | | | | 44 | 2.5 | | | | | |
| G4L | 24.7 | 94 | 106 | C | 3 5 | 8.92 | 5.11 | 5.15 | -.00 | -.03 | .97 | 13 | 0 | -.00-0 | | | | | | | | | | | |
| RS | 28.6 | 149 | 104 | D | 3 5 | 9.66 | 5.85 | 5.80 | -.00 | .05 | .94 | 25 | 0 | -.00-0 | | | | | | | | | | | |
| SYR | 30.7 | 24 | 58 | D | 3 5 | 9.99 | 6.18 | 6.11 | -.00 | .07 | 1.08 | 20 | 0 | -.00-0 | | | | | | | 14.45 | 10.64 | -.23 | .00 | |
| CRF | 38.6 | 52 | 58 | D | 3 5 | 11.03 | 7.22 | 7.29 | -.00 | -.07 | 1.11 | 7 | 0 | -.00-0 | | | | | | | | | | | |
| BGG | 55.0 | 140 | 58 | C | 3 5 | 13.63 | 9.82 | 9.75 | -.00 | .08 | .79 | 5 | 0 | -.00-0 | | | | | | | 21.56 | 17.75 | .40 | .00 | |
| ETP | 57.9 | 105 | 58 | | 3 5 | 13.88 | 10.07 | 10.17 | -.00 | -.09 | .78 | 4 | 0 | -.00-0 | | | | | | | | | | | |
| EUK | 56.7 | 104 | 58 | 0 | 3 5 | 20.74 | 16.93 | 15.96 | -.00 | .97** | .00 | 7 | 0 | -.00-0 | | | | | | 54 | 2.9 | 31.82 | 28.01 | -.40 | .00 |

ATTACHED