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WM Record File

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WM Project 10

Docket No. _____

PDR

LPDR

Distribution:

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(Return to WM, 623-SS)

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Dr. Robert J. Wright
Repository Projects Branch
Division of Waste Management
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Wright:

REQUEST FOR INFORMATION ON ROCKWELL HANFORD OPERATIONS REPORT #SD-BWI-TI-177:
"REPROCESSING AND INTERPRETATION SEISMIC REFLECTION DATA HANFORD SITE, PASCO
BASIN, SOUTH CENTRAL WASHINGTON"

Please find enclosed the responses to the information requests detailed in
your letter of September 21, 1984. Also included are hand colored plots
of the Basic Stacks (Plates 7A, 8A, and 9A).

If you have any additional questions, please contact B. W. Hurley of my
staff at FTS 444-7059.

Very truly yours,

O. L. Olson, Project Manager
Basalt Waste Isolation Project Office

BWI:BWH

Enclosure

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RESPONSE TO INFORMATION/ACTION CONTROL 941

The references to borehole data discussed below relate to the top of basalt relief not to verification of fault zones within the core. Borehole data, i.e., top of basalt, were honored and the relief on the top of basalt was assessed in possible fault interpretations. Unfortunately, the colors referenced on Page 59 of SD-BWI-TI-177 are not reproducible on blue lines. To aid in following the discussion of SD-BWI-TI-177, hand colored Basic Stack Plots (Plates 7A, 8A and 9A) are enclosed. Revisions to this document will remedy this problem.

Item 1

SEISMIC LINE 8, Page 62 - The text states: "However, the seismic dips and borehole information support a horst block, especially on the west side of SP 155."

What borehole information from what intervals supports a horst block interpretation?

Response

The text should read, "However, the seismic dips and borehole information do not preclude the interpretation of a horst block, especially on the west side of SP 155." This change will be made through an official revision to the document.

The top of basalt contacts in boreholes 37-82, DH-21 and DH-22 support the seismic dips along Seismic Line 8. No direct borehole evidence of a horst, such as closely spaced borehole control or tectonic breccia in existing boreholes, has been identified. Additional seismic exploration is planned to address structure in the RRL.

Item 2

SEISMIC LINE 5, Page 64 - The text states: "In order to honor the borehole data and seismic character correlations, a fault was interpreted at SP 930."

What borehole data from what intervals support fault interpretation?

Response

The phrase "honor the borehole data" refers to the top of basalt contacts in boreholes DC-16 and DH-20. Evidence of faulting has not been identified in either of these boreholes.

The elevation of the basalt surface at boreholes DC-16 and DH-20 are 69 feet and 20 feet respectively (Bjornstad, 1984, Profile A-A). The seismic data indicate that the basalt surface is relatively flat-

lying near DC-16 (SP 890 to SP 920, Plate 14) and near DH-20 (SP 935 to 960), though the reflection data are poor. To account for the approximately 50 feet of basalt relief between the two boreholes while honoring the apparent flat basalt surface of the reflection data, a possible fault was interpreted where the reflections were poorest (SP 930). The gravity and magnetic profiles shown on plate 24, however, do not indicate any anomalous features at SP 930, but rather tend to support a continuous gradient between the wells. More detailed evaluations of the potential field data is planned.

Item 3

SEISMIC LINE 3, Page 66 - The text states: "In the area from SP 1660 west, a series of faults parallel to the N96 and N84 magnetic linear is strongly suspect and would help tie the seismic data to the borehole information."

What borehole information from what intervals supports series faulting?

Response

Borehole information which was assessed in the interpretation of faulting west of SP 1660 are the top of basalt in RRL-8, DB-11 and 53-103 (McGee Well). None of these boreholes provide direct evidence of faulting.

The basalt surface in DB-11 is at an elevation of 380 feet, while at 53-103 it is at 259 feet, a relief of approximately 120 feet. Furthermore, borehole 53-103 lies approximately 0.5 miles north of seismic line 3, where it approaches the southern limb of the Umtanum Ridge anticline. Faulting offers a possible interpretation, however, due to the poor quality of the seismic data in this area, other interpretations are possible such as folding or channeling.

The basalt elevation in borehole RRL-8 which lies approximately 0.5 miles south of seismic line 8 is at 67 foot elevation (Bjornstad, 1984, Profile E-E). Additionally, the uppermost basalt layer in RRL-8 is the Elephant Mountain member, whereas the uppermost basalt in DB-11 is Pamona. Again, faulting may be suspected to explain the basalt relief and termination of the Elephant Mountain basalt.

Subsequent to the writing of SD-BWI-TI-177, borehole information from DH-27 and DH-28 became available. DH-27 is located near SP 1740 and DH-28 is near SP 1700. These boreholes have further restricted the location of the Elephant Mountain Basalt termination to between these two boreholes. Though one interpretation of the borehole data is a fault, no faulting has been confirmed to date.

att.