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UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20555

PDR-1 PDR-WM-10(2)

WM Record File 101

WM Project 10 Docket No. PDR LPDR

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'87 FEB 24 A4:31

February 16, 1987

MEMORANDUM: Robert E. Browning, Director Division of Waste Management FROM: F. Robert Cook, Senior On-Site License Representative, Basalt Waste Isolation Project (BWIP) SUBJECT: QUESTIONS ASKED BY JAMES CURTISS ON JANUARY 30 1987 AND MY ANSWERS; CLARIFICATION OF--

The following are questions asked by Mr. James Curtiss of the Senate Environment and Public Works Committee. They are not in the order asked and are not exact quotes. Answers are essentially the information I provided. The total conversation was lengthy--about an hour. I did about 95% of the talking in answering his questions and providing tutorial information in helping him understand the answers. (This revises the questions and answers in my earlier memorandum of February 3, 1987, reflecting your and M. Bell's comments during my visit on February 12 and 13 at Silver Spring. The changes are in bold print.)

- 1. Q. How long have you worked at the site? A. About 3.5 years. I came in September, 1983. 2. Q. When did you come to the NRC? A. September 1980. 3. Q. Where were you before? A. I worked for the Navy in the Naval Reactors Program for 18 years. For Rickover.? Yes. 4. Q. What is your opinion about the adequacy of the current Reference Repository Location site? A. I do not believe it has adequate margin to allow demonstration of adequate isolation capability given the current requirements in Part 60 and considering current licensing procedures and in any case I do not believe it represents a practical, safe option. This is not to say that sufficient margins do not exist at other potential site locations at Handord. In fact I consider other locations may have adequate margins to allow developing a practical, safe, licenseable facility within the current rules of 10CFR60. 5. Q. What is it that makes you conclude this?

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A. The high in-situ stress in the rocks and its relation to instability.

At this point he asked me to explain and I did as best I could over the phone. I emphasized that what I was going to tell him was my OPINION and did not reflect the NRC's positions. He stated he wanted my opinion and ideas.

I mentioned a number of documents which I have discussed in my periodic reports. I also explained the effects of the in-situ stress on the practicality of safely constructing and operating the repository's underground facility. I noted the sensitivity of the size of the repository to the in-situ stress. I noted the uncertainty the stresses cause in determining the disturbed zone and, hence, the isolation capability of the geology around the facility. I tried to explain the potential effects of the instability of the site as represented by the site's micro earthquakes and faults, new and old. I noted comments I have received from Olson regarding expanding the repository to the East following BWIP selection as a site and RHO's thwarted desire to determine the in-situ stresses prior to the selection. I noted Ash's major concern regarding the stress situation. I noted N. Cook's concerns expressed in review sessions which I attended in November, 1986.

I discussed the potential synergistic effects of construction, dewatering, thermal loading, local seismicity and in-situ stress and the difficulty associated with validating a design procedure to assess the site. I noted that I considered the pre-placement ground water travel time was going to be heavily dependent upon the hydrologic integrity of the Grande Ronde basalts directly above the underground facility in the thermal plume. I noted that I doubted that the pre-placement integrity could be demonstrated, much less the post-placement integrity, i.e., considering the disturbed zone. I noted that once contamination reached the Wanupum Basalts there was basically no barriers left in terms of travel time.

I explained the potential for lower stresses to the East of the current site. I discussed the recent experience with fatalities at the Lucky Friday mine and contrasted and compared that mine with the potential BWIP facility. I noted that our rules do not focus on non-radiological safety, but that this was a current concern within NRC. I noted my opinion on the subject of public health and safety and explained why I thought it was a critical issue for BWIP considering the public sensitivity to nuclear power. I noted that I did not consider MSHA controls for mine safety were adequate to assure worker safety--i.e., reasonable expectations of no deaths and acceptable frequency of injuries.

In general I tried to fully explain the factual basis for my opinion and the projected judgement of the inadequacy of margins

in the site parameters to allow a successful facility and license review at the current location of the proposed facility.

6. Q. He asked me what my work consisted of?

A. I told him that my reports were my primary product.

7. Q. He asked if I would send him all my reports?

A. I said I would send him the reports and pertinent attachments.

8. Q. Was any of this discussed before by NRC?

A. I told him some of the stability concerns were pointed out in the SCA and in EA comments, for example, major comment #4.

9. Q. He asked me who else was familiar with the stability issues associated with the site?

A. I told him P. Prestholt had written much of the SCA on the subject and referred him to Paul. I believe I also mentioned H. Lefevre.

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