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Mr. Russell Jim
Yakima Tribal Council
Confederated Tribes and Bands
Yakima Indian Nation
P. O. Box 151
Toppenish, Washington 98948

Dear Mr. Jim:

This is in response to your letter dated November 23, 1982. In your letter you requested that the U. S. Nuclear Regulatory Commission (NRC) respond to several questions regarding the Hanford Reservation. It should be noted that the NRC has not concluded that the basalt underlying the Hanford Reservation is better than the basalts that lie elsewhere in the same formation. Our regulations governing the disposal of high-level radioactive wastes (10 CFR 60) require that the U. S. Department of Energy (DOE) submit to NRC a Site Characterization Report which includes, among other things, the method by which DOE selected a particular site for characterization.

As you are aware, the DOE submitted a Site Characterization Report to the NRC on November 12, 1982. DOE has stated that the Site Characterization Report provides documentation for the technical questions that have been identified at the site and the plans for resolving them through further site studies. They further note that the document describes the site to be characterized, provides information on the site screening and selection process, and describes the repository design, waste package research and development, and quality assurance efforts. Finally, the document summarizes the alternative geologic media and sites under investigation in the National Waste Terminal Storage Program. Chapter 2 of the Site Characterization Report discusses the site selection process that led DOE to the repository location at the Hanford Reservation.

The NRC staff is currently reviewing the content of the Site Characterization Report. Upon the completion of this staff review, the Director of NRC's Office of Nuclear Material Safety and Safeguards will

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prepare a Draft Site Characterization Analysis of the information provided in the Site Characterization Report. Public comment will be invited on the Draft Site Characterization Analysis. Our current schedule for issuing the Draft Site Characterization Analysis indicates that it will be available in April, 1983.

Even though our Draft Site Characterization Analysis will not be issued until April, 1983, I will attempt to respond to each of your questions.

Question No. 1: What information does NRC have that demonstrates that DOE has looked elsewhere to compare the relative advantages of the basalt at Hanford to the basalt off the Hanford Reservation?

Response: The only information that we have concerning the efforts of DOE to evaluate the relative advantages of basalt at Hanford to the basalts elsewhere in the United States is that which is contained in the Site Characterization Report and the supporting documents cited in the Site Characterization Report.

Question No. 2: Is NRC, or, has NRC, required DOE to look elsewhere? If not, why not? If not, then why is NRC and DOE focusing on the site on the Hanford Reservation?

Response: The NRC requires that DOE characterize several sites. The NRC believes that characterization of several sites will prevent a premature commitment by DOE to a particular site and will assure that DOE's preferred site is chosen from a slate of candidate sites that are among the best that can reasonably be found. (It should be noted that the Site Characterization Report for the Basalt Waste Isolation Project (BWIP) is only the first of several Site Characterization Reports that the NRC expects to receive from the DOE over the next several years.)

Section 60.11(a) of 10 CFR 60 describes the information that must be contained in a Site Characterization Report. One of the requirements of this section is that DOE describe "the method by which the site was selected for site characterization." Our draft Site Characterization Analysis will include an assessment of the adequacy of DOE's Site Characterization Report in terms of meeting this requirement.

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Question No. 3: Please give us a good map that outlines the basalt formations in the U.S.

Response: Many geologic factors would have to be taken into account in developing a map of basalt formations. Among these are the chemical and physical properties of the rock, the extent of the formation, and the reliability of the existing data. DOE has included a map of certain basalt flows in a recent environmental impact statement (Management of Commercially Generated Radioactive Waste, Final Environmental Impact Statement, DOE/EIS-0046F, Volume 2, October, 1980). I have attached a copy of the map but it should be noted that other presentations of basalt flows could be made as well.

Question No. 4: Give us the thickness measurements of our local basalt in locations other than Pasco, WA.

Response: Any information that the NRC would have on this subject would be that which is contained in the Site Characterization Report and its supporting documents. Most of the information related to your questions would be contained in Chapter 3 on geology.

Question No. 5: Please supply us, and explain geologists' analyses that demonstrate why NRC and DOE believe that the basalt at Hanford is the best compared to elsewhere in the same formation. Please include raw geologic data.

Response: As stated earlier in this letter, the NRC has not concluded that the basalt underlying the Hanford Reservation is better than the basalts that lie elsewhere in the same formation. As indicated above, our review has not yet been completed. However, I would add that under our regulations, DOE is not necessarily required to demonstrate that the geologic characteristics of a site are superior to those elsewhere in the same formation. Other non-geological factors may be considered in the site selection process to assure that the slate of candidate sites selected are among the best that reasonably can be found.

The U. S. Congress recently passed a Nuclear Waste Bill which has not yet been signed by the President. The NRC staff is currently reviewing this legislation to determine what effect it might have on our review procedures.

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I have forwarded a copy of your letter to the Department of Energy for their consideration. I have also enclosed a copy of SECY-82-427 which you requested in your letter. If you should need any further clarification on these matters, please do not hesitate to contact me.

Sincerely,

Original Signed By:
Joseph O. Bunting, Chief
Licensing Process and
Integration Branch
Division of Waste Management

Enclosures:
As stated

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PDR on delayed basis. *See previous concurrence

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DOE/EIS-0046F
Volume 2 of 3
UC-70

FINAL

ENVIRONMENTAL IMPACT STATEMENT

Management of Commercially Generated Radioactive Waste

Volume 2
Appendices

October 1980

U.S. Department of Energy
Assistant Secretary for Nuclear Energy
Office of Nuclear Waste Management
Washington, D.C. 20545

B.6.4 Basalt Properties

Terrestrial basalt flows are considered here to be applicable to conventional geologic disposal. Basalt is a black to medium gray, extrusive volcanic mafic rock (high in magnesium rock silicates) with the major mineral component calcic plagioclase (usually as phenocrysts) olivine and accessory minerals of magnetite, chlorite, sericite, and hematite (Office of Waste Isolation 1978e, Holmes 1978). The texture of a basalt may be either glassy or granular. Generally, basalt flows have a large areal extent. The locations of potential basalt repository areas are illustated in Figure B.6.4. The basalts of southeastern Idaho are not considered because of high permeability features such as the Lost River and known large open lava tubes.

Basalt is commonly a very dense, high-strength material. Consequently, porosity and permeability are favorably low, with negligible moisture content, although interflow sedimentary units may be more permeable. Basalts remain relatively strong under elevated temperatures but may exhibit expansion. An average chemical composition of basalt is included Table B.6.2. More data are needed about basalt-waste reactions under repository conditions.

Joints are generally platy or columnar. They may be filled with various secondary minerals, alteration or weathering products of basalt. Joints may be unopened or opened with wide spacing (∿0.3-1.8 m) and be smooth to rough. Joints in basalt may be extensive. They are generally unfavorable because of their potential for high permeability and ground water flow.

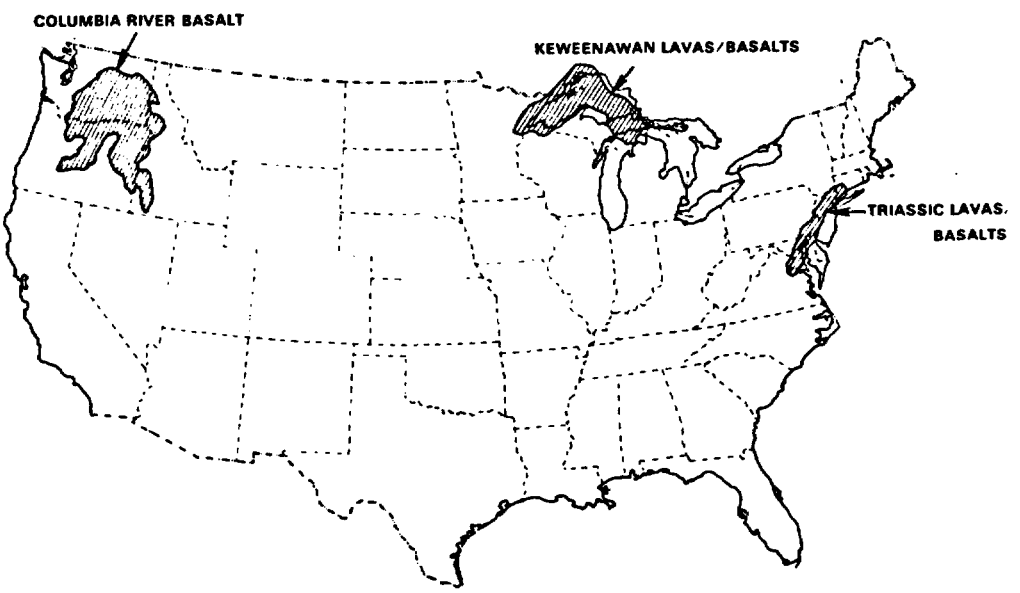

FIGURE B.6.4. Potential Repository Basalts in the United States (adapted from Office of Waste Isolation 1978a, Dott and Batten 1971)