

WM Record File

AUG 12 1985

WM Project 10

Docket No.

PDR

- 1 PDR

101.4/108.3/DJB/85/08/02/00

Distribution:

(Return to WM, 623-SS)

Mr. Russell Jim
Nuclear Waste Program
Confederated Tribes and Bands
Yakima Indian Nation
P.O. Box 151
Toppenish, WA 98948

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WM 101.4 s/f
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KJackson
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REBrowning

Dear Mr. Jim:

We appreciate receiving the summary of issues and comments from the Yakima Nation on the redox properties of the basalt-groundwater system at the Hanford site. Your summary of issues reiterates NRC concerns expressed in various NRC contractor reports, the NRC draft analysis of the Site Characterization Report for the Basalt Waste Isolation Project (DSCA), and NRC comments on the draft Environmental Assessment for the Hanford Site. It should be noted that NRC contractor reports are not intended to be NRC technical positions. Further, while NRC positions are contained in various NRC documents (such as the DSCA and in our comments on the Hanford Site EA), the NRC has not issued a formal technical position concerning redox. However, we are currently in the preliminary stages of developing such a technical position. Plans call for a first draft topical report on the subject to be prepared in FY 86.

Your comments reflect three concerns about the development of an NRC technical position on redox:

1. Based on the DSCA, the NRC may not adequately consider the uncertainty of the redox data used to characterize ambient site conditions (Your letter, p. 4).
2. Based on the DSCA, the NRC may not adequately consider the limitations of the geochemical codes used to calculate expected redox conditions (Your letter, pp. 11 and 12).
3. Based on the DSCA, the NRC may not adequately consider the need for DOE to determine a bounding range of redox conditions, rather than a single value (Your letter, pp. 13, 14, and 20).

The NRC is sensitive to all three of these points (Point 1--see DSCA pp. 5-2 and 5-3; Point 2--see DSCA pp. 5-16, 5-17 and 5-18; Point 3--see DSCA pp. 5-10 and 5-20), and we will continue to consider them as our position is developed.

Another source of NRC concerns to be addressed involves questioning the validity of the redox concept itself. These questions can be divided into three different considerations, each of which depends on the other. First, can

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DATE :85/07/ :85/07/ :85/07/

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an acceptable working definition of redox be formulated from which a potential (or a set of bounding potentials) can be calculated that is representative of a geologic system? A subordinate issue in defining the redox properties of a geologic system is to specify whether the redox properties of the groundwater or the entire rock/groundwater system is being considered. This is important because the oxidation state of the elements in the groundwater could be determined by reactions at the interface between the solid (rock) phases and the solution. Second, will the reactions which determine redox conditions be rapid enough to poise the potential effectively after perturbations to the system? Third, if so, will there be enough redox buffering capacity to effect the reactions necessary for adequate retardation of redox-sensitive radionuclides, and will the perturbations of waste emplacement adversely affect this buffering capacity. We would be pleased to receive your comments on these subjects.

Again, we appreciate receiving your comments and will take them into consideration as we develop our technical position. If you have any questions on this matter, please contact Kenneth Jackson (Geochemistry Section Leader/ (301) 427-4541) or David Brooks (Geochemistry Lead - Hanford Site/(301) 427-4603).

Sincerely,

Original Signed By

Malcolm R. Knapp, Chief
Geotechnical Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

DFC :WMGT	:WMGT	:WMGT	:	:	:
NAME :DJB	:mt	:KCJackson	:MRKnapp	:	:
DATE :85/08/09	:85/08/09	:85/08/9	:	:	:

FROM MJBell		DATE OF DOCUMENT 7/22/85		DATE RECEIVED 7/2 5		NO WM-85675	
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DESCRIPTION (Must Be Unclassified)		REFERRED TO		DATE		RECEIVED BY	
Improving the NRC position paper on Oxidation-Reduction Conditions of Basalt Groundwater at Hanford ENCLOSURES (See MBell's note) Closed by letter to Mr. Jim REXX from Mal Knapp. 45/08/82		MKnapp		7/29		MZ	
		BROOKS		7/30			
REMARKS							
Tagged 3520 7/27/85							

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July 22, 1985

United States Nuclear Regulatory Commission
Robert Browning
623-SS
Washington, D. C. 20555

Dear Mr. Browning:

The Yakima Indian Nation (YIN) has reviewed the NRC position on the Oxidation-Reduction Conditions of the Basalt Groundwater at the Hanford Site. We offer the following summary of the issues regarding redox conditions and some suggestions on improving the NRC position papers. If you have any questions please feel free to call.

Sincerely,

Russell Jim

Russell Jim, Manager
Nuclear Waste Program

Attachment

cc: Mal Knapp
USNRC
623-SS
Washington, D. C. 20555

RJ/skc

Mal

what are these?

*all I could find
was restating of our
issues - I wonder how
much it cost the YIN to
have these guys tell them what
NRC said.*

MJB