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**MAY 1 1984**

MEMORANDUM FOR: David Brooks  
Geochemistry Section,  
Geotechnical Branch

FROM: Warren Rehfeldt  
BWIP Project Section,  
Repository Projects Branch

SUBJECT: DRAFT SITE TECHNICAL POSITION FOR BWIP - SUPPORT  
DOCUMENT ON SOLUBILITIES

As requested in a January 31, 1984 memorandum from Philip Justus to Robert Wright, we have reviewed the draft document "Assessment of Radionuclide Apparent Solubilities by Conservative Estimation of Steady-State Concentration". This document represents the basis for geochemical issues defined by NRC for the BWIP site.

Based on our review, there appear to be some of inconsistencies in the document that should be addressed. These are indicated on the attached "marked-up" copy of the document. Our specific comments are as follows:

Executive Summary: Reference to the term "near field" appears in the second paragraph on page 4 (and elsewhere in the document). "Near field" is considered to be synonymous with "disturbed zone", as defined in 10 CFR Part 60. To be consistent with the terminology used in the draft SCA for BWIP (NUREG-0960), "near field" should be replaced by "disturbed zone" where appropriate. If, in any case, "near field" is the preferred term, additional definition will be needed so that confusion or conflict will not result.

The term "solid compositions", in consideration 1 at the bottom of page 4, is an abstraction which should be clarified.

1.0 Introduction: Some discussion is needed relative to the NRC definition of "solubility" and the BWIP-proposed definition (BWIP Operational "solubility" definition presented at the January 9-12, 1984 meeting on geochemistry held in Richland, Washington).

1.2 Regulatory Framework: Pertinent sections from 10 CFR Part 60 are provided on pages 8 and 9. At least three sections, references (e), (f) and (g), are from the proposed rule and have been changed either in section designation or wording. Sections from the final rule should be referenced.

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2.0 Background: The descriptions of "geologic HLW repository" and "geologic setting", on page 9, should be more specific and conform to the definitions of terms provided in 10 CFR Part 60.

3.1 Speciation: On page 13, and elsewhere in the document, terms such as "repository-groundwater system" and "groundwater-rock system" appear to be interchangeable (see also mark-up pages 14 and 20, e.g., "rock-water system"; "host rock solid components and groundwater"). It is not clear if the variation is intended.

3.3 Redox Conditions: The references cited on pages 16-17 should be checked. Several are not listed with the references on pages 30-31, or are incorrectly cited (see attached "mark-up" copy).

4.0 Summary of Technical Position: The relationship between "near field" and "disturbed zone" (as used in 10 CFR Part 60 and NUREG-0960) should be pointed out in paragraph 3. at the top of page 28.

References: The format on pages 30-31, is not consistent with NRC practice (see page 12 of NUREG-0650). The individual entries are not all presented in the same manner (e.g., date of publication usually follows the authors name).

**"ORIGINAL SIGNED BY"**

Warren R. Rehfeldt  
Repository Project Branch  
Division of Waste Management

Enclosure:  
As stated

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