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Dr. Narasi Sridhar, Element Manager
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SUBJECT: NRC COMMENTS ON THE HLW CHEMISTRY MANUAL PRELIMINARY OUTLINE

Dear Dr. Sridhar:

U. S. Nuclear Regulatory Commission (NRC) staff reviewed the High Level Waste Chemistry Manual Preliminary Outline submitted on March 10, 1997 by the Center for Nuclear Waste Regulatory Analysis (CNWRA). The outline is generally consistent with the scope of work described in the Operations Plan for Technical Assistance Related to Tank Waste Remediation System Licensing (February 1997). NRC staff have the following comments and suggestions:

- Although physical and chemical properties are referred to in the outline objectives (See 1. Introduction), it was not clear where this material would be covered in the HLW chemistry manual. To prevent forcing a reader to review the Hanford Tank Waste Remediation System Familiarization Report to find such information, NRC staff recommend adding a new chapter between current Chapters 1 and 2 that summarizes general tank chemistry and physical properties. This material should include, but not be limited to:

A brief description of chemical constituents (e.g. major cations, anions, and radionuclides).

A description of tank phases (sludge/saltcake/solution/gas), including a representative range of parameters such as density, viscosity, etc.

A discussion on the physical parameters of the tank contents, especially temperature.

NRC staff anticipates that material in this chapter will be culled from the Familiarization Report, where appropriate.

- Divide Chapter 8 (Models and Codes for Simulating Hanford Processes) into two chapters. The first chapter should be dedicated exclusively to model evaluation (chemical and criticality). Include a brief summary of the models' advantages/disadvantages, limitations, inherent assumptions, and the necessary data requirements. Please provide a list of the models that may be reviewed.

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The second chapter should refocus and expand the discussion on the chemical hazards associated with potential waste processing. Supporting model calculations should be used where necessary.

Both chapters would be submitted as part of the final HLW Chemistry Manual.

- Include a list of anticipated appendices in the outline. For example, large numerical tables, e.g. pertinent thermodynamic data or rate constants, should be located in the appendices.

If you have any questions, please contact me on (301) 415-7251, or Ms. Amy Bryce of my staff on (301) 415-5848.

Sincerely,

Original Signed By

Michael Tokar, Section Chief
TWRS Section
Special Projects Branch
Division of Fuel Cycle Safety
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Contract No. NRC-02093-005

Project No. 20-5709-101

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