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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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August 10, 2004

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Mr. Roy J. Schepens  
Office of River Protection  
United States Department of Energy  
P.O. Box 450, MSIN: H6-60  
Richland, Washington 99352

Dear Mr. Schepens:

Re: Letter from R. Schepens, USDOE, to M. Wilson, Ecology, dated June 3, 2004, "Request for Exception to the Hanford Federal Facility Agreement and Consent Order (HFFACO) Waste Retrieval Criteria, Retrieval Data Reports for Single-Shell Tank (SST) 241-C-106; HFFACO Milestones M-45-00 and M-45-05H, and Target Dates M-45-05L-T01 and M-45-05M-T01", with 4 attachments

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Letter to R. Schepens, USDOE, from J. Lyon, Ecology, dated February 12, 2004, in response to letter from USDOE "Results of the Video Camera/CAD Model System Test, RPP-18744, Rev. 0", dated December 17, 2003

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The Washington State Department of Ecology (Ecology) has reviewed the above-mentioned request for exception to the waste retrieval goals on Single Shell Tank 241-C-106 (C-106). Ecology first wants to commend the United States Department of Energy-Office of River Protection (USDOE-ORP) and CH2M HILL Hanford Group, Inc. (CH2M) for their efforts in retrieving waste from C-106 and other single-shell tanks. This is a real gain for the environment and Ecology wants to support continued retrieval of all SST wastes in an environmentally safe manner. Based on our evaluation, Ecology cannot approve the current request for exception to retrieval goals established in the HFFACO, but will allow USDOE-ORP to submit a revised exception request when the procedural and technical deficiencies outlined below have been addressed. As this is the first Appendix H exception request to be submitted, we want to ensure that the information provided is at a level of detail and of sufficient quality to serve as a model for all future requests.

Ecology's denial is based on both procedural and technical deficiencies. Ecology has determined that additional retrieval of Tank C-106 is not required at this time. Resolution of the deficiencies noted below will allow Ecology to make a final determination on the Limit of Waste Retrieval Technology Capability and additional retrieval action requirements for C-106.



SA2S  
Mr. Roy J. Schepens  
August 10, 2004  
Page 2

The procedural deficiency is as follows:

Completion of the requirements in the Appendix H Retrieval Criteria Procedure, Step 2(b) and Step 9, to establish an interface with the Nuclear Regulatory Commission (NRC), and reach formal agreement on the retrieval and closure actions for SSTs with respect to allowable waste residuals in the tank and soil column. Ecology understands that USDOE-ORP is working on this issue and looks forward to a positive response from the NRC.

The major technical deficiencies with the request for exception are listed below.

1. Criteria number 3, Attachment 2 of Appendix H was not demonstrated to Ecology's satisfaction because development and demonstrations of the vacuum retrieval and mobile retrieval systems have not been completed and evaluated to the degree necessary to determine their suitability for use in retrieving additional waste from C-106. USDOE-ORP should not submit a revised request until after these technologies have been proven and their usability in C-106 appropriately evaluated.
2. Criteria number 4, Attachment 2 in Appendix H was not demonstrated to Ecology's satisfaction because the chemical and radiological characteristics of the waste were not reported in accordance with the agreed upon "Tank 241-C-106 Component Closure Action Data Quality Objectives, Rev. 1" (DQO RPP-13889.) The Appendix H submittal notes a "best basis inventory [BBI] methodology". The BBI process involves developing and maintaining waste tank inventories comprising 24 chemical and 46 radionuclide components; this constituent list is not consistent with that identified in DQO RPP-13889, which contains additional constituents. It is unclear how the additional information from the DQO process is incorporated into the BBI process. The USDOE-ORP should meet with Ecology to communicate how the DQO is incorporated into the BBI process and agree to what data should be presented in any future requests.
3. Criteria number 4, Attachment 2 in Appendix H was not demonstrated to Ecology's satisfaction because the volume assessment was not consistent with the criteria detailed in the DQO RPP-13889, with the incorporation of Ecology's comments provided in a letter dated February 12, 2004, referenced above. The Stage I Retrieval Data Report (RPP-20110, Rev. 1) identifies a "Waste Immersion Technology", and references other reports as information to support alternative volume assessments. Ecology is willing to explore this method further with USDOE-ORP in the context of a DQO. When USDOE-ORP submits a revised request, it should include a remaining volume assessment that is consistent with the criteria detailed in DQO RPP-13889, or an approved revision, with the incorporation of Ecology's comments provided in the February 12, 2004, letter.

Mr. Roy J. Schepens

August 10, 2004

Page 3

4. Criteria number 5, Attachment 2 in Appendix H was not demonstrated to Ecology's satisfaction because the submittal does not contain sufficient information or clarity for a knowledgeable technical reviewer to replicate calculations or to audit the results. Furthermore, the correct risk goals were not used in the risk assessment. The risk goals that should have been used are as follows: total incremental life-time cancer risk (ILCR) for the waste management area (WMA) of less than or equal to  $1E-05$  for all carcinogenic contaminants, using the Native American scenario and total hazard index (HI) of less than or equal to 1.0 for the WMA for all hazardous chemicals, using the Native American scenario. Note that these goals are totals and do not apply to individual contaminants. Calculations of both ILCR and HI must be based on the best data available for the inventories in the WMA. Further details will be provided in Ecology's comments for Stage II Retrieval Data Report (RPP-20577), Stage I Retrieval Data Report (RPP-20110), and the Request for Exception Document (RPP-20658). Additionally, the risk assessment did not adequately address potential leak losses during retrieval. The USDOE-ORP should meet with Ecology to clarify the level of detail needed for our review. In addition, any future requests should include the information cited above.
5. In the Request for Exception, Stage I, and Stage II Retrieval Data Reports, USDOE-ORP indicates no leak loss in C-106; however, Ecology has not received the necessary data to support that assertion. In addition, USDOE-ORP used an unapproved method (the "Waste Immersion Technology") to evaluate leak loss or tank integrity. When USDOE-ORP submits a revised request for C-106, it should include the agreed to groundwater monitoring data, drywell logging data, and mass balance calculations to allow Ecology to evaluate possible leak losses during this retrieval.

Ecology will also provide a detailed set of comment documents in response to the four attachments submitted with the request for exception. These comments will be sent under a separate cover letter when Ecology has completed the consolidation of comments, but no later than August 31, 2004. It is Ecology's expectation that the comments will provide clarification and direction for potential future Appendix H submittals, as well as for incorporation into the revision to the C-106 submittal. It is not expected that a separate formal comment response from USDOE-ORP will be necessary, but that USDOE-ORP will provide the response in a revised C-106 request for exception document.

Ecology requests that any further Appendix H waiver documents be cohesive, single, stand-alone, complete documents, rather than a main document, such as RPP-20658, that cannot be understood without additional support documents (RPP-20577 and RPP-20110). This will prevent unnecessary redundancy and inconsistencies between the main and supporting documents. The document should consist of a main body with all necessary explanations and supporting appendices of data and calculations, and should include tank chemical characterization data in a format determined by the applicable DQO.

Mr. Roy J. Schepens  
August 10, 2004  
Page 4

**Other Actions:**

Ecology agrees that USDOE-ORP has met the limits of technology requirement for "Oxalic Acid Dissolution with Modified Sluicing Technology", in the present configuration for C-106. We believe that for future applications of modified sluicing, USDOE-ORP should implement technology improvements, (e.g., alternate pump designs and improvements, number and configuration of nozzles, etc.).

Ecology would like to better understand USDOE-ORP criteria for retrieval actions and decisions. Ecology requests a workshop to reach formal agreement on (1) the plan to achieve a "real time" communication process, (2) inputs to the Waste Retrieval Efficiency Evaluation, and (3) the method that USDOE-ORP will use to make a field determination of limits technology performance.

Appendix H Retrieval Criteria, Attachment 2, requires USDOE-ORP to submit the request for an exception to both Ecology and the United States Environmental Protection Agency (EPA). Future Appendix H exception requests should be submitted jointly to Ecology and EPA.

For the purposes of any future tank retrieval activity, no additional liquid shall be added solely for the purpose of evaluating residual volume, confirming other leak detection methods, or for tank integrity assessments, without obtaining approval in advance through an approved Tank Waste Retrieval Work Plan or other approved document.

Sincerely,



Michael Wilson  
Program Manager  
Nuclear Waste Program

JJL:lkd

cc: Nick Ceto, EPA  
Dave Bartus, EPA  
Delmar Noyes, USDOE  
Roger Quintero, USDOE  
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