Department of Energy
Idaho Operations Office
850 Energy Drive
Idaho Falls, Idaho 83401-1563

April 26, 2001

Stanley Hobson
Chair, INEEL Citizens Advisory Board
c/o Jason Associates
477 Shoup Avenue
Idaho Falls, Idaho 83401

SUBJECT: DOE Idaho Response to INEEL Citizens Advisory Board Recommendation #81 Regarding High Level Waste Tank Closure (EM-INTEC-01-018)

Dear Mr. Hobson:

Thank you for your letter of January 30, 2001, which offered Citizens Advisory Board (CAB) Recommendation #81 regarding INEEL's Resource Conservation and Recovery Act Closure Plan for the Idaho Nuclear Technology and Engineering Center Tanks WM-182 and WM-183. This office has reviewed the comments and questions contained in the recommendation and has developed the enclosed response.

We appreciate the positive feedback from the CAB regarding our efforts at stakeholder involvement. The success was due in part to the CAB's cooperation in working with limited written documentation, instead relying on verbal information and explanations provided by DOE-Idaho staff. We listened and incorporated suggestions into the final closure plan. The regulatory time constraints for the preparation and submittal of closure plans will continue to pose a hardship on both the DOE and the CAB, but we will use the Tanks WM-182/WM-183 closure plan development process as a model for stakeholder involvement for future closure actions.

Again, we appreciate the positive feedback from the CAB regarding our efforts at stakeholder involvement during development of this closure plan, and look forward to continuing such activities as we proceed with implementation of these closure activities.

Sincerely,

Beverly A Cook

Beverly A. Cook,
Manager

INFORMATION ONLY

Enclosure

Responses to Citizens Advisory Board Comments Regarding HLW Tank Closure

Comment #1: ***"It is possible that wastes produced as a result of cleaning tanks 182 and 183 should not be put in other Tank Farm Facility (TFF) tanks. If the resulting wastes do not require classification as HLW, it would not make sense to put them into a tank containing HLW as the result would simply increase the total volume of waste that will subsequently have to be handled (treated and disposed) as HLW."***

Response: We agree that it would not be prudent to implement a tank closure process that results in non-high level wastes being mixed with high level waste streams.

The waste currently in the TFF tanks is a mixture of radioactive liquid wastes associated with spent fuel reprocessing and other ancillary processes, and are referred to as sodium-bearing wastes, due to the relatively high sodium content when compared to the high-level wastes that have been previously calcined. (The last of the high-level wastes was calcined in 1998.) The current inventory of sodium-bearing waste includes mainly wastes from decontamination activities, laboratory operations, fuel storage basin water clean-up, and other ancillary process sources.

Due to the variety of wastes which comprise sodium-bearing waste, there is some level of uncertainty in categorizing the wastes (i.e., high-level waste or transuranic waste). Therefore, a Waste Incidental to Reprocessing (WIR) Determination, in accordance with the recently issued DOE Order 435.1, is currently under development. The WIR Determination formally evaluates whether the sodium-bearing waste, including settled solids which will be removed during closure, meets the criteria to manage and dispose of the waste as transuranic waste. If the evaluation shows that the waste does not meet that criteria, the wastes would be required to be managed and disposed of as high-level waste. The different wastes which comprise sodium-bearing waste are intermingled in the various TFF tanks. Therefore, it is envisioned that the outcome of the WIR Determination will result in the entire TFF sodium-bearing waste inventory being categorized as either high-level waste or transuranic waste.

The sodium-bearing wastes, including removed solids, will be treated by a process to be identified in the on-going Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement and the subsequent Record Of Decision. This treatment facility is not planned to be operational until after these two tanks have been removed from service and closed. Therefore to continue with the closure activities, the wastes removed from these two tanks during cleaning, including the tank decontamination solutions, will be temporally stored in other existing tanks until the treatment facility is operational.

The tank farm closure project is currently assuming that the WIR Determination will show that the sodium-bearing wastes are appropriately categorized as transuranic wastes. As such, current tank cleaning and closure plans would not result in high-level wastes being mixed with non-high-level wastes. If the WIR Determination shows that the sodium-bearing waste should be categorized as high-level waste, the plans for tank cleaning would be reviewed and modified, as necessary, to ensure that decontamination solutions from the tank cleaning activities would be managed appropriately for treatment and disposal.

Comment #2: ***"When will the DOE Tier I plan be prepared and ready to review (no date was identified)?"***

Response: The DOE Tier 1 Closure Plan is currently under development and is to be ready for internal DOE review this April. The final approval from DOE-HQ is scheduled to be completed by March 2002. DOE-Idaho plans to work with the Citizens Advisory Board to develop an

appropriate timeframe and mechanism for continued stakeholder involvement in the closure planning process.

Comment #3: ***"The impression is that either clean closure or landfill closure will be implemented, but it is unclear what determination process will be used to decide whether the tanks will be eligible for clean closure or they will be required to meet the requirements of a landfill closure. What are the parameters or criteria for landfill closure (deferred until 2012)? Why does landfill closure come into the picture (Section 5 states, "if landfill closure is necessary" many times)? Discussion is needed for clarification about the parameters that would be used to support a determination of whether landfill closure is or is not necessary."***

Response: Closure under landfill standards would only be required in the event that tank cleaning activities failed to meet performance standards agreed to by the State of Idaho.

The goal of this closure project is to use existing technologies to remove as much waste as is technically and economically practical from tanks WM-182 and WM-183, and from the other tank farm tanks. This is the prudent approach, and will likely be required as part of the approval process for both the State of Idaho-approved HWMA/RCRA Closure Plan, and the DOE-approved Closure Plan (which addresses the radiological risks associated with closure.) However, it is recognized that current decontamination technologies may not be totally effective, and that some residual material will likely remain in the tanks after cleaning efforts are complete. Therefore, while a complete clean closure under HWMA/RCRA (removal of ***all*** hazardous waste) is not judged to be technically or economically practical, a risk-based approach is planned whereby the waste removal is effective in meeting certain performance standards. This may have been previously described to the CAB as "clean closure to risk-based standards." These performance standards are described in the Closure Plan and center on meeting risk criteria for both carcinogenic hazardous constituents and non-carcinogenic hazardous constituents. Specifically, for carcinogens, the risk of a cancer incidence to an individual exposed over a lifetime must be less than 10^{-4}. For non-carcinogens, the criteria is based on concentrations that an individual could be exposed to on a daily basis without appreciable risk of a deleterious effect during a lifetime (i.e., the calculated hazard index must be less than 1). Achievement of these performance standards during closure would thus satisfy the HWMA/RCRA requirements, without the need for the long-term monitoring and care actions associated with a landfill closure.

Consistent with past RCRA/HWMA closure actions at the INEEL, the determination of whether the risk-based closure conditions (performance standards) can be met will be made using data from samples taken from the tanks after waste removal and decontamination efforts are complete. At that point in the closure process, a risk assessment will be performed using this sample data and techniques approved by the Idaho Department of Environmental Quality. The risk assessment will compare the risk associated with leaving trace amounts of residual material in the tanks with State of Idaho-approved performance standards. If the performance standards described in the HWMA/RCRA Closure Plan are met, the remaining closure plan activites (grouting) would continue. If the risk assessment showed that the DOE failed to meet the performance standards, a decision would be made as to whether additional decontamination efforts would be prudent. If further cleaning was performed, samples would be re-taken after the additional cleaning, and risk analysis performed on the new samples. If further decontamination efforts were to be judged as ineffective, no further tank cleaning would take place. Such a process is planned for each of the TFF tanks.

It is important to note that the WM-182/WM-183 Closure Plan is really a "partial" closure plan for the Tank Farm Facility. The high-level waste tank farm tanks, vaults, and associated piping and equipment comprise the Tank Farm Facility, an interim status unit regulated by the HWMA/RCRA. The Closure Plan for WM-182 and WM-183 descibes the approach for the first in a series of closures leading to a final closure of the Tank Farm Facility. As such, final decisions

regarding whether or not risk-based closure has been achieved for these tanks can be made only after closure activities for all the tanks have been completed, and a determination (risk-based closure or landfill) is made for the Tank Farm Facility as a whole, based upon a risk assessment of the entire TFF.

Although the goal of the WM-182/WM-183 closure project is a risk-based closure, and the plan written accordingly, HWMA/RCRA requires that a "Contingent" Landfill Closure Plan be submitted for hazardous waste systems such as the TFF without adequate secondary containment. This Contingent Landfill Closure Plan, which describes post-closure care and monitoring activities for the tank farm, would be implemented in the event the closure process could not meet the risk-based closure performance standards.

Comment #4: ***"It is unclear how the ongoing cleanup involving the soils around the tanks (being conducted in compliance with Comprehensive Environmental Response, Compensation, and Liability Act) relates to the closure plan for the tanks. Will the soils be included in the landfill cleanup, if it is necessary?"***

Response: Future cleanup of the tank farm soils are being addressed as part of the CERCLA program, and as such, are not proposed as part of the WM-182/WM-183 RCRA Closure Plan.

TFF closure actions are being coordinated with CERCLA actions regarding the soils in and around the TFF. The TFF closure program addresses the tanks, vaults, and associated piping and equipment that comprises the tank systems. The soils surrounding the tank systems are being addressed by the CERCLA program as part of Waste Area Group 3, Operable Unit 3-14. As these programs are being implemented concurrently, close integration is required to ensure that closure and remediation actions are effective in protecting the environment. At the completion of the TFF closure actions, it is planned that the CERCLA program will address the need for implementing any final landfill closure actions (i.e, permanent caps and long-term monitoring).

Comment #5: ***"On page 33 of the main document, it states that closure may require a vessel off-gas system to be installed. The document later states that a temporary off-gas system will be installed. The document needs to elaborate on how the determination will be made to install the off-gas system."***

Response: Additional evaluation is planned prior to making a final determination regarding the need for a temporary vessel off-gas system.

It is important for personnel safety and protection of the environment to maintain proper ventilation control of the tank farm tanks, both during normal operations and during any maintenance or closure activities. Currently, it is not clear as to whether the normally installed vessel off-gas (VOG) system will provide the proper ventilation control during the tank cleaning and grouting evolutions. As a result, the INEEL is designing a temporary ventilation capability to augment the normally installed system, if needed. Testing planned for later this year will provide information which will assist in determining the need for the temporary system. The discussion in the closure plan is intended to inform the reader of the potential need for such a system.

If installed, this system would be connected to the existing vessel off-gas line to provide additional air movement through the tanks and vaults. The air would be returned to the existing VOG system, and continue through the existing filters and monitoring system. The additional air movement would thus provide for radiological contamination control when the tank is open for closure activities.