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Department of Energy
Richland Operations Office
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Richland, Washington 99352

NOV 22 2004

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Mr. William Johns
389 Cottonwood Drive
Richland, Washington 99352

Dear Mr. Johns:

COMMENTS ON THE DRAFT TRI-PARTY AGREEMENT MILESTONE CHANGE PACKAGES FOR THE K BASINS SLUDGE AND K BASINS CLEANUP (M-34-04-01 AND M-16-04-04)

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Thank you for submitting comments on the draft K Basins Sludge and K Basins Cleanup Change Packages. Your comments are included in the enclosed Comment and Response Document. This document and the final change package can be accessed on the internet at http://www.hanford.gov/tpa/current.html (see "Modifications Which Have Undergone Public Comment") and also can be accessed electronically at the U.S. Department of Energy's Public Information Repositories.

The State of Washington Department of Ecology, the U.S. Environmental Protection Agency, and the U.S. Department of Energy appreciate the time and effort you took to provide input on the proposed changes to the Tri-Party Agreement for the K Basins Sludge and K Basins Cleanup.

If you have any questions, please contact me, or you may contact Matt McCormick, Assistant Manager for the Central Plateau, on (509) 373-9971 or Joel Hebdon, Director, Office of Environmental Services, on (509) 376-6657.

Sincerely,

Keith A. Klein
Manager

AMCP:PMP

Enclosure

cc: See Page 2

cc w/encl:
Administrative Record
Environmental Portal

cc w/o encl:
N. Ceto, EPA
L. D. Crass, FHI
L. J. Cusack, Ecology
L. L. Fritz, FHI
S. Harris, CTUIR
J. S. Hertzel, FHI
R. Jim, YN
T. Martin, HAB
E. J. Murphy-Fitch, FHI
K. Niles, ODOE
R. E. Piippo, FHI
P. Sobotta, NPT
M. A. Wilson, Ecology

Hanford Tri-Party Agreement

Response to Public Comments on K Basin Sludge and K Basin Cleanup Change Packages (M-34-04-01 and M-16-04-04)

November 2004

1. Comments submitted by Ken Niles, Oregon Department of Energy

Comment 1: Most importantly, the proposed milestones provide little detail about how a treatment process for the sludge will be developed. The problems in dealing with the sludge to date are attributable in large part to the lack of a definitive plan for how and where to process the sludge. A detailed plan and associated milestone is needed to assure that plans are developed, waste form(s) identified, and tests are performed resulting in a waste form acceptable to whatever disposal site for which the waste is ultimately approved. We understand that the U.S. Environmental Protection Agency (EPA) proposes to require these plans be detailed in remedial action work plans in an amendment to the Record of Decision on the basins. Given that this work is critical to the success of the project, we would prefer to see these requirements as a major M-34 milestone, allowing EPA to take enforcement action and levy penalties if they are missed.

Response to Comment 1: The milestones were intended to set schedules, not to discuss how the treatment process would occur. The Parties are preparing an amendment to the existing Record of Decision to proceed with sludge treatment. The detailed plans for the treatment will be described in the remedial design report/remedial action work plans (RDR/RAWP) accordingly. The RDR/RAWP is a primary document that will include a schedule. Primary documents and their schedule are enforceable.

Comment 2: One or more facilities must be identified for storage and processing of the sludge. The U.S. Department of Energy (DOE) previously identified T Plant for interim storage of the sludge. DOE Headquarters later indicated a strong preference to close T Plant. Recently, the Record of Decision for the Hanford Solid Waste Environmental Impact Statement designated T Plant for various activities. Frankly, we're not certain at this point what DOE's plans are for T Plant. DOE must assure that needed facilities - whether T Plant or some other facility or combination of facilities - are funded and available.

Response to Comment 2: DOE is committed to removing the sludge and completing the K Basin decommissioning on schedule. If T Plant or any facility is used as part of this effort, it will be funded appropriately. The treatment facility will be identified in the RDR/RAWP.

Comment 3: We agree that the sludge is likely transuranic waste and appears best suited for disposal at the Waste Isolation Pilot Plant (WIPP). However, DOE and EPA must not simply presume the waste will meet WIPP acceptance requirements. We are greatly concerned that the State of New Mexico has not yet provided written agreement that the sludge meets the WIPP Waste Acceptance Criteria. Without this assurance, there is a risk the treated sludge could become orphan waste and remain permanently at Hanford.

Response to Comment 3: The agencies share your concern. The remedial action work plans will address the disposal pathway.

Comment 4: The proposed milestones indicate that some waste that has characteristics of transuranic waste but does not meet the WIPP 100 nCi/gram threshold may be disposed in the Environmental Restoration Disposal Facility. We have previously questioned whether the DOE standard at 100 nCi/gram properly reflects the definition of transuranic waste under Federal law, which we understand to be 10 nCi/gram. We request that DOE respond in writing, and document the basis upon which its definition of transuranic waste was established.

Response to Comment 4: The definition of transuranic waste was promulgated by EPA in 40CFR191, "Environmental Radiation Protection Standards for the Management of and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Waste."

Comment 5: Following are additional, specific comments on the milestones proposed:

- We understand that the sludge will be moved into containers built in the basins, and then later sluiced to an onsite facility for processing, or into other containers for transport to a processing facility. There have been serious problems with sludge handling in the past, including hydrogen off-gassing. We are concerned that the proposed milestones leave too many questions unanswered and provide little assurance that EPA will have the tools it needs to assure this work is completed in a timely manner.

- Milestones are missing for removal of the sludge from the K West Basin, for groundwater remediation, and for completion of water removal from the basins. The draft change package indicates that the sludge treatment actions will be detailed in a work plan. A milestone is still needed for submittal and approval of this work plan. If the intent is to use completion of major project milestones to drive these actions, this should be so noted.

Response to Comment 5: The milestones were not intended to discuss how the treatment process would occur. DOE and EPA are preparing an amendment to the existing Record of Decision to proceed with sludge treatment. The detailed plans for the treatment will be described in the remedial design report/remedial action work

plans (RDR/RAWP) accordingly. The RDR/RAWP is a primary document that will include a schedule. Primary documents and their schedule are enforceable.

The RDR/RAWP must be submitted and approved by EPA before DOE will authorize the work. Project activity requires timely submittal of the work plan so a separate milestone for the work plan submittal was not considered necessary.

Comment 6: We understand that DOE's current plans for processing the north load out pit sludge include diluting the sludge by about twelve to one with grout for shielding purposes. Treatment of the sludge should be done in such a way as to minimize the increase in volume of the waste and consumption of WIPP capacity. Much waste remains at Hanford and elsewhere that needs to go to WIPP.

Response to Comment 6: The 6 cubic meters of K East Basin North Load Out Pit (NLOP) sludge if grouted will be approximately 72 cubic meters. Consistent with standard waste management practices, DOE will make every effort to minimize the amount of waste generated.

Comment 7: Cleanup of the leaked wastes under the pickup chute at K East is not specifically identified, and is presumably included as a part of soil remediation under M-016-57. This should be clarified. Removal of the leaked waste should occur as part of the interim remedial action for the basin and not be postponed to an uncertain removal 75 years from now when the reactors are dealt with.

Response to Comment 7: Cleanup of the soil contamination caused by past K East Basin leaks will be done as a separate action sequenced after basin removal is completed. This soil cleanup action is already scoped in the 100 Area Remaining Sites CERCLA Record of Decision (ROD). As the soil area impacted by past leakage is presumably under the construction joint that separates the reactor building foundation from the basin, it is likely that soil contamination will be found under the reactor building.

Comment 8: The draft change package notes that Milestone M-034-30 (commencement of sludge removal) is not satisfied by beginning removal of sludge from the K East Basin north load out pit. It is advisable and preferable for the milestone to specify the conditions that will satisfy the milestone, rather than including a note about one particular action that will not satisfy it.

Response to Comment 8: The Parties agree that a statement should be added to reflect the difference between the North Load Out Pit sludge and the remainder of the basin sludge. For example: "Milestone M-034-30 will be satisfied when the process begins to remove the K Basin floor, pit, and canister sludge and the process is operational."

Comment 9: As a general comment, the ordering of the milestones is tremendously confusing. The public would be better served when complex milestones are changed

by the Tri-Parties by including a table detailing the milestones, their dates and changes that more clearly show the order in which the tasks will occur (see attached example).

Response to Comment 9: The Parties will rearrange the milestones in the change package to progress in a chronological order.

2. Comments submitted by Todd Martin, Chair, Hanford Advisory Board

Comment 1: The project to remove and safely store the spent fuel from the K Reactor storage basins has been of interest and concern to the Hanford Advisory Board (Board) since the inception of the project. During the ten years this project has been underway, the Board has closely followed progress on the project and has, on a number of occasions, expressed concern. (See Board Advice #6, 72, 107, 113, and 148.) The Board has always stated that the safe and cost-effective removal and disposal of the spent nuclear fuel from the K Basins was one of its highest priorities due to the threat this improperly stored fuel posed to the Columbia River.

At this time, work on the project has progressed to the point that the majority of the fuel has been removed, processed, and safely placed in interim dry storage pending its ultimate disposal. This phase of the project is currently scheduled for completion by July 2004. The remaining work includes the removal, treatment, and packaging of the sludge and broken fuel particles from both the K East (KE) and K West (KW) basins, the dewatering, hydrolasing of vertical wall surfaces, and demolition and removal of the storage basin structures. The project completion date is March 31, 2009.

Proposed Path Forward

Initially, sludge from the North Load Out Pit (NLOP) will be transported to the 325 Building in the 300 Area for treatment and packaging for Waste Isolation Pilot Plant (WIPP) disposal. Once the above-ground KE-KW sludge pumping system is in operation, the remaining KE NLOP sludge and the sludge from the KE basin floor will be pumped to KW for consolidation with the KW sludge, for treatment and packaging at KW for WIPP disposal. Following completion of the sludge removal operation, the storage basin structures and their equipment will be dewatered, cleaned, demolished, and disposed of in the Environmental Restoration Disposal Facility (ERDF) or other suitable repositories.

Response to Comment 1: The Tri-Party agencies appreciate and want to thank the HAB for the years of interest, ideas, and advice it provided for the K Basins cleanout effort. There is one change from the path forward described in this advice. In June DOE decided to not use the 325 Building to process the sludge from the North Load Out Pit. Instead, the sludge will be retrieved and transported to the T Plant where it will be treated to meet appropriate waste acceptance criteria.

The spent fuel project will continue to remain one of the Tri-Party agencies highest priorities.

Comment 2: Advice: The Board supports the completion of the project in a timely and cost-effective manner and encourages the Tri-Parties to ensure the commitment of adequate management, engineering, and operations attention to ensure the successful completion of the project.

Response to Comment 2: The Parties agree.

Comment 3: More specifically, project management should take effective action to ensure there is adequate integration between the engineering and operations/ maintenance staffs in the development, installation and operation/maintenance of the sludge removal, transfer, and packaging systems; i.e., fully implement the use of the existing Integrated Safety Management (ISM) and Enhanced Work Planning (EWP) processes as the basic strategy for accomplishing the recommendations. Worker requests for ergonomic tools should be carefully considered, in compliance with the principles of ISM. Following the above advice is necessary to alleviate the equipment and operations problems that have been experienced on this project to date and minimize potential risks to personnel and the environment.

Response to Comment 3: DOE and Fluor Hanford, Inc. are committed to the use of Integrated Safety Management and Enhanced Work Planning processes. For example, in response to recent worker concerns and suggestions on the fuel removal process, ergonomic tools were designed and put in place.

Comment 4: The Board is pleased the change package includes a commitment to treat the K Basins sludge and send the treated material to a permanent, approved, offsite waste repository, but issues related to the classification of the packaged waste have not been resolved. The Board expects to have continuing interaction on this issue.

Response to Comment 4: There will be ongoing opportunities for the Hanford Advisory Board to be involved in this issue, e.g., the proposed plan for a ROD Amendment.

3. Comments submitted by Confederated Tribes and Bands of the Yakama Nation

Comment 1: It is come to our attention that the Energy department will begin removal and stabilization of degraded spent fuel sludge form the 100 K East Basin for disposal in the Waste Isolation [sic] Pilot Project [sic] in New Mexico as transuranic wastes.

The Yakama Nation objects to reclassifying these wastes as transuranics, since the preponderance of the sludge, in terms of weight and radioactivity, resulted from degradation of spent reactor fuel (see attached table).

DOE has not provided a technical and legal justification that demonstrates that the K Basin sludge and spent reactor fuel are not one and the same. Proceeding with this effort sets a dangerous precedent, in terms of processing safety at Hanford and disposal risks in the Waste Isolation Pilot Plant, which was not constructed for DOE high-level waste or spent reactor fuel disposal.

As DOE's data clearly indicates, the K Basin [sic] sludge is primarily the byproduct of the degradation of spent uranium-metal reactor fuel. It comprises a volume of approximately 52 cubic meters and is composed of irradiated corroded spent reactor fuel, aluminum and zirconium, windblown material and miscellaneous materials, such as ion exchange material (both organic and inorganic) and paint chips. (DOE/EIS-0189-SA2, K Basin Sludge Inventory, table 3.22).

The wastes are highly radioactive and contain as much as 878,000 curies of radioactive materials, of which about 12 percent are transuranic (DOE/EIS-0189-SA2, K Basin Sludge Inventory, table 3.22). The mixture of radionuclides in the sludge is the same as found in the spent fuel.

Response to Comment 1: The Remedial action work plans will address the disposal pathway.

Comment 2: The Yakama Nation has several safety concerns:

- High levels of radiostrontium and radio cesium in the sludge pose safety concerns because of high-radiation dose rates, and decay heat build-up during storage, retrieval and processing.

- Generation of hydrogen gas from the corrosion of metallic uranium (hydration), which makes up more than half of the sludge weight, poses potentially significant fire and explosion risks (DOE/EIS-0189-SA2, K Basin Sludge Inventory, table 3.22). As the uranium corrodes and hydrogen is trapped, the sludge is estimated to expand from 1.6 to 12.9 times its original volume (A. J. Schmidt C.H. Delegard. Updated Volumetric Expansion Factors for K Basin Sludge During Storage, PNNL-14228, March 2003, Table S.1, p. iv).

  The processing and storage of k-basin sludge is expected to result in further hydrogen has generation and sludge growth, which could over-pressurize canisters and poses explosion and fire risks. DOE-sponsored research indicates that hydrogen gas generation "may take years of subsequent uranium compound oxidation to reach the projected end-state uranium compound distribution (DOE/EIS-0189-SA2, K Basin Sludge Inventory, table 3.22). The potential worker exposure from a waste drum explosion at Hanford was reported by the Defense Nuclear Facilities Safety Board staff to be the lethal range of 640 rem. (Defense Nuclear Safety[sic] Facilities Safety Board, Staff Issue Report October 13, 2003, Memorandum for J. K. Fortenberry, Technical Director From D. Ogg, Subject: Transuranic Waste Retrieval, Hanford Site, p.3).

Response to Comment 2: The Parties agree that it is important to highlight the inherent risks associated with management of the sludge. It is highly radioactive and produces potentially explosive hydrogen gas. These are two key controlling factors in both its management prior to treatment, and also key design criteria for the treatment process. Potential worker dose and public and environmental exposure from an accident or poorly managed handling and treatment process could be very high. Design and conduct of this work must be done in a safe manner.

We will continue to perform our activities in accordance with applicable codes, standards, and procedures for nuclear safety and industrial safety operations.

Comment 3: If the sludge were treated for disposal as high-level waste DOE estimates that it would result in a glass volume between 56 and 170 square meters and add 20 to 40 days to the operation of the Waste Treatment Plant (U.S. Department of Energy, Supplement [sic] Analysis for the Tank Waste Remediation System, DOE/EIS-0189-SA2, May 1998, p. 42).

Response to Comment 3: The volumes as stated in DOE/EIS-0189-SA2 (Tank Waste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement) are accurate. However, this is not applicable because the K Basin sludge is not high-level waste and it is not planned to be treated as such.

Comment 4: DOE should provide safety basis details and subsequent safety controls to assure the public that the risks associated with this highly radioactive and potentially flammable or explosive material are being responsibly addressed.

Response to Comment 4: We will continue to perform our activities in accordance with applicable codes, standards, and procedures for nuclear safety and industrial safety operations.

Comment 5: The Yakama Nation urges the department to abandon its ill-conceived decision to reclassify K Basin sludge as transuranic waste, and proceed to stabilize these materials in a transparent manner that ensures public and worker safety, for subsequent disposal as high-level wastes.

Response to Comment 5: The Remedial action work plans will address the disposal pathway.

4. **Comments submitted by Nancy Kroening**

Comment 1: The following is comment on proposed changes to the K Basin sludge/cleanup milestones: What kinds of containers will hold the sludge? It sounds like worker safety would be improved if containers are strong and sealed tightly.

Response to Comment 1: The basin containers are made of stainless steel. There will be four of them and they will be located in the southeast section of the basins. The containers are substantial, but they are not going to be sealed. Their purpose is to consolidate the sludge to facilitate retrieval for treatment and to provide defense in depth protection.

Comment 2: How will transport to New Mexico be achieved? Truck or rail? In what kind of truck/rail cars and how marked?

Response to Comment 2: Any transportation of waste off site will be in accordance with all Department of Transportation requirements.

Comment 3: By "grout" do you mean "concrete"? What exactly is the material used?

Response to Comment 3: Grout is essentially concrete without the gravel and aggregate. It is primarily cement, fly ash and water.

Comment 4: How is the schedule revised? Forward or backward?

Response to Comment 4: The overall schedule for basin removal has been revised forward (i.e., will be completed earlier than originally planned). However, some interim activities will be completed later than originally planned to accommodate safety concerns and the change in technologies and methods used to completely remove the basin structures.

Comment 5: In all these tasks, meeting and beating the timelines, worker safety and getting the job done are paramount. Protecting groundwater and preventing air pollution are also high goals.

Response to Comment 5: We agree.

5. Comments submitted by G. Thomas Clark

Comment 1: Your Fact Sheet has this statement:

"The scheduled for the retrieval is slightly delayed from its original date; however, ..."

I find this a serious understatement to fool the public. The K Basin was originally scheduled to be completed in the year 1998. It missed that schedule and over spent the budget and a new schedule and budget were negotiated in 1998. A new schedule was again negotiated in December of 2002. I don't remember the total number of times the clean up schedule for K Basins was renegotiated, but, we are doing it again. As a public citizen, I am tired of paying the big salaries of unskilled construction managers. I am tired of wimpy oversight managers who are afraid of getting tough with the contractors. There is too much job preservation occurring by the contractors.

Workers are allowed to dilly dally, knowing that as long as there is a public safety hazard, they will be paid. The government employees in charge of these clean up projects are looking the other way and letting this fraud of the U. S. Taxpayers occur. The government employees also know that they have job security by letting clean up work linger. This is a conflict of interest.

No change orders to increase the time of completing the work should be approved. Contractors missing schedules should be replaced. Inexperienced workers should be laid off. Workers not giving their best should be warned. U.S. Department of Energy managers of the K Basin project should be fired.

I am not against the need for the clean up work. I am against the total lack of discipline and resolve shown at Hanford. Frankly, this country has higher priorities for spending the public money.

Response to Comment 1: The overall schedule for basin removal has been revised forward (i.e., will be completed earlier than originally planned). However, some interim activities will be completed later than originally planned to accommodate safety concerns and the change in technologies and methods used to completely remove the basin structures.

6. Comments submitted by William Johns

Comment 1: The removal of the sludge can be delayed even further than October 31, 2007 date. I think too much is being spent on low-risk areas.

Response to Comment 1: The Parties believe the K Basin sludge work will eliminate a significant risk at the Hanford Site. We do not consider this to be a low risk activity and do not wish to delay the project any further. In addition, eliminating this risk will allow the government to better focus resources on other site risks.