

August 24, 2006

Mr. E. Kurt Hackmann  
Site Manager  
Westinghouse Electric Company LLC  
3300 State Road P  
Festus, MO 63028

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE INITIATION  
OF A DETAILED TECHNICAL REVIEW OF WESTINGHOUSE'S JUNE 8, 2006,  
LICENSE AMENDMENT REQUEST (TAC NO. L52692)

Dear Mr. Hackmann:

On July 7, 2006, (ML061880363), the U.S. Nuclear Regulatory Commission (NRC) staff informed you that additional information would be needed in order for staff to start its technical review of the June 8, 2006, Westinghouse Electric Company LLC (WEC) license amendment request (ML061630034). The needed information is summarized in the enclosed Request for Additional Information (RAI). When developing the RAI, the staff also considered the January 25, 2006, Meeting Report (ML060900328), as well as electronic mail correspondence (ML061950076 and ML061950078) regarding guidance staff has already provided on the burial pit characterization. Please note that the technical review of any response to the RAI, may identify omissions in the information or technical issues that might require additional information before completing the licensing action.

E. K. Hackmann

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Please respond to the enclosed RAI within 30 calendar days of the date of this letter. Staff will begin it's technical review of WEC's license amendment request after evaluating responses to the RAI.

Please direct any questions concerning the above to me at (301) 415-8580 or [ams3@nrc.gov](mailto:ams3@nrc.gov).

Sincerely,

**/RA by C.Glenn for/**

Amy M. Snyder, Senior Project Manager  
Materials Decommissioning Section  
Decommissioning Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 070-00036  
License No.: SNM-00033

Enclosure: Request for Additional Information

cc: A. J. Nardi, Chairman, Project Oversight  
T. Chance, Radiation Safety Officer  
B. Moore, Project Manager, Missouri Department of Natural Resources

E. K. Hackmann

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**ML061940163**

<b>OFC</b>	DWMEP:PM	DWMEP:PM	FCSS	NSIR	DWMEP:PM
<b>NAME</b>	ASnyder	BWatson	HFelsher	EJohannenmann	ASnyder for SNallaswami
<b>DATE</b>	7/24/06	7/25/06	7/25/06	7/25/06	7/28/06

<b>OFC</b>	DWMEP:SC	DWMEP:DD
<b>NAME</b>	RTadesse	KMcConnell
<b>DATE</b>	08/14/06	08/23/06

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## **Request for Additional Information**

### **Nuclear Criticality Safety:**

1. Explain why Westinghouse Electric Company LLC (WEC) proposes the large reductions in the possession limits for Items A, B, and C. When performing the activities described in the Buried Waste Characterization Plan (BWCP), explain and justify which possession limit Item(s) WEC will use for the soil, waste, water, and other material that will be unearthed or brought onto the site.
2. Specify the type, including radionuclide, enrichment, and specific location of Special Nuclear Material (SNM) expected to be encountered in BWCP activities by Westinghouse. Explain and justify how WEC intends to determine the enrichment of SNM encountered during BWCP activities.
3. Explain the purpose of the information described in Section 3.4 (Nuclear Criticality Safety Considerations) of the BWCP. WEC previously told the U.S. Nuclear Regulatory Commission (NRC) staff that the current Nuclear Criticality Safety (NCS) Program (i.e., Chapter 4 of the license application) would be followed during BWCP activities. However, Section 3.4 contains three NCS control methods that are inconsistent with the current NCS Program. Identify and justify which controls will be used for which BWCP activities. In addition, for any part of the NCS Program that WEC does not intend to follow during BWCP activities, WEC must submit a license amendment request containing the change(s) to the NCS Program, as well as the safety basis justifying the change. The amendment request will need to provide justification how the regulatory requirements will still be met or else provide justification for an exemption from the regulatory requirements.
4. Explain and justify why WEC does not intend to control moderators during BWCP activities. Since WEC plans to create trenches/holes where water could be collected, if there is sufficient mass of SNM in the ground and there were sufficient moderator collected, an inadvertent nuclear criticality would be possible.
5. Explain WEC's use of the terms 'soil' vs. 'spoils' in Section 2.3 (Spoils Management) of the BWCP. The use of the terms appears to be inconsistent, and NRC has not been able to determine what actions WEC intends to perform for that part of the BWCP.

### **Physical Security:**

6. Provide a proposed physical security plan that addresses the activities proposed in your request. NRC will not approve WEC's request for subsurface characterization without a physical security plan that covers the activities described in its proposed license amendment request.

Enclosure

### **Material Control and Accountability (MC&A):**

7. With regards to RAI #1 above, as necessary, provide an update to WEC's current MC&A plan so that it is consistent with the proposed activities you are requesting. NRC will not approve your request for subsurface characterization without a MC&A plan that covers the activities described in your proposed license amendment request.

### **Sampling and Analysis:**

8. Identify when and how WEC plans to characterize the burial pits and the Red Room Roof Burial Area to support the decommissioning of the burial pit and the final status survey. The plan does not include provisions to adequately characterize the burial pits or the Red Room Roof Burial Area to design the final status survey program. Based on the ALARA principle, it would be prudent from a worker safety, environmental and economic standpoints to characterize these areas during the trenching and boring activities. Please justify how the BWCP sampling and data collection approach is consistent with ALARA.

Contrary to previous WEC discussions with NRC staff, the BWCP is not consistent with NRC Guidance in NUREG - 1757. Volume 2 page 4-10 states "The information supplied by the licensee should be sufficient to allow the NRC Staff to determine that the characterization survey design is adequate to determine the radiological status of the facility." The BWCP provides historical information on the burial pits and the Red Room Roof Burial Area, but does not address fundamental Characterization Plan requirements as identified in both NUREG -1757, Vol 2, Section 4.2 and the Mutli-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (NUREG -1575) Section 5.3. These include the Data Quality Objectives (DQO) process, the number of samples, types surveys to be taken, and the selection of instrumentation based on detection capabilities. Note that NUREG - 1575 or NUREG - 1757 are not referenced in Section 5.0.

The staff believes that WEC has the opportunity to obtain more than adequate characterization samples and data in accordance with NRC guidance and MARSSIM during the trenching and boring activities, and be better prepared to adjust the FSS Program, if needed, during remediation. This would be consistent with the WEC discussions held with the NRC staff at the January 25, 2006 public meeting at NRC headquarters, the staff email of March 29, 2006 (ML061950076) to J. Nardi and the staff visit to Hematite on April 24-26, 2006.

9. In Section 2.1.3.1, the BWCP states that portable instrumentation will be used to survey the excavations, but no details are provided. The BWCP states that samples will be collected from each test trench and the samples will be analyzed per Table 3, Analytical Methods. In Section 2.1.3.3, Sampling and Analysis, it is stated that samples will be collected in accordance with the existing Quality Assurance Program Plan (QAPP) and site procedures. It is not clear how these documents relate to the BWCP, since they are not referenced in Section 5.0. Clarify how the QAPP relates to the BWCP.

### Operations:

10. Specify where trenching and sampling will occur and how WEC intends to evaluate and interpret the data. The BWCP does not provide specific location details for the trenching and cover removal. The BWCP appears to allow trenching of the entire burial pit area and removal of the cover of all 38 burial pits. This is inconsistent with licensee briefings provided to the NRC staff, which described only limited trenching and cover removal to obtain samples. The BWCP appears to be a pit locator plan and remediation plan for the surrounding non-pit areas and not a complete characterization plan.
11. Provide a completed base map identifying where WEC plans to trench and take samples, including:
  - groundwater monitoring wells
  - both surface water and groundwater hydrologic features along with the readily available hydrologic data (surface and groundwater).
  - the locations of the 38 unlined pits and the approximate locations of the undocumented additional 20 to 25 pits.

In Section 2.1.1, "Task 1 - Preparation of Base Map," WEC describes compiling a base map which will be based on "currently available information" and will be used to identify expected and possible Burial Pit and Red Room Roof Burial Area locations. This (current) report should include a base map for properly reviewing the procedures "to retrieve materials or groundwater for treatability analysis or testing of alternative remedial technologies" (Page 8 of 40), to carefully remove "cover soil materials and exposing the top surface of the underlying waste" (page 24 of 40), and to aid in performing elective excavation of a "more substantial sample of waste from the burial pits or nearby soils" (Page 28 of 40).

12. Clarify the depth of covering that WEC will use for restoring the pit cover. In Section 2.3, WEC states that it plans to restore the pit cover to a maximum of four feet. This is inconsistent with the 1965 letter referenced in Section 1.3.1.1, that required a minimum of four feet of soil covering and appears to be a decrease in the safety afforded by the authorization to bury the material. Also, state the technical basis for the four feet of soil covering.

### Water Management:

13. Describe the specific strategy for water management controls, to include the possibility of exceeding the daily capacity of the existing site water treatment system. In Section 3.3.1, WEC acknowledges that, as the volume of water generated as a result of the work described may exceed the daily capacity of the existing site water treatment system, additional water storage may be needed, but no specifics are provided, for example:
 

Page 26 of 40, Attachment 2, Section 2.1.3.2, Phase 2 - Vertical Test Pits  
Item 5 - How much of groundwater will accumulate in the vertical test pits and the basis for the quantity estimate? The portable pumps and the water tank should have sufficient capacity to handle the amount of groundwater accumulation.

Page 35 of 40, Attachment 2, Section 3.3.2, Water Management. Provide detailed descriptions of the additional temporary storage through bladders, pools, or portable tanks. Staff is concerned about insoluble sediments, suspended solids, and the relationship to present groundwater contamination.

As previously discussed with WEC, a detailed water management plan is needed to ensure that regulatory limits would not be exceeded during decommissioning activities. The staff continues to be concerned that WEC will not be able to control liquid effluents per NRC requirements.

### **Hydrology:**

14. Provide hydrogeologic characterization information so that staff can properly evaluate the impact of the installation of the deeper test pits on the groundwater system (Page 2 of the letter (Ref: HEM-06-43) indicates in the last paragraph that groundwater is expected to be encountered during the installation of the deeper test pits.) Refer to section 16.37 of NUREG 1757, Vol. I for details.
15. It is stated that the burial pits were nominally 20 by 40 feet in plane and 12 feet deep. Specify whether the groundwater level is above or below the bottom of the pits. (Page 9 of 40, Attachment 2, Section 1.3, Burial Pits). Similarly, describe the groundwater level relationship to the Red Room Roof Burial Area.
16. Evaluate the impacts of the burial pits, both documented and those WEC states are undocumented, on the site hydrologic system.
17. The last bullet on Page 10 of 40 indicates that groundwater sampling data from the Remedial Investigation (RI) sampling shows chlorinated VOC's in the temporary wells around the perimeter of burial pits. Identify whether or not these groundwater samples were also tested for radionuclides. If they were not, explain why. If they were, identify which radionuclides were detected and their concentrations.
18. What is the current status of groundwater contamination and its migration on-site?
19. The last paragraph under this Section (Page 19 of 40) states that "observations of groundwater inflow to the test pits and analysis of water samples collected in the vicinity of the burial pits will be used to evaluate potential treatment options for the water collected during the burial pit exhumation." What is the basis for the above statement? Does WEC plan on exhuming all of the waste and residual radioactivity in the burial pit area? If so, please describe how such plans will relate to the Decommissioning Plan and remediation as described in Section 1.2, page 8 of 40.

In addition, staff believes that groundwater characterization information is necessary to reach a conclusion about the exploration of potential treatment options for the water collected during the burial pit exhumation, not just groundwater flow information. Please clarify (Page 19 of 40, Attachment 2, Section 1.3.9, Conclusions - Burial Pits). Why is WEC focused on groundwater flow only.

20. Provide a statement on how you will address slope stability. Slope stability and safety aspects of the Test Pits should be carefully evaluated and implemented (Page 26 of 40, Attachment 2, Section 2.1.3.2, Phase 2 - "Vertical Test Pits Samples").
21. Identify or describe the types of "groundwater conditions" that will influence the placement of test pits between burial pit (Page 26 of 40, Attachment 2, Section 2.1.3.2, Phase 2 - "Vertical Test Pits Samples").

## Health and Safety

22. Describe how the proposed work will be accomplished safely. Materials License Number SNM-00033, does not address work in subsurface contaminated areas. However, WEC states on page 32 of 40, that work will be performed in accordance with the site Health and Safety Plan (HASP) (Document PO-EHS-001) and Radiation Protection Plan (PO-HP-001). These plans include procedures for personal monitoring for radiological and non radiological (chemical) contaminants that may be encountered during the work. In WEC's license amendment request, describe any changes to these plans based on proposed activities in contaminated subsurface areas and work involving contaminated groundwater. If there are changes, NRC will need to evaluate and approve the changes in conjunction with WEC's license amendment request. If there are no changes, then explain why there are no changes to these programs to address this newly proposed work (work involving disturbing and/or working in subsurface contamination and contaminated groundwater).

On Page 18 of 40, WEC states that groundwater and surface water samples were collected. One groundwater sample from a borehole showed gross alpha activity exceeding 15 pCi/L (the drinking water limit at that time). Also, gross beta activity exceeded 50 pCi/L in 5 of the 22 samples, 3 of which came from a borehole near the Evaporation Ponds (Page 17 of 40, Attachment 2, Section 1.3.8, 1982 Radiological Survey of the Burial Pits). This data indicates that radionuclides were present in the groundwater in 1982 (24 years ago).

Provide this information to allow staff to assess whether the radiological safety measures for workers and for protection of the public are commensurate with the risks associated with the proposed activities as required by 10 CFR 20.1101.

23. On page 19 of 40, in Section 3.1 of the BWCP, WEC states that, "additional information is needed to provide a more complete characterization of the waste materials that are present in the pits. This information is needed for project planning in both a health and safety role and in decisions regarding waste management." On page 32 of 40, WEC states that it "will implement a program to monitor environmental conditions with regard to personnel (worker) health and safety and to demonstrate that there are no unacceptable releases to the environment as a result of implementation of the work described herein." Please clarify what "program" WEC will implement to accomplish the monitoring of the environment.

On page 33 of 40, Section 3.2, Environmental Protection, WEC describes the implementation of specific actions for monitoring surface water runoff, use of existing air

sampling network, and monitoring of volatile organic compounds. Please clarify the "Program" WEC will implement.

Also, monitoring environmental conditions is an important part of occupational and public health and safety. However the program needs to address other facets such as controls involved when collecting highly contaminated samples of soil and contaminated groundwater and packaging of wastes.

## **NRC Requirements and Licensing**

24. On page 5 of 40 of the BWCP, WEC states that it has a Remedial Investigation/Feasibility Study (RI/FS) Work Plan, dated May 2003, approved by the Missouri Department of Natural Resources (MNDNR), and that, as a condition of approval, concurrence of the NRC was to be obtained before exploratory trenches were excavated in the Burial Pit area. Westinghouse states that "The work described herein will be performed as part of Westinghouse's overall program to remediate the Hematite site in accordance with the National Contingency Plan (NCP) and is part of Westinghouse's plan to decommission the plant and terminate its special nuclear material license (SNM-33) with the NRC."

Installation of test pits and trenching are not covered under the current license and do not appear to be described as part of the license amendment request. Moreover, after receiving an informal copy of the Draft RI/FS, NRC notified WEC that we will not be reviewing the RI/FS work plan (ML021080321).

Work involving licensed material must be done in accordance with Materials License SNM-00033. This license amendment request, if approved, will be incorporated into the license. If the work described in the May 2003 RI/FS Work Plan, that was approved by MNDNR, is inconsistent with Materials License SNM-00033 and it is implemented, WEC could be in violation of its license.