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Date: December 16, 2009

Subject: Review of the Technical Basis for NRC Approval of Hematite License Amendment 52 for Building Demolition (License No. SNM-00033, Docket No. 070-00036)

References:
1) Westinghouse (K. A. Craig) letter to NRC (A. Kouhestani), dated October 5, 2004, ML042860234, Request for Amendment to Chapter 1 of SNM-33
2) Westinghouse (K. A. Craig) letter to NRC (A. Kouhestani), dated December 22, 2004, ML0502503470, Submittal of Building Demolition Evaluation
3) Notice of Availability of Environmental Assessment and Finding of No Significant Impact, ML061170282, dated June 2006
4) NRC (A. Persinko) letter to Westinghouse (E. K. Hackmann), ML061280324, dated June 30, 2006 Amendment No. 52 to Material License No. SNM-00033 Authorized Building Demolition at the Hematite Facility into the License (TAC NO. L52641)
5) Westinghouse (E. K. Hackmann) letter to Document Control Desk (NRC), HEM-09-121, dated October 23, 2009, Hematite Decommissioning Project Summary Report of the 2009 Process Building Characterization
6) Westinghouse (E. K. Hackmann) letter to Document Control Desk (NRC), HEM-09-140, dated December 3, 2009, Hematite Decommissioning Project Criticality Alarm Exemption Request

Through the series of correspondence of References 1 though 4, Westinghouse submitted and NRC approved a request to demolish the Hematite facility's process buildings (i.e., License Amendment 52). Recently, the Westinghouse Hematite Decommissioning Project (HDP) completed additional characterization of the Process Building and submitted a report (Reference 5) which estimated that more special nuclear material exists in the process buildings than had been assumed for Amendment 52, and requested an exemption from the 10 CFR 70.24 requirement (Reference 6) for a criticality monitoring system.

Westinghouse has reviewed the Amendment 52 Safety Evaluation Report (SER) of Reference 4 and determined the basis remains valid for the HDP and there have been no changes at the HDP since the original NRC approval of the amendment request that would necessitate a revision to the SER, other than the necessity to readdress the exemption from 10 CFR 70.24 as request by

NMSSD/
FSME

HDP in Reference 6. The attachment to this letter provides the results of the HDP's review and describes the limited changes that have occurred or that have been reexamined and updated. The attachment concludes that, once the Reference 6 criticality alarm exemption request has been approved by NRC, there is no other issue which should prevent implementation of the currently authorized building demolition activities.

Please contact Gerard Couture, Licensing Manager of my staff at 803-647-2045 should you have questions or need any additional information.

Sincerely,

E. Kurt Hackmann
Director, Hematite Decommissioning Project

Attachment: Current Validation of Hematite License Amendment 52

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ATTACHMENT

Current Validation of Hematite License Amendment 52

A. INTRODUCTION

Westinghouse Hematite Decommissioning Project (HDP) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) to approve a license amendment to authorize Building Dismantlement and Demolition at the Hematite Facility under Material License No. SNM-00033. This request was submitted in a letter dated October 5, 2004 (ML042860234) and was supplemented by letter dated December 22, 2004 (ML0502503470).

The NRC evaluated the request and developed an Environmental Assessment (EA) (ML061170282) to support the review of the HDP plans and the proposed license amendment request in accordance with the requirements of Title 10 Code of Federal Regulations (CFR) Part 51. Based on the NRC staff's evaluation, the conclusion of the EA was a Finding of No Significant Impact on human health and the environment for this licensing action.

By letter dated June 30, 2006 (ML061280324), NRC approved Amendment 52 to Materials License No. SNM-00033, incorporating the authorization to dismantle and demolish buildings at the Hematite Facility. An NRC Safety Evaluation Report (SER) was prepared for this licensing action and was included as Enclosure 2 to the June 30, 2006 license amendment letter.

In 2008, while HDP was performing radiation surveys prior to building demolition, more special nuclear material (SNM) was discovered in the process buildings than had previously been estimated. This gave rise to an NRC Confirmatory Action Letter (most recently, CA 3-08-005A, ML091900453). HDP subsequently performed a detailed radiological survey characterization of the process buildings (HEM-09-121) and submitted a request for exemption to the requirement for a criticality alarm system (HEM-09-140).

Since the NRC's approval of building demolition happened more than 3 years ago, and in light of the recent discovery of more SNM in the process buildings than had previously been assumed, there may be a question of the current validity of the bases upon which building demolition was approved. The bases of the NRC's approval were given in the aforementioned SER. The following evaluates each section of that SER to determine its current validity (pertinent sections of the SER are addressed below; quotations from the SER are identified by italics).

B. CURRENT EVALUATION OF SAFETY EVALUATION REPORT

Section 1

The beginning of the SER contains the following Executive Summary, which Westinghouse addresses below:

1. EXECUTIVE SUMMARY

By letter dated October 5, 2004 (ML042860234, supplemented by letter dated December 22, 2004 (ML0502503470), Westinghouse Electric Company, LLC (WEC) submitted an amendment request to the U.S. Nuclear Regulatory

Commission (NRC) to amend Chapter 1 of Materials License No. SNM-00033 to authorize the dismantlement and demolition of the buildings at the Hematite Facility, in Festus, Missouri.

Currently as authorized by the Materials License number SNM-00033, the Hematite Facility is undergoing activities necessary to reduce the current inventory of Special Nuclear Material, Source Material, and Byproduct material from the site including, but not limited to, such activities as: 1) preparation, packaging, and shipment of the remaining inventory of Special Nuclear Material and Source Material; 2) waste preparation, packaging, and shipment; and 3) equipment testing, clean-out, and decontamination in preparation for packaging and shipment. The licensee completed this work in March of 2006. Before the licensee conducts building dismantlement and demolition, it proposes to have all equipment removed from each of the buildings, except for 4 pieces of very large non uranium enrichment process equipment (hoppers, high-efficiency particulate air filter frame structure, shredder) that have been decontaminated and will be removed when the process buildings are dismantled and demolished.

The WEC's decommissioning strategy is to first conduct source reduction of material and equipment from the buildings followed by building dismantlement and demolition excluding removal of slabs and foundations followed by decommissioning under a Decommissioning Plan. The decommissioning objective of the licensee for the site is unrestricted use as defined in the License Termination Rule, Subpart E to 10 Code of Federal Regulations (CFR) Part 20. For the decommissioning of the site, a dose objective of 25 Millirem (mrem)/year (0.25 mSv/year) is the basis for demonstrating that the site can be released for unrestricted use.

The purpose of this Safety Evaluation Report (SER) is to evaluate the licensee's request to amend the license to determine whether the proposed building dismantlement and demolition activities will be conducted in a safe manner in accordance with NRC regulations. This SER has been prepared in conjunction with an Environmental Assessment (EA) (ML061170282) which evaluates the potential environmental impacts associated with this action.

HDP is continuing the activities authorized by SNM-00033. Westinghouse has not altered the decommissioning strategy described in Section 1 of the SER. Efforts are currently underway to prepare for removal of some of the remaining equipment from the buildings prior to and during building dismantlement as described in Section 1 of the SER, with the minor exception that the number of larger pieces of equipment are more accurately noted in the recent Summary Report of the 2009 Process Building Characterization provided to NRC (HEM-09-121). Some equipment and other debris from the facility will be removed from the buildings to facilitate waste disposal prior to and during building dismantlement and demolition.

Sections 2 and 3

Westinghouse has reviewed the facility operating history described in Section 2 of the SER and concludes that it remains accurate. The facility description contained in Section 3 of the SER also remains consistent with the activities currently planned and the details of the various buildings' construction remain accurate and unchanged.

Section 4

The following Radiological Status is summarized in the SER; Westinghouse discusses this section below:

> ***4. RADIOLOGICAL STATUS OF FACILITY***
>
> *The Hematite radioactive contamination at the Hematite consists of soils and building and equipment contaminated with uranium, fission products, and by-product material from licensed operations that occurred from the mid 1950's until 2001.*
>
> *The NRC staff has reviewed the information in the Environmental Report for the Building Demolition of the Hematite Facility (ML051310063), the Building Demolition Evaluation Technical Report (ML050250347), and building radiological survey records prior to the fixative application (lock down) at the Hematite Facility during a site visit on April 24-26, 2006, according to the Consolidated NMSS Decommissioning Guidance, Volume 1, Section 16.4 (Facility Radiological Status). Based on this review, NRC staff has determined that the licensee has described the types and activities of radioactive material contamination at the site sufficiently to allow NRC staff to evaluate the potential safety issues associated with building dismantlement and demolition of the facilities on site. Also, the staff has determined that the remediation activities and radiation control measures proposed by the licensee are appropriate for the type of radioactive material present at the site and the licensee's waste management practices are appropriate.*

The radiological status of the facility has not changed since 2005 when the Environmental Report for the Building Demolition of the Hematite Facility and the Building Demolition Evaluation Technical Report was submitted to NRC. The radioactive contamination consists of soil, buildings and some equipment contaminated with uranium, fission products and by-product materials generated during licensed operations that occurred from the mid-1950's until 2001. As in that Environmental Report, no subsurface excavation would occur as part of the building demolition. Overall impacts to geology and soils associated with implementation of the Proposed Action would be temporary in nature and minor in scope; potential impacts would be mitigated by implementation of the proper erosion control measures, devices and best management practices.

The fixative that was applied to contaminated surfaces remains. A comprehensive Hematite Characterization Summary Report has been completed that thoroughly establishes the levels of contamination and the quantities of special nuclear material (SNM) that remain in the Process Buildings in the form of contamination. This information has been provided to NRC (HEM-09-121).

Section 5

The planned decommissioning discussed in Section 5 of the SER remains unchanged. The planned building dismantlement and demolition remains as described in the Environmental Report for the Building Demolition of the Hematite Facility (ML051310063) and the Building Demolition Evaluation Technical Report (ML050250347). Westinghouse believes that with the submittal of the information in the Summary Report of the 2009 Process Building Characterization (HEM-09-121), HDP has provided sufficient information to ensure that the planned building dismantlement and demolition activities can be conducted in accordance with regulatory requirements and thus NRC's prior conclusion remains valid.

Section 6

Section 6 of the SER described the review of health and safety during building dismantlement and demolition provided by HDP in Sections 3, 4, and 5 of the Environmental Report for the Building Demolition of the Hematite Facility (ML051310063) and the Building Demolition Evaluation Technical Report (ML050250347). The staff concluded that there would be no significant surface disturbances and no subsurface soil disturbances as the buildings are proposed to be removed to grade and the concrete slab or foundation will remain in place. This remains accurate. The traffic volumes described in 2004 have likely changed slightly since that time; therefore there may be minor differences to that described in Section 3.2.1 of the Environmental Report for the Building Demolition of the Hematite Facility (ML051310063). In addition, the Waste Transportation Routes described in Section 3.2.2 may be somewhat different due to changes in the traffic pattern since 2004 or as the result of the use of a different waste disposal facility. The recent installation of a rail spur will allow rail transportation to replace a significant portion of the previously assumed waste transportation methods, thus minimizing transportation impacts. These potential differences are inconsequential. Effluent limitations, monitoring requirements and monitoring locations, frequencies, and sample types will be in accordance with license requirements.

Section 7

The Criticality Safety section of the SER follows; Westinghouse identifies updates needed for this section below:

7. NUCLEAR CRITICALITY SAFETY DURING BUILDING DISMANTLEMENT AND DEMOLITION

The NRC staff has reviewed the nuclear criticality safety information in the Building Demolition Evaluation Technical Report (ML050250347) and WEC's response (ML060800265) to Request for Additional Information (RAI) on Nuclear Criticality Safety (NCS) during building dismantlement and demolition according to the definition of Special Nuclear Material found in 10 CFR Part 70.4. Staff evaluated the information and determined that the there is no NCS concern for the building demolition activities because the total residual mass of UO2 in the buildings (i.e., 5 kg UO2) is less than the favorable geometry mass limit in the license application (i.e., 16 kg UO2). Also, NRC staff determined that the licensee is not required to have a criticality accident alarm system for building demolition because the conservative estimate of mass of U235 in the buildings (i.e., 250 grams U235) is less than the action limit in 10 CFR Part 70.24 (i.e., 700 grams of U235). Thus, NRC staff has determined that the licensee has provided sufficient information to conclude that there is reasonable assurance of safety for NCS during building dismantlement and demolition activities.

Recent radiological surveys performed within the Hematite facility process buildings have identified quantities of enriched uranium that were not previously accounted for in estimates of the residual mass of uranium in the buildings (HEM-09-121). The results of these recent radiological surveys have been used to refine the estimated ^{235}U mass within each of the individual process buildings (HEM-09-121). Westinghouse has submitted an exemption request (HEM-09-140) to incorporate the most recent characterization of the Process Buildings. The current condition of the buildings, the further removal of SNM from the buildings and the demolition of the buildings is demonstrated to be sufficiently safe such that a criticality alarm system is not warranted.

Section 8

The Environmental Monitoring and Control Program as described in Section 8 of the SER remains valid with no changes necessary for building demolition activities to resume. No changes are necessary to the NRC assessment that HDP has provided sufficient information on the environmental as low as reasonably achievable evaluation program, effluent monitoring program and effluent control program.

Section 9

Section 9 of the SER addressed the Radioactive Waste Management Program. The NRC staff reviewed the waste management information sections 3 and 4 of the Environmental Report for the Building Demolition of the Hematite Facility (ML051310063) and the Building Demolition Evaluation Technical Report (ML050250347) according to the Consolidated NMSS Decommissioning Guidance, Volume 1, Section 17.5 (Radioactive Waste Management Program). Based on this review, NRC staff determined that the HDP programs for the management of radioactive waste generated during building dismantlement and demolition activities were sufficient to ensure that the waste would be managed in accordance with NRC requirements and in a manner that is protective of the public health and safety. There have been no program changes that would affect this decision; rather changes to the programs at the HDP since the initial issuance of the SER are designed to enhance compliance with NRC requirements. HDP strategy is to manage radioactive waste in accordance with information provided in the Environmental Report for the Building Demolition of the Hematite Facility (ML051310063) and the Building Demolition Evaluation Technical Report (ML050250347).

C. CONCLUSION

Westinghouse has reviewed the existing Safety Evaluation Report for Amendment No. 52 to Material License No.SNM-00033 and the only impact to the basis documents is that associated with the Nuclear Criticality Safety evaluation of Section 7 of the SER. The refined characterization data and the minor changes discussed above for the process building dismantlement and demolition do not affect other SER conclusions. A comprehensive Hematite Characterization Summary Report has been completed that thoroughly establishes the levels of contamination and the quantities of SNM that remain in the Process Buildings in the form of contamination. This information has been provided to NRC (HEM-09-121) and a request for a Criticality Alarm Exemption (HEM-09-140) has been submitted. Once the exemption request has been approved by NRC, there is no other issue which should prevent implementation of the activities currently authorized to proceed. The authorized building dismantlement and demolition activities will be conducted in a safe manner in accordance with NRC regulations.