January 8, 2010

CAL 3-08-005

Mr. E. Kurt Hackmann, Director
Hematite Decommissioning Project
Westinghouse Electric Company
Nuclear Fuels
3300 State Road P
Festus, MO 63028

SUBJECT: NRC INSPECTION REPORT 070-00036/09-03(DNMS) - WESTINGHOUSE ELECTRIC COMPANY (HEMATITE)

Dear Mr. Hackmann:

This refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted November 16-19, 2009, and December 11, 2009, at the Westinghouse Hematite decommissioning facility (Inspection Report No. 070-00036/09-03(DNMS), enclosed). The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, the inspection focused on radiation protection and environmental ground water sampling. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The enclosed report presents the results of this inspection, which were discussed with you during an exit meeting on November 19, 2009. A subsequent phone exit was held on December 11, 2009, to complete the inspection following receipt and review of ground water sample analysis.

Based on the results of the inspection, no violations were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, will be available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

We will gladly discuss any questions you may have regarding this inspection. If you have questions, please feel free to contact William Snell of my staff at (630) 829-9871.

Sincerely,

***/RA/***

Christine A. Lipa, Chief
Materials Control, ISFSI
and Decommissioning Branch

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

Enclosure:
Inspection Report 070-00036/09-03(DNMS)

cc: E. Gilstrap
K. Waltz
J. McHugh
Wm. Earl Cook, Sr
R. Huckstep
G. Miller
D. Diehl
D. Schuette
A. Schmidt
M. Michelsen
C. Eaton
P. Lamping
C. Banks
E. Kemp
M. Templeton
D. Buntin
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REGION III

| | |
|---|---|
| Docket No.: | 070-00036 |
| License No.: | SNM-00033 |
| Report No.: | 070-00036/09-03(DNMS) |
| Licensee: | Westinghouse Electric Company, LLC |
| Facility: | Former Hematite Fuel Manufacturing Facility |
| Location: | 3300 State Road P<br>Festus, Missouri |
| Dates: | November 16-19, 2009<br>December 11, 2009 (In-office Review) |
| Inspectors: | William Snell, Senior Health Physicist, Region III<br>Bruce Watson, Senior Health Physicist, FSME<br>Matthew Meyer, Hydrogeologist, FSME<br>Tamara Powell, Criticality Specialist, NMSS |
| Approved by: | Christine A. Lipa, Chief<br>Materials Control, ISFSI, and Decommissioning Branch, DNMS, RIII |

Enclosure

## EXECUTIVE SUMMARY

### Westinghouse Electric Company, LLC
### HEMATITE FUEL MANUFACTURING FACILITY
### NRC Inspection Report 070-00036/09-03(DNMS)

This inspection evaluated the Westinghouse Electric Company's (WEC) performance related to decommissioning of the Hematite facility, including environmental sampling and radiation protection. The inspection also included a review of actions taken per Confirmatory Action Letter 3-08-005.

**Environmental Monitoring**

A review of the results of the analysis of eight groundwater samples collected during inspection activities determined the licensee's analyses of environmental groundwater samples was acceptable. (Section 1.0)

**Radiation Protection Program**

The licensee's identification of residual contamination during its characterization of the Process Building was comprehensive. The NRC's independent assessment of the licensee's quantification of the residual U-235 present in the Process Building will be provided in a future inspection report.

Surface scans of the area where Missouri Department of Transportation (MDOT) is scheduled to replace a road culvert in front of the site property identified no significant radiological contamination in excess of background, which was consistent with licensee survey results. The results of the analysis of soil samples collected in that area will be provided in a future inspection report. (Section 2.0)

## Report Details

### 1.0 Environmental Monitoring (88045)

a. Inspection Scope

The inspectors reviewed the results of the analysis of eight groundwater samples collected during inspection activities documented in Inspection Report 070-00036/09-02(DNMS) (ADAMS Accession No. ML093070705).

b. Observations and Findings

On October 8, 2009, the inspectors observed the licensee collect eight environmental groundwater samples. After the samples were collected and split with the NRC inspectors, the NRC samples were sent to the NRC's contract laboratory, the Oak Ridge Institute for Science and Education (ORISE), for analysis for technetium-99 (Tc-99), gross alpha, gross beta and isotopic uranium. The licensee sent its samples to Test America, an independent laboratory used by Westinghouse. The results of ORISE analysis were received by the NRC by letter dated December 11, 2009, with a subsequent revision on December 23, 2009 (see ADAMS ML093631605). Test America provided its sample analysis results to the licensee as Lab Samples F9J090285-01 through – 03 and -05 through -08, and F9I300263-12, which were provided to the inspectors during the inspection.

Comparing the results of the sample analyses, the samples had very similar results other than one sample which differed by around 50 percent. For this sample, which was collected from a groundwater well in the Process Building, the licensee's results were about 50 percent higher for uranium, while the NRC's results were about 50 percent higher for Tc-99, gross alpha and gross beta. The results from this well were also higher than those previously obtained from this location. The fact that this particular well had not been sampled in a year due to a commitment the licensee made to maintain a "Stop Work Order" which included restricting access to the Process Building (in response to an NRC Confirmatory Action Letter (CAL), dated December 15, 2008), may have contributed to the differences. Overall, the comparisons in results were considered acceptable and did not warrant further review. The quantitative results of the sampling will need to be assessed by the licensee as part of its ongoing environmental groundwater sampling program.

c. Conclusion

A review of the results of the analysis of eight groundwater samples collected during inspection activities determined the licensee's analyses of environmental groundwater samples was acceptable.

### 2.0 Radiation Protection Program (83822, 83890)

a. Inspection Scope

Independent confirmatory surveys were conducted by ORISE to verify the results of the licensee's characterization of uranium-235 (U-235) in the Process Building. ORISE

personnel also conducted confirmatory surveys of the area previously surveyed by the licensee where the Missouri Department of Transportation (MDOT) is scheduled to replace a culvert under the road in front of the site property.

b. Observations and Findings

Personnel from ORISE conducted extensive confirmatory surveys of the Process Building to independently identify and quantify residual uranium-235 (U-235) contamination. The floors, walls, ceilings, and exterior of the building, along with accessible piping and ductwork, were scanned for direct radiation using sodium iodide (NaI) scintillation detectors. Smear surveys were also conducted to assess fixed versus loose radiological contamination. Additional measurements were conducted to assess holdup using an In-Situ Object Counting System (ISOCS).

The results of surface surveys conducted by ORISE personnel identified only one small section (of about 10 inches) of one small diameter pipe that the licensee had failed to identify and survey during its characterization. All other surface surveys showed very good agreement with the licensee's measurements. A final report of the results of the ORISE surveys, including the quantification of U-235, has not been provided to the NRC as of the date of the inspection report. These results will be discussed in a future inspection report.

Personnel from ORISE also conducted surface surveys using a NaI detector and collected soil samples in the area where MDOT is scheduled to replace a culvert under the road in front of the site property. Surface scanning identified no significant radiological contamination in excess of background. The results of the soil samples will be provided in a future inspection report.

c. Conclusions

The licensee's identification of residual contamination during its characterization of the Process Building was comprehensive. The NRC's independent assessment of the licensee's quantification of the residual U-235 present in the Process Building will be provided in a future inspection report.

Surface scans of the area where MDOT is scheduled to replace a culvert under the road in front of the site property identified no significant radiological contamination in excess of background, which was consistent with licensee survey results. The results of the analysis of soil samples collected in that area will be provided in a future inspection report.

## 3.0 Unresolved Item (URI) 07000036/2009-02-01

Three issues were discussed in Inspection Report 070-00036/09-02(DNMS) (ADAMS No. ML093130284) regarding the collection of groundwater samples. These issues included: 1) an inconsistency between the two procedures used to decontaminate non-dedicated equipment between sampling locations; 2) ambiguous verbiage in the Low Flow Well Sampling procedure in regards to purging of the well prior to sampling and; 3) wells were not sampled in order of least contaminated to most contaminated. These issues were reviewed further during the November 16-19, 2009 inspection, and the

licensee provided additional information by letter dated December 1, 2009 (See ADAMS ML093370373). Each of these issues is addressed below.

The licensee's procedures for addressing groundwater sampling activities, HDP-PR-EM-011, Low Flow Well Sampling, Rev. 0 and HDP-PR-EM-012, Water Quality Field Measurements, Rev.0, contained confusing instructions regarding the use of mixture of Alconox® and tap water or just water for purging/sampling equipment to prevent cross contamination of subsequently sampled wells. The licensee has since revised Procedures HDP-PR-EM-011 and HDP-PR-EM-012 to clearly indicate the use of the Alconox®-water mixture. In addition, while the NRC indicated that they did not observe the licensee personnel decontaminate the water level indicator following sampling of well DM-02, the licensee stated in its December 1 letter to the NRC that the workers did conduct the decontamination with a distilled water rinse. The NRC has no further concerns regarding this issue.

In response to the NRC's concern that Procedure HDP-PR-EM-011, Sections 8.1.10 and 8.1.11 did not clearly inform the reader whether to sample the well after three well volumes have been purged or after water quality parameters have stabilized, the licensee revised the procedure to better address the optional purging conditions. The NRC has no further concerns regarding this issue.

Section 7.0 of Procedure HDP-PR-EM-011 indicated that the order in which wells are purged and sampled shall be from least impacted to most impacted (within each monitoring well group) if non-dedicated sampling equipment is used. During the collection of water samples, the licensee in one case did not collect the samples from least to most impacted. Additionally, in collecting its water samples the licensee used the same water level indicator in multiple wells. In its December 1 letter, the licensee stated its position was that the level indicator is not part of the sampling equipment (which consists of the pump, tubing and bailer), and is therefore neither a dedicated or non-dedicated piece of equipment. As such, the procedural requirement to sample from least impacted to most impacted was not relevant. The NRC disagrees with this assertion. The NRC (and industry standard) is that if a piece of equipment is used in more than one well, it is non-dedicated equipment and has the potential to cross-contaminate a well. Because the licensee failed to collect the samples from the least to most impacted well during sample collection on October 8, 2010, this is a violation of procedure HDP-PR-EM-011. However, this failure constitutes a violation of minor significance and is not subject to formal enforcement action, consistent with Section IV of the NRC Enforcement Policy.

In its December 1, 2009 letter to the NRC the licensee stated that Procedures HDP-PR-EM-011 and HDP-PR-EM-012 were revised to indicate "that dedicated and non-dedicated sampling equipment are defined to not include the water level indicator". The licensee provided the NRC with the revised procedures (Revision 1, effective dates of December 4, 2009) on January 7, 2010, and upon review of the procedures it was noted that in HDP-PR-EM-012, the water level indicator is required to always be decontaminated between wells with a mixture of Alconox® and tap water. This addresses the NRC concerns on this issue. The Unresolved Item URI 07000036/2009-02-01 is closed.

## 4.0 Review of Licensee Commitment per Confirmatory Action Letter No. 3-08-005

On November 19, 2008, the licensee submitted a 24-hour report to the NRC (Event Notification Report 44668) regarding the identification of residual U-235 contamination in the Process Buildings, with a follow-up report provided on November 21, 2008. In response to the report, on December 15, 2008, the NRC issued CAL No. 3-08-005 that identified specific actions that the licensee intended to implement. The implementation of the licensee's commitments as described in the CAL were evaluated by the NRC during onsite inspections in January 2009, and documented in Inspection Report 070-00036/08-02(DNMS), dated July 23, 2009. A revision to the CAL was issued by NRC letter, dated July 9, 2009. The July 9 revision was issued following the NRC's June 22, 2009, approval of an exemption for the licensee to access the Process Buildings without a criticality monitoring system. A second addendum was issued to the CAL by NRC letter dated November 13, 2009. This addendum was issued in response to the licensee's completion of its characterization of the Process Building, which was summarized in the submittal, *Hematite Decommissioning Project Summary Report of the 2009 Process Building Characterization* dated October 23, 2009. While a Stop Work Order is maintained for the Process Building, the licensee was allowed entry to conduct the following activities: radiological surveys and safety inspections; required environmental sampling, including sampling existing wells; and routine maintenance work in the building and on the roof to the extent necessary to maintain the integrity of the facility and ensure the safety of workers.

No concerns were identified with the licensee's adherence to the CAL during the inspection.

## 5.0 Exit Meeting Summary

The NRC inspectors presented inspection findings to members of the facility management team following the onsite inspection on November 19, 2009, with additional follow-up by telephone on December 11, 2009, to inform the licensee of the results of water sample analyses. The licensee acknowledged the findings presented.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## PARTIAL LIST OF PERSONS CONTACTED

Westinghouse Electric Company

E. Kurt Hackmann, Director, Hematite Decommissioning Project
G. Rood, Radiation Safety Officer
K. Harris, Manager, Environmental Engineering

## INSPECTION PROCEDURES USED

| | |
|---|---|
| IP 83822 | Radiation Protection |
| IP 83890 | Closeout Inspection and Survey |
| IP 88045 | Effluent Control and Environmental Protection |

## ITEMS OPENED, CLOSED, AND DISCUSSED

| Closed | Type | Summary |
|---|---|---|
| URI 07000036/2009-02-01 | URI | Concerns related to collection of groundwater samples. |

Opened

None

Discussed

None

## LIST OF ACRONYMS USED

| | |
|---|---|
| ADAMS | Agencywide Documents Access and Management System |
| CAL | Confirmatory Action Letter |
| DNMS | Division of Nuclear Materials Safety |
| HDP | Hematite Decommissioning Project |
| ISOCS | In-Situ Object Counting System |
| MDOT | Missouri Department of Transportation |
| NaI | Sodium Iodide |
| NRC | U.S. Nuclear Regulatory Commission |
| ORISE | Oak Ridge Institute for Science and Education |
| Tc-99 | technetium-99 |
| U-235 | uranium-235 |
| WEC | Westinghouse Electric Company |