



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

February 7, 2001

EA 01-043  
Docket No. 07000698

License No. SNM-770

Russel Cline  
Manager, IHSEC  
Westinghouse Electric Company  
Waltz Mill Site  
P.O. Box 158  
Madison, PA 15663-0158

**SUBJECT: INSPECTION 07000698/2000001, WESTINGHOUSE ELECTRIC COMPANY,  
WALTZ MILL SITE, MADISON, PENNSYLVANIA**

Dear Mr. Cline:

From August 7, 2000 - December 14, 2000, Anthony Dimitriadis and Mark Roberts of this office conducted a safety inspection at the above address of activities authorized by the above listed NRC license. The inspection was limited to a review of interior and exterior decommissioning activities conducted under License SNM-770. Selected decommissioning activities that extended into portions of the facility covered under the TR-2 license were also included. The findings of the inspection were discussed with Wayne Vogel, A. Joseph Nardi, and B. Griffith Holmes at the conclusion of the inspection. Within the scope of this inspection, no violations were identified.

Although we have not cited any violation of the requirements of 10 CFR 19.12, we are requesting that you address our concerns about training of radiation workers regarding administrative dose limit extensions as described in Section IV of the attached report, and respond in writing within 30 days.

In addition, we are also concerned about whether the work environment at the facility is conducive to promoting and encouraging the raising of safety issues. These concerns were discussed with your management at the December 14, 2000 exit meeting by Mr. George Pangburn, Director, Division of Nuclear Materials Safety.

Accordingly, within 30 days of the date of this letter, we are requesting that you provide a response in writing that describes actions you have already taken or plan to take, including the results of any investigations, to assure that a safety conscious work environment exists at the facility and there is not a chilling effect on the willingness of employees to raise safety and compliance concerns within your organization or to the NRC.

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html>. Therefore, your response should not, to the extent possible, include any personal privacy or proprietary information so that it can be made available to the Public. If personal privacy information is necessary to provide an acceptable

R. Cline  
Westinghouse Electric Company

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response, then please provide a bracketed copy of your response that identifies the personal privacy-related information and a redacted copy of your response that deletes the personal privacy-related information. Identify the particular portions of the response in question which, if disclosed, would create an unwarranted invasion of personal privacy, identify the individual whose privacy would be invaded in each instance, describe the nature of the privacy invasion, and indicate why, considering the public interest in the matter, the invasion of privacy is unwarranted. If you request withholding on any other grounds, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information).

After reviewing your response, the NRC will determine whether further action is necessary at this time to ensure compliance with regulatory requirements.

Your cooperation with us is appreciated.

Sincerely,

***Original signed by Ronald R. Bellamy***

Ronald R. Bellamy, Chief  
Decommissioning and Laboratory Branch  
Division of Nuclear Materials Safety

cc:  
Wayne Vogel, Radiation Safety Officer  
Robert Maiers, Commonwealth of Pennsylvania  
Roy Woods, Commonwealth of Pennsylvania  
A. Joseph Nardi, Westinghouse Electric Company  
Richard K. Smith, Viacom Inc.

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DATE	02/07/01		02/07/01	02/07/01	02/07/01
OFFICE	RC/RI		DNMS/RI	OE	
NAME	JBFewell/JBF		Fcostello/FMC	DJV f/	
DATE	02/07/01		02/07/01	02/07/01	

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No.                     07000698/2000001  
Docket No.                         07000698  
License No.                       SNM-770  
Licensee:                         Westinghouse Electric Company  
Location:                         Waltz Mill Site  
                                      Interstate 70 at Madison Exit  
                                      P.O. Box 158  
                                      Madison, PA 15663-0158  
Inspection Dates:               August 7-11, August 28-31 & September 1, October 2-5,  
   November 13-17, and December 13-14, 2000

Inspectors:	<p><b>/RA/</b> _____</p> <p>Anthony Dimitriadis Health Physicist</p>	<p><b>02/06/01</b> _____</p> <p>date</p>
	<p><b>/RA/</b> _____</p> <p>Mark Roberts Senior Health Physicist</p>	<p><b>02/06/01</b> _____</p> <p>date</p>
Approved By:	<p><b>/RA/</b> _____</p> <p>Ronald R. Bellamy, Chief Decommissioning and Laboratory Branch Division of Nuclear Materials Safety</p>	<p><b>02/06/01</b> _____</p> <p>date</p>

## **EXECUTIVE SUMMARY**

Westinghouse Electric  
NRC Inspection Report No. 07000698/2000001

This inspection report documents the series of announced and unannounced inspections of the Westinghouse Electric Company, Waltz Mill site for the inspection period August 7, 2000 - December 14, 2000. The inspection focused on decommissioning activities, equipment and instrumentation, training and instruction to workers, radiation protection, radioactive waste management and transportation, and posting and labeling.

Within the scope of this inspection, no violations of NRC requirements were identified.

### **Decommissioning Activities**

Decommissioning activities at the Waltz Mill Site are continuing. During the inspection period, the licensee had completed remediation of the WTR Basins 1, 2 and 3. Decommissioning work in the transfer canal had progressed and the canal had been completely drained of water in preparation for decontamination of the walls.

### **Equipment and Instrumentation**

The inspection verified that the licensee used suitable equipment and properly calibrated radiation detection instrumentation.

### **Training and Instructions to Workers**

The licensee established a training program that met the requirements of 10 CFR 19.12. However, the inspection revealed that aspects of the licensee's program were weak pertaining to training and retraining of radiation workers. Interviews with field personnel revealed a lack of knowledge of the policies and standard operating procedures related to internal dose, administrative dose limits and regulatory limits. Some workers admitted that they were uncomfortable bringing up questions relating to radiation to licensee management.

### **Radiation Protection**

The licensee provided good radiological controls for the decommissioning work in the restricted and unrestricted areas. Respirators used as routine personal protective equipment were adequately cleaned and surveyed for contamination.

### **Radioactive Waste Management and Transportation**

The solid radioactive waste management and transportation programs were adequately implemented as evidenced by an experienced staff carrying out the detailed procedures. Radioactive waste and other radioactive materials were properly characterized, classified,

maintained, posted, and in satisfactory material condition. The licensee responded promptly and effectively to a minor railcar derailment involving contaminated soil from the site.

### **Posting and Labeling**

The licensee provided good posting and labeling practices throughout the site. The licensee effectively dealt with the challenge presented by moving the reactor vessel from the TR-2 containment building and onto a truck for offsite transport. No safety concerns were identified.

## REPORT DETAILS

### **I. Decommissioning Activities**

#### a. Inspection Scope

The inspectors reviewed the continuing interior and exterior remediation activities at the Westinghouse Waltz Mill facility. Major interior activities included decontamination of the hot cells and adjoining structures, hot cell support areas, and the transfer canal and associated annex. The inspection also included observations of work activities in the TR-2 portion of the transfer canal. Major exterior work activities that were reviewed included excavation and soil remediation of WTR-Basins 1, 2 and 3; remediation of contaminated soils adjacent to Calley's Run; dismantling and remediation of the Liquid Waste Retention Basin; and general activities in the Solid and Liquid Waste Processing Area. The inspectors also reviewed the licensee's documentation of final status surveys for WTR Basin 1.

#### b. Observations and Findings

The inspectors toured the WTR Transfer Canal/Annex and observed work in progress. During the inspection period, water was being emptied from the Transfer Canal and the walls of the Transfer Canal were in the process of being decontaminated. The water was pumped into tanker trucks and transferred to the water treatment system in the Solid and Liquid Waste Processing Area. Sludge from the bottom of the Transfer Canal was being removed by pumping it into drums filled with sand. Hardware and equipment located in the Canal were also removed for disposal as radioactive waste. Some of the fixed structures in the Canal were still awaiting removal. The major decontamination efforts in the hot cells and adjoining structures are continuing. The "doghouses" (support rooms at the rear of the hot cells) have been demolished. The guillotine doors that allowed entry to the hot cells have been removed and were shipped for waste treatment.

The inspector observed remediation activities in progress on Basin 1 as well as support surveys for soil remediation activities. The Basin grounds were marked with an orange plastic barrier to designate the "exclusion zone" and a Radiation Work Permit (RWP) was required for entry. Heavy loaders and backhoes were observed in the restricted area moving earth and removing suspected contaminated soil. The licensee used a water mist spray during operation of the heavy equipment to reduce dust and potential airborne activity.

The licensee has commenced dismantling of the above-ground portion of the Liquid Waste Retention Basin. Following removal of the asbestos-containing roof panels and structure of the Liquid Waste Retention Basin, the licensee will continue decontaminating the concrete floor slab. Recent surveys of cracks in the floor and samples from beneath the floor slab indicate that the floor can likely be effectively decontaminated and will not require removal. Significant contamination beneath the slab has not been identified.

The inspector reviewed selected survey documentation for WTR Basin 1 including characterization data that identified the radionuclides present, survey design, radiological analysis of samples, and direct gamma measurements. The inspector collected soil samples and made direct gamma measurements where the licensee had made measurements. Representatives from the Commonwealth of Pennsylvania also performed confirmatory radiation measurements in the remediated basin areas. These data were incomplete at the time of this inspection report and will be documented in a subsequent inspection report.

c. Conclusions

The licensee's remediation and decommissioning activities were well-controlled and the licensee's actions in the project were reasonable and adequate. No violations were identified.

## II. Equipment and Instrumentation

a. Inspection Scope

The inspector reviewed the licensee's selection and use of radiation detection instrumentation for final clearance surveys, for checks for release of material, and for surveys for release of personnel exiting the radiological control area (RCA). The inspector also examined calibration practices to ensure that instrument calibrations are in accordance with license requirements and procedures.

b. Observations and Findings

The inspector reviewed the instrumentation used by the licensee for surveys and monitoring. All instrumentation was found to be in operable condition, calibrations were current, and suitable for the type of measurements being performed. The inspector reviewed a sample of the licensee's instrument calibration records and interviewed the site calibration services manager.

The inspector observed an HP technician using a portable survey instrument to scan for elevated spots in the WTR Basin 1. The instrumentation used included a Ludlum 2350 scaler/ratemeter (Data Logger) coupled to a 2"x2" NaI detector. The licensee used Eberline RO-2 survey meters for area surveys documented on the Radiation Work Permits (RWPs).

The inspector reviewed a sample of the calibration records to ensure that the survey instruments were calibrated properly and timely. The records clearly listed the exposure rates at various calibration points, beta correction factors, and the reference National Institute of Standards and Technology (NIST) traceable source information.

During the walkdown of the RCA, the inspector observed continuous air monitors in operation and verified that they were in good working order. Samples were changed as prescribed in the licensee's procedures.



c. Conclusions

The inspection verified that the licensee used operable, suitable, and properly calibrated radiation detection instrumentation in its radiation protection and survey programs.

### III. Training and Instructions to Workers

a. Inspection Scope

The inspectors performed a review of the program for providing training and instruction to workers. The inspectors interviewed several individuals about radiation safety training and instruction in an effort to evaluate personnel knowledge of the training program and its effectiveness. The inspectors focused on decommissioning procedures, compliance with instructions in RWPs, and radiation surveys.

b. Observations and Findings

Licensee personnel receive initial and annual refresher radiation safety training in accordance with the training program prepared by the licensee. Training discusses aspects of the licensee's radiation safety program including, but not limited to, use of RWPs, protective clothing, regulatory and administrative requirements, and licensee procedures. Individuals entering a radiologically restricted area are required to read and sign an RWP prior to entry into the area. RWP copies are kept at each access control point. Supervisors generally discuss daily work activities with their work crews at the morning safety briefings.

The inspectors interviewed health physics technicians, radiation workers, and work supervisors/foremen. Selected training records and administrative records (dose extension forms) were also reviewed. Interviews with several field personnel revealed a weakness in the working knowledge of the policies and standard operating procedures related to radiation doses, administrative dose limits, and dose extensions. For the decommissioning project, the annual Total Effective Dose Equivalent (TEDE) administrative dose guideline is 1 rem (1000 millirem). For workers approaching approximately 80 percent of the 1000 millirem administrative dose limit, a dose extension form is initiated. Standard operating procedures specify that the worker and the Radiation Safety Officer approve all dose extensions. Based on discussions of this issue with the work foremen and several of the craft workers, the inspectors determined that the dose extension policy was not well understood by the workers and that the supervisors had not explained the policy adequately. Interviews with numerous radiation workers about radiation protection issues revealed that they were not comfortable raising questions, concerns or discussing radiation protection issues with their management.

c. Conclusions

The licensee established a training program that met the requirements of 10 CFR 19.12. However, the inspection revealed that aspects of the licensee's program were weak pertaining to training and retraining of radiation workers. Interviews with field personnel

revealed a lack of knowledge of the policies and standard operating procedures related to internal dose, administrative dose limits and regulatory limits. Some workers admitted that they were uncomfortable bringing up questions relating to radiation to licensee management.

#### IV. Radiation Protection

a. Inspection Scope

The inspectors reviewed the licensee's radiation protection program, survey and contamination control practices, interviewed radiation workers, and toured restricted work areas.

b. Observations and Findings

Standard operating procedures require each individual to wear protective clothing including a hard hat, safety glasses, and safety shoes when working on site. The inspector observed individuals performing decommissioning and survey work wearing the prescribed protective clothing. Radiation workers were observed wearing personnel dosimeters.

The inspector toured the perimeter of the site, the restricted areas and observed licensee and contractor personnel don protective gear, perform surveys in restricted areas, and perform other decontamination and dismantlement activities. The inspectors observed contractor personnel survey themselves for removable contamination with appropriate radiation detection instrumentation.

Survey stations were set up at the exit point of each restricted area on the site. There are two separate restricted areas on site: (1) the WTR Basin/soil remediation work and (2) the work underway in the Reactor building area and associated Transfer Canal and Annex area.

The entry and exit points to the Transfer Canal and associated Annex were clearly marked and manned by appropriate HP support personnel. Radiation detection monitors (friskers) were set up and working at the boundary of the RCA and workers were observed using them upon their exit. Work performed in the Canal was described by two separate RWPs and physically split by a block wall and containment tent that was set up on each side of the canal. The use of two separate RWPs was designed to track the work and radiation exposure linking each side to the appropriate license and licensed entity (Westinghouse Electric Company and Viacom Inc.). In November 2000, after the majority of the reactor work was completed, the RWPs were re-written so that the work in the canal and associated areas was joined to encompass the entire remedial and decontamination activities.

Soil remediation work was performed by excavating the soils from the WTR Basin 1 and Basin 2/3 areas in the vicinity of the Liquid Waste Retention Basin. The licensee had also completed remediation work along the creek known as Calley's Run and the areas

were backfilled and seeded. Various concrete pads and shield blocks had been removed, including a portion of an underground process drain line.

The inspector performed a walk-over in-process survey of the excavated areas in WTR Basin 1 to identify areas with residual amounts of radioactivity. During the in-process sampling phase, the inspector was onsite to collect confirmatory soil samples in this survey unit. The samples were transported to the Region I laboratory for processing and analysis.

#### Protective Equipment: Respirators

The inspector reviewed the respirator program. The licensee's procedures require that full face negative pressure respirators be used for entry into the Hot Cell loading area and the transfer canal area. The respirators are cleaned by a technician who reassembles, checks, and surveys the respirators. There are approximately 200 respirators onsite that were cleaned and used daily. The equipment used for cleaning was in good working condition at the time of inspection. Survey documents were complete and readily retrievable.

#### c. Conclusions

The licensee provided good radiological controls for the decommissioning work in the restricted and unrestricted areas. Respirators used as routine personal protective equipment were adequately cleaned and surveyed for contamination.

### **V. Radioactive Waste Management and Transportation**

#### a. Inspection Scope

The inspectors reviewed the implementation of the radioactive waste program relative to waste processing, waste characterization, the application of scaling factors, and transportation activities. This review included examination of shipping records, interviews with cognizant personnel, and direct observation of work activities. The inspectors also reviewed the licensee's response to a minor train derailment involving a rail shipment of contaminated soil.

#### b. Observations and Findings

The inspector observed packaging and storage of radioactive waste (radwaste), and toured the areas where radwaste was staged in preparation for shipment. Independent measurements of radiation levels made by the inspector on storage containers confirmed the licensee's measurements. A significant volume of waste was being stored in polybags and roll-off containers, seavan containers, and railroad cars for eventual shipment offsite.

Shipping records for dry active waste and supporting documentation for containers were reviewed. Manifests were properly prepared, radioactive waste was properly characterized and classified as to DOT type, and appropriate shipping container, labels and vehicle placards were used. Direct observation was made of shipping staff finalizing preparations of Low Specific Activity (LSA) shipments via truck and railcar. The licensee had properly blocked, braced and labeled the packages, and had obtained the radiation and contamination levels of the transport packages. The inspector discussed radwaste challenges with the licensee as they relate to classification and shipment of radwaste. The licensee described the activities underway in moving and packaging hot duct work that was generated from the sub-cell room and the complexities in properly packaging and classifying the waste in accordance with 10 CFR 61.55. This work is continuing. No safety concerns were identified.

Up-to-date NRC licenses for facilities receiving shipments and current copies of DOT/NRC regulations were found on file. Individuals responsible for implementing the waste characterization and shipping programs were knowledgeable of the regulatory requirements contained in these documents.

The inspectors reviewed the licensee's response to a minor railcar derailment of a shipment of contaminated soil. Licensee personnel responded to the scene following notification of the event and confirmed that the incident did not release any of the contaminated soil. The shipment was returned to the site for re-packaging.

c. Conclusions

The solid radioactive waste management and transportation programs were adequately implemented as evidenced by an experienced staff carrying out the detailed procedures. Radioactive waste and other radioactive materials were properly characterized, classified, maintained, posted, and in satisfactory material condition. The licensee responded promptly and effectively to a minor railcar derailment involving contaminated soil from the site.

## VI. Posting and Labeling

### a. Inspection Scope

The inspectors reviewed posting and labeling of contaminated areas, radiation areas, and radioactive materials areas and examined areas for posting of required notices. Information was gathered by review of radiological surveys, tours of restricted areas, and discussions with cognizant personnel.

### b. Observations and Findings

A review was performed of the radiological posting and labeling practices and posting of notices throughout the facility. The inspectors reviewed the records and interviewed individuals about the posting practices in the Transfer Canal, Annex and associated vessel areas. In particular, the inspectors reviewed the process for the removal of the former test reactor vessel from the containment building and subsequent loading for transport. The licensee appropriately dealt with the challenge of decontaminating the exterior of the reactor vessel and portions of the floor of the reactor containment building so that the workers removing the vessel did not have to perform work in a contaminated area and could handle the vessel without the need for personal protective equipment. After performing radiological surveys, Health Physics personnel changed the boundary in the area where the vessel was to be transferred onto a truck for shipment offsite. Upon completion of the transfer, the area boundaries were re-established and the area was returned to use as a radiologically controlled and contaminated area where protective clothing was required. The inspectors observed that the licensee had done a good job of posting signs that notified workers and visitors of the RCA boundaries as they changed.

The inspector observed that the licensee had posted copies of NRC Form 3, "Notice to Employees", in the main work areas, at entrances to the RCAs, and in meeting rooms. The inspector also observed that exclusion barriers had been established on the perimeter of the restricted areas and verified that they were conspicuously posted with the appropriate caution signs as required by 10 CFR 20.1902 (e). Orange plastic barriers were set up on the perimeter of the WTR Basin 1 and on the perimeters of Basins 2 and 3. The inspector observed that the licensee posted an NRC Form 3 in the main meeting trailer of the soils area where workers gather to read RWPs and frisk out of the RCAs. In addition, a copy of the NRC license was posted with a notice identifying where copies of 10 CFR 19 and 20 could be reviewed in accordance with 10 CFR 19.11.

### c. Conclusions

The licensee provided good posting and labeling practices throughout the site. The licensee effectively dealt with the challenge presented by moving the reactor vessel from the TR-2 containment building and onto a truck for offsite transport. No safety concerns were identified.

## **VII. Exit Meeting**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on Thursday, December 14, 2000. The licensee acknowledged the findings presented.

### **PARTIAL LIST OF PERSONS CONTACTED**

#### Licensee and Contractors

A. Joseph Nardi - Supervisory Engineer, Westinghouse Electric Company  
Wayne Vogel - Radiation Safety Officer, Westinghouse Electric Company  
Russell Cline - Manager, IHSEC Westinghouse Electric Company  
William Lavalley - Remediation Project Manager, Westinghouse Electric Company  
Broadus (Bo) M. Bowman - Viacom Inc.  
Andrew Lombardo - Earth Sciences Consultants, Inc.  
Dennis Reese - Project Manager, Washington Group  
Herb Cruickshank - Manager, Health Physics, GTS Duratek  
John Boughner - Operational HP Supervisor, GTS Duratek  
Evan Reese - HP Supervisor, GTS Duratek  
Julian Owoc - HP Operational Supervisor, GTS Duratek  
Harry Anagnostopoulos - HP Supervisor, GTS Duratek  
Carie Blotzer - Calibration Supervisor, Westinghouse Electric Company  
Gary Lemmon - Foreman, Washington Group  
Dennis Mazzone - Foreman, Washington Group  
Thomas Cullen - Team Leader, Washington Group  
Dave Wiatt - Soils Technician, Earth Sciences  
Dennis Needham - Technician, Westinghouse Electric Company

#### Commonwealth of Pennsylvania

Robert Maiers - Chief, Decommissioning Section, PADEP  
Roy Woods - Radiation Health Physicist, PADEP  
Steven Bostjancic - Radiation Health Physicist, PADEP