



040-08976

**Westinghouse  
Electric Corporation**

Westinghouse Building  
Gateway Center  
Pittsburgh Pennsylvania 15222

January 26, 1994

Mr. Mark Roberts  
Senior Health Physicist  
U.S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406

Subject: DEMOLITION OF BUILDING 9 AND 10A AT THE BLOOMFIELD, NJ  
FACILITY

Dear Mr. Roberts:

The purpose of this letter is to document our intention to perform partial demolition of Buildings 9 and 10A at the Bloomfield site concurrently with the conduct of termination surveys. This activity is necessary to minimize health and safety risks to personnel on-site. There are portions of the building walls and roofing which have degraded to the point of posing a direct safety hazard if left in place during ongoing remediation and survey activities.

We believe these activities do not constitute an activity outside the scope of the current radioactive materials license and will facilitate the ability of the NRC or ORISE to conduct confirmatory measurements. The steps involved in the demolition process are described in the attachment to this letter.

If you have any questions or concerns regarding our plans, please contact me at (412) 642-3880.

Sincerely,

*C. W. Bickerstaff*  
C. W. Bickerstaff, Manager  
Industrial Hygiene  
Environmental Affairs

Attachment

cc: 1539 WESTINGHOUSE BUILDING -- B. M. Bowman

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# BLOOMFIELD LAMP PLANT BUILDING 9 DEMOLITION PLAN

## Background

Building 9 housed manufacturing operations which involved the use of natural thorium. The building was found to be contaminated during initial surveys for license termination. The primary areas found to be contaminated were the floor of the building, the drain systems, the soil around the drain lines, the ventilation exhaust louvers and the roof surface adjacent to some of the exhaust louvers.

Westinghouse has performed extensive remediation to remove the contamination. Drain systems have been removed and soil excavated, resulting in a number of open trenches throughout the building. In some areas, the interior walls and support columns have been undermined by the removal of drains and soil, resulting in unsupported interior walls and support columns. The removal of contaminated ventilation system louvers has left several sections of the roof unsafe with loose concrete debris held by only reinforcing wire. The roof is also in disrepair in several locations and its structural integrity is questionable.

As a result of the remediation work which has already been performed as well as additional passage of time, the majority of Building 9 is not felt to be in a safe condition for the planned surveys and any further remediation work. Westinghouse has elected to perform a partial demolition of Building 9 to eliminate the potential safety hazards before proceeding with the final remediation and release surveys. Because of the building configuration, Building 10A will also need to be demolished to allow the access of heavy equipment into Building 9.

## Pre-Demolition Surveys

Buildings 9 and 10A were extensively surveyed during the previous decommissioning work. The results of those surveys were reported in *Radiological Decontamination Confirmation Survey, Westinghouse Bloomfield Lamp Plant, Building 7, 8, and 9, August 1992*. In May, 1993 a confirmatory survey was conducted by ORISE which showed residual contamination remaining on the floor of Buildings 9 and 10A and in some of the trenches in Building 9.

Westinghouse intends to perform the following pre-demolition surveys, assuming conditions permit the safe performance of the surveys.

### **Building 9**

- The open penetrations in the roof where the ventilation louvers were located will be surveyed, using biased survey techniques.
- The interior walls, which can be safely accessed, will be surveyed using

biased survey techniques at a rate of one (1) measurement per 50 m<sup>2</sup> (NUREG - 5849 criteria).

### **Building 10A**

- The floor will be gridded and systematically scanned and surveyed at a rate of four (4) measurements per 1 meter grid (NUREG - 5849 criteria).
- The interior walls will be surveyed using biased survey techniques at a rate of one (1) measurement per 50 m<sup>2</sup> (NUREG - 5849 criteria).

**NOTE:** *Any areas found contaminated in Building 10A during pre-demolition surveys will be remediated and resurveyed prior to the start of demolition work.*

### **Demolition Controls and Surveys**

The objective of the demolition work is to remove those sections of the roof and walls which create an unsafe work environment in Building 9. Prior to start of any demolition work, the floor of Building 9 will be covered to avoid disturbing any potentially contaminated areas on the floor or in the trenches.

The debris from the demolition will be collected in skip pans and moved to a location outside of Building 9. The debris will then be surveyed by qualified (ANSI 3.1) health physics technicians for any residual contamination, using project operating procedures. A list of project procedures and a copy of REDS-RAM-103, *Unconditional Release of Tools, Equipment and Waste Materials* are attached for your reference. If contamination is detected, the material will be segregated and packaged as radioactive waste.

### **Post-Demolition Surveys**

When Building 9 is in a safe condition, Westinghouse will continue with the survey and remediation of the remaining walls, floor and trenches in accordance with established plans and procedures.

## **BLOOMFIELD LAMP PLANT PROJECT PROCEDURES**

REDS-CHM-101	Sample Identification and Chain-Of-Custody
REDS-CHR-100	Site Characterization Plan
REDS-CHR-101	Characterization of Structures
REDS-CHR-102	Characterization of Systems
REDS-CHR-106	Surface Soil Sampling
REDS-CHR-107	Subsurface Soil Sampling
REDS-DEC-201	Operation of Wall and Floor Scabblers
REDS-DEC-203	HEPA Vacuum Operation
REDS-DEC-204	Operation and Maintenance of the PENTEK CORNER CUTTER
REDS-DEC-205	Operation and Maintenance of the PENTEK SQUIRREL-III Scabber
REDS-DEC-206	Operation and Maintenance of the PENTEK VAC-PAC Models 6A and 9A
REDS-DEC-301	Decontamination of Tools, Equipment and Area
REDS-DEC-302	Control and Use of Radiological Containments
REDS-DEC-303	Decontamination Techniques - Selection and Precautions
REDS-HS-101	Confined Space Entry
REDS-INST-100	Radiation Protection Instrumentation Program
REDS-INST-101	Issue, Control and Accountability of Radiation Protection Instrumentation
REDS-INST-102	Quality Control of Counting Systems and Portable Counters
REDS-INST-201	Operation of the Ludlum Model 2350 Data Logger

REDS INST-203	Operation of NE Technology CM7A Contamination Monitor
REDS-INST-205	Operation of Ludlum Model 3 Survey Meter with Model 44-9 Beta Gamma Probe or Model 43-5 Alpha Scintillation Probe
REDS-INST-206	Operation of the Ludlum Model 19 Micro-R Meter
REDS-INST-207	Operation of Eberline Ion Chamber Model RO-2/RO-2A
REDS-INST-209	Operation of Ludlum Model 177 Portable Frisker
REDS-INST-211	Operation of Eberline BC-4 Portable Beta Counter
REDS-INST-212	Operation of Eberline SAC-4 Portable Alpha Counter
REDS-INST-216	Operation of F&J Lv-1 and Hv-1 Air Samplers
REDS-OPS-201	Radiation Work Permits
REDS-OPS-202	Selection and Use of Protective Clothing
REDS-OPS-301	Performance of Surveys
REDS-OPS-302	Survey Documentation and Review
REDS-OPS-303	Posting of Radiologically Controlled Areas
REDS-OPS-304	Analysis and Evaluation of Air Samples
REDS-RAM-103	Unconditional Release of Tools, Equipment and Waste Materials
REDS-RSP-101	Selection and Issue of Respiratory Protection Equipment
REDS-RSP-104	Respirator Fit Test
REDS-RSP-105	Respirator Cleaning and Drying
REDS-RSP-107	Use of Respiratory Protection Equipment



## **1.0 PURPOSE**

This procedure provides guidelines and criteria for the performance of release surveys that are required prior to the unconditional release of tools, equipment and waste materials from Radiologically Controlled Areas (RCAs).

## **2.0 APPLICABILITY**

This procedure applies to all project personnel who perform unconditional release surveys.

## **3.0 REFERENCES & COMMITMENTS**

### **3.1 References**

3.1.1 REDS-DEC-301. *Tool, Area and Equipment Decontamination.*

3.1.2 REDS-INST-100. *Radiation Protection Instrumentation Program.*

### **3.2 Commitments**

None

## **4.0 GENERAL**

### **4.1 Discussion**

None

### **4.2 Definitions**

#### **4.2.1 Aggregate Material**

Items or materials which by their physical natures do not lend themselves to being effectively surveyed using portable instrumentation and require bulk or composite survey techniques or representative sampling and analysis.

#### **4.2.2 Minimum Detectable Activity (MDA)**

The smallest amount or concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. MDA depends upon the type of instrument, the counting geometry, and the radionuclide to be detected. MDA has the same meaning as Lower Limit of Detection (LLD) for radiation survey instruments. (ANSI N13.3-1989)

**4.2.3 Radioactive Material**

Material activated or contaminated by the operation or decommissioning of AMTL, and by-product material procured and used to support the operation or decommissioning of AMTL.

**4.2.4 Radiologically Controlled Area (RCA)**

Areas within the restricted area that require posting because of the radiological hazards present. Radiologically Controlled Areas may contain Radioactive Materials Areas, Contamination Areas, Radiation Areas, High Radiation Areas, and Airborne Radioactivity Areas.

**4.2.5 Unconditional Release of Material**

The removal of materials from a Radiologically Controlled Area (RCA) to areas which do not require radiological control of the material by the licensee.

**4.3 Responsibilities**

4.3.1 The Project Manager or designee is responsible for administering and implementing this procedure.

4.3.2 Health Physics technicians are responsible for performing this procedure.

**4.4 Prerequisites**

4.4.1 Instruments shall be used in accordance with REDS-INST-100, *Radiation Protection Instrumentation Program*.

**4.5 Precautions & Limitations**

4.5.1 **DO NOT** remove material from potentially contaminated areas without having the material surveyed and released in accordance with this procedure.

4.5.2 The following exclusions are **NOT** addressed by this procedure:

1. The monitoring of personnel or personal articles prior to egress from an RCA in accordance with posted frisking procedures.
2. Samples for off-site analysis released in accordance with radioactive waste procedures.
3. Effluents released or discharged to the environment.

## 5.0 PROCEDURE

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### NOTE

When using a pancake G-M detector (HP-210 or equivalent equipment) held at 1/2 inch from the item being surveyed, 100 cpm above background approximates 5000 dpm/100 cm<sup>2</sup> for most fission and activation products. Specific values per direction of the Project Manager or designee may be used if a source term and detector efficiency correlation has been made.

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### 5.1 General

- 5.1.1 Health Physics technicians shall be notified of items or materials to be removed from potentially contaminated areas prior to their removal.
- 5.1.2 Document all release surveys in accordance with Section 5.6.
- 5.1.3 Direct the transfer of contaminated tools, equipment and waste materials to processing areas.

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### CAUTION

**Extreme care should be taken when handling sensitive maintenance and test equipment (e.g., micrometers, voltmeters, oscilloscopes, etc.).**

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- 5.1.4 Surfaces of tools and equipment which are likely to be contaminated, but are of such size, construction, or location as to make the surfaces inaccessible for measurement, shall be presumed to be contaminated in excess of the limits specified in Step 5.3.1.
- 5.1.5 Decontaminate reusable items used within Contamination Areas in accordance with REDS-DEC-301, *Tool, Area and Equipment Decontamination*, prior to survey for release.
- 5.1.6 Control all wastes as radioactive material until release surveys indicate that the wastes contain no detectable quantities of radioactivity.
- 5.1.7 Resurvey aggregate waste packages found to be free from radioactive contamination with a gamma sensitive instrument, in accordance with Step 5.2.3 of this procedure prior to release from the potentially contaminated areas.

- 4.5.3 Oils or solvents shall **NOT** be introduced into floor drains.
- 4.5.4 Due to interference and sensitivity difficulties in performing direct frisk for alpha, a technical basis may be developed to demonstrate compliance with alpha criteria using measured correlations with associated beta-gamma emitting radioisotopes.
- 4.5.5 **DO NOT** open electrical equipment containing power supplies or transformers (e.g., welders) to avoid the risk of electrical shock. Contact personnel knowledgeable of such hazards (i.e., electricians) for specific guidance.
- 4.5.6 **DO NOT** cover over contamination by painting, plating, taping, etc. to reduce contamination to releasable limits.

#### **4.6 Apparatus**

- 4.6.1 Typical instrumentation necessary for unconditional release of items may include but is not limited to:
  - 1. SAC-4 or equivalent
  - 2. BC-4 or equivalent
  - 3. TCM-2 or equivalent
  - 4. CM7A with DP5A gas flow probe or equivalent
  - 5. Model 177 with 44-9 probe or equivalent
  - 6. Model 19 micro-R meter or equivalent
- 4.6.2 Gamma spectroscopy equipment as required for isotopic identification
- 4.6.3 Disc smears
- 4.6.4 Sample containers

#### **4.7 Records**

- 4.7.1 Release Log

- 5.1.8 All HVAC ducts and equipment and all piping that is potentially contaminated shall be physically surveyed internally and externally, as appropriate, to ensure that the wastes contain no detectable quantities of radioactivity.

## **5.2 Instrumentation Criteria**

- 5.2.1 Instruments selected for survey shall be calibrated and set up for monitoring radioactivity considered representative of that present at the site employed.
- 5.2.2 Portable counting instruments employed to evaluate gross beta-gamma or alpha contamination shall be capable of detecting the following minimum level of activity using direct survey methods, as applicable:
1. For loose beta/gamma contamination: 1000 dpm/100 cm<sup>2</sup>.
  2. For loose alpha contamination: 20 dpm/100 cm<sup>2</sup>.
  3. For direct frisk beta/gamma contamination: 5000 dpm/100 cm<sup>2</sup>.
  4. For direct frisk alpha contamination: 100 dpm/100 cm<sup>2</sup>.
- 5.2.3 Portable instruments used to perform final measurements shall be capable of detecting low levels (e.g.,  $\mu\text{rem/hr}$ ) of gamma radiation in low level background areas.

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### **NOTE**

For purposes of waste material release criteria, background is equivalent to the minimum level of activity that can be detected (MDA) considering the instrumentation utilized. Background may also include measurable activity resulting from naturally occurring radioisotopes contained in construction materials (e.g., concrete).

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## **5.3 Release Criteria**

- 5.3.1 To unconditionally release an item from potentially contaminated areas, ensure the item or material does not contain detectable amounts of radioactive material in accordance with the following criteria:
1. Loose contamination levels < 1000 dpm/100 cm<sup>2</sup> beta-gamma AND/OR < 20 dpm/100 cm<sup>2</sup> alpha.
  2. Direct frisk contamination levels < 5000 dpm/100 cm<sup>2</sup> beta-gamma AND/OR < 100 dpm/100 cm<sup>2</sup> alpha.

5.3.2 For those materials which were subjected to a reactor neutron flux or were in contact with reactor coolant, volume analysis shall be performed to meet standard NRC Radiological Effluent Technical Specification lower limits of detection.

#### **5.4 Vehicle Surveys**

5.4.1 Survey all vehicles exiting an RCA according to the following:

1. Vehicles under constant control not entering a contaminated area:
  - a. Survey for loose surface contamination.
  - b. Survey all tires, as a minimum.
2. Vehicles not under constant control and entering a contaminated area:
  - a. Survey for loose surface and fixed beta-gamma contamination.
  - b. Survey tires, steps and driver's compartment area.
  - c. Survey surfaces that may have come in contact with radioactive materials.

5.4.2 Allow emergency vehicles (ambulances, fire/rescue vehicles, etc.) to immediately exit an RCA without an unconditional release survey.

1. Perform the following:
  - a. Contamination surveys along the travel route within an RCA AND in the immediate area(s) outside the RCA from which the vehicle exited.
  - b. Notify the Project Manager or designee after emergency vehicles have exited an RCA without an unconditional release survey.
2. Survey the emergency vehicle as soon as possible following use (i.e., after transport of a contaminated injured person) in accordance with Step 5.4.1.2 of this procedure.

#### **5.5 Contaminated Items**

5.5.1 **DO NOT** unconditionally release any items found to be contaminated in excess of the limits given in Step 5.3.1 of this procedure.

5.5.2 Handle all items being released from contaminated areas as radioactive material.

5.5.3 Attempt to decontaminate an item by wiping with disposable wipes or similar technique.

5.5.4 **IF** contamination levels still exceed the limits given in Step 5.3.1 of this procedure, **THEN** send item for decontamination or dispose as radioactive waste.

## **5.6 Survey Documentation and Review**

5.6.1 Document items unconditionally released on Attachment 6.1, *Release Log*, or equivalent. Attachment 6.1 shall provide the following information:

1. Date and time of survey.
2. Organization responsible for the item or material.
3. Item description and origin, if known. Include container contents where applicable, and provide sufficient detail to maintain historical information regarding material disposition.
4. Instruments used to perform the survey, including the serial number, calibration due date and background count rate, if applicable.
5. The results of the release survey.
  - a. **IF** direct frisk is performed using a Model 177 with 44-9 probe or equivalent, **THEN** record the cpm observed in the space provided.
  - b. **IF** direct frisk is performed using a TCM-1, CM7A with DPSA probe or equivalent, **THEN** record as less than or greater than MDA, as observed in the space provided.
6. The name of the Health Physics technician performing the survey.
7. Complete all information for the entry. "N/A" is acceptable, where appropriate.
8. Review by the Project Manager or designee.

5.6.2 Completed Attachment 6.1, along with other survey documentation associated with unconditional release surveys shall be reviewed, documented, and filed.

## **6.0 ATTACHMENTS**

### **6.1 *Release Log***

