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VIACOM

March 25, 2002

Document Control Center
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Viacom Inc.
Westinghouse Test Reactor TR-2; Docket No. 50-22
2001 Annual Report

In accordance with Section 6.6.1 of the Westinghouse Test Reactor (TR-2) Technical Specifications, a written annual report covering the status of the test reactor decommissioning is attached. The report covers the period beginning January 1, 2001 through December 31, 2001.

Also, pursuant to 10CFR50.59 (2) and as specified in 10CFR50.4, a report containing a brief description of the changes made in 2001 to the TR-2 license under the provisions of 10 CFR 50.59 including a summary of the safety evaluation has been incorporated.

If you have any questions regarding this matter, please write or call me at the above address and telephone number or contact Mr. Wayne Vogel at (724) 722-5924.

Sincerely,



Richard K. Smith
Director - Environmental Remediation

Attachment 1 - 2001 Annual Report

A020

cc:

Mr. Alexander Adams, Jr., Senior Project Manger
Non-Power Reactors and Decommissioning Project Directorate
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Wayne Vogel, Radiation Safety Officer
Westinghouse Electric Company

Attachment 1

**2001 Annual Report
for the
Waltz Mill Facility
Westinghouse Test Reactor
License No. TR-2
Docket No. 50-22**

Viacom Inc.

January 1, 2001 - December 31, 2001

2001 ANNUAL INSPECTION REPORT FOR RETIRED WESTINGHOUSE TEST REACTOR

U.S.N.R.C. LICENSE TR-2

DOCKET 50-22

EXECUTIVE SUMMARY

During the reporting period of January 1, 2001 through December 31, 2001, the Waltz Mill Decommissioning Project Team (WMDT) continued implementing the Westinghouse Test Reactor (WTR) Final Decommissioning Plan as approved by the NRC in Amendment 8 of the TR-2 License. The objective of the approved decommissioning plan is to terminate the TR-2 License. As described in the Decommissioning Plan, this is to be accomplished by removing the reactor tank, its internals and portions of the biological shield. This objective will also be met by providing the NRC sufficient documentation to demonstrate that the license termination requirements have been met including all documentation required for transferring the remaining residual radioactivity and WTR Facilities to the SNM-770 License.

Site decommissioning activities are conducted in accordance with approved procedures, work packages and the TR-2 License. All WTR work packages are reviewed and approved by the TR-2 Radiation Safety Committee (RSC). The RSC monitors decommissioning operations to ensure they are performed safely and according to federal, state and local regulatory requirements (NRC, EPA, PADEP, DOT, etc.).

Both site and project radiological controls personnel continue to monitor the radiological conditions at the site to assure protection of the health and safety of the general public and site personnel.

This report reviews those activities as required by the Technical Specifications Section 6.6.1 and includes the following:

1. A narrative summary of facility activities.
2. Tabulation of the major preventative and corrective maintenance operations having safety significance.
3. A brief description of major changes in the reactor facility and procedures and activities significantly different from those performed previously and not described in the safety analysis report, and a summary of the safety evaluation that shows no unreviewed safety questions were involved (per 10CFR50.59 (2)).
4. A summary of the nature and amount of radioactive effluents released or discharged to the environs beyond the effective controls of the licensee as determined at or before the point of such releases or discharge. The summary shall include to the extent practical, an estimate of the major individual radionuclides present in the effluent. If the estimated average release after dilution or diffusion is less than 25% of the concentration allowed or recommended, a statement to this effect is sufficient.
5. A summarized result of the environmental survey performed outside the facility.

1. A Narrative Summary of Facility Activities.

Facility Operations

In 2001, the Waltz Mill Decommissioning Team (WMDT) continued to implement the Westinghouse Test Reactor Final Decommissioning Plan as approved by the U.S. Nuclear Regulatory Commission by Amendment 8 to the TR-2 License on September 30, 1998. Some general area decontamination and clean up was also performed. A list of significant activities is provided below:

- Decontamination and survey of the Primary Coolant Tunnel.
- Decontamination and survey of the Top Loop Tunnels.
- Decontamination and survey of the Transfer Canal.
- Decontamination and survey of the Diesel Pump Pit.
- Decontamination and survey of the Sub-Pile Room.
- Decontamination and survey of the Containment Building.
- Decontamination and survey of the Polar Crane.

ALARA Data

All decommissioning activities were planned and conducted in accordance with the site ALARA policy and comprehensive safety programs. WMDT places the highest priority on conducting the Waltz Mill Decommissioning Project safely and maintaining exposure to ionizing radiation ALARA. An ALARA summary for the WTR facilities decommissioning activities is provided in attached Table A.

Regulatory Interfaces

Throughout the year, the licensee communicated with the USNRC. These communications took place via written correspondence, telephone calls and meetings. Significant results are noted below:

- Viacom and Westinghouse submitted monthly updates to the NRC on the status of the decommissioning activities underway at Waltz Mill.
- A telephone conference call was held on January 23 with representatives from NRC Region 1 and Headquarters to discuss the process for transferring the Westinghouse Test Reactor facilities to the SNM-770 license and terminating the TR-2 license.
- 2000 Annual Report for the TR-2 License was issued on March 9, 2001.

Radiation Safety Committee Activities

The Radiation Safety Committee (RSC) for the TR-2 license provided management oversight and review of the WTR decommissioning activities. During 2001, the RSC reviewed the status of the decommissioning project, results of audits and inspections, and performance against ALARA objectives.

In accordance with the Section 6.2.4 of the TR-2 Technical Specifications, the RSC conducted independent audits of decommissioning activities - specifically, an audit of "facility activities for conformance to the Technical Specifications and License" (6.2.4.1) and "The results of actions taken to correct those deficiencies that may occur in the reactor facility equipment,

systems, structures or methods of operations that affect facility safety” (6.2.4.3). These audits were performed on November 6, 7 and 8, 2001. Audit deficiencies were documented and corrective actions were immediately initiated by the project. The auditors concluded that the WTR facility activities were being conducted in accordance with the Technical Specifications and the TR-2 License.

Organizational Changes

The current management organization relative to the administration of License TR-2 is as follows:

- Richard K. Smith, Viacom Decommissioning Project Director, is the senior site manager having responsibility for the retired WTR facilities.
- Russell G. Cline remains as the Westinghouse Nuclear Services Manager, Environment, Health and Safety (EHS)
- Wayne D. Vogel, Radiation Safety Officer, reports directly to Mr. Cline.

A current organizational chart is attached.

Summary

In summary, work on the TR-2 Decommissioning Plan has been authorized by the NRC. Work on Phase I, Facility Preparations & Engineering, is complete. Phase II, Reactor Tank Removal, platform and structural interference and bioshield removal are complete. Phase III, Building & Structures Remediation, was concluded on November 8, 2001. A current project schedule is attached.

2. Tabulation of the major preventative and corrective maintenance operations having safety significance.

Since reactor fuel was removed from the reactor and the site decades ago, the Westinghouse Test Reactor as described in the Decommissioning plan and in the Technical Specifications does not contain any nuclear safety related equipment.

3. A brief description of major changes in the reactor facility and procedures and activities significantly different from those performed previously and not described in the safety analysis report, and a summary of the safety evaluation that shows no unreviewed safety questions were involved.

In 2001, license reviews of work packages and procedures were performed to provide administrative controls over physical or procedural activities to preclude adverse impacts on the safe dismantling and decommissioning operations conducted under the TR-2 License. During this time, no proposed activity required a safety evaluation pursuant to 10 CFR50.59.

4. A summary of the nature and amount of radioactive effluents released or discharged to the environs beyond the effective controls of the licensee as determined at or before the point of such releases or discharge. The summary shall include to the extent practical, an estimate of the major individual radionuclides present in the effluent. If the estimated average release after dilution or diffusion is less than 25% of the concentration allowed or recommended, a statement to this effect is sufficient.

Low Level Radioactive Waste

Low-level radioactive, solid debris and dry active waste from the WTR was collected, packaged and transported for either processing or burial at a licensed facility. During 2001, 13,282.5 cubic feet of LLW containing 2,008.5 mCi was shipped for disposal. The 2001 waste shipments are summarized in the Attachment B.

All 14,195 gallons of contaminated water from the WTR collected in 2001 was processed through an on-site water treatment system. The primary source of water was the transfer canal and diesel pump pit. This water was processed, analyzed and disposed by discharge to a public sanitary sewage treatment facility in accordance with 10CFR20.2003. The collected water was processed along with water from the SNM-770 license. All water disposed by discharged to the public sanitary sewage plant was less than 20% of the 10 CFR 20, Appendix B, Table 3 limits. The total activity discharged from both licenses, utilizing the on-site water processing system, was 391 μ Ci tritium and 424 μ Ci other beta-gamma emitters.

Airborne Releases

In order to support decommissioning activities in the WTR, a HEPA ventilation unit was installed to maintain negative pressure in containment and to provide for a controlled and monitored discharge of airborne activity. The stack is continuously monitored for air particulate. The filter samples are typically collected weekly and analyzed for gross beta and alpha activity. The average monthly concentration is then determined from this data. During 2001, the estimated average release measured at the point of discharge was less than 25% of the 10 CFR 20, Table 2, Column 2 concentration. This determination was made using the most restrictive radionuclides possibly present (Sr-90/Pu-239). A summary of the releases from the WTR ventilation system is contained in Table C.

In accordance with Regulatory Guide 4.20, "Constraint on Releases of Airborne Radioactive Materials to The Environment For Licensees Other Than Power Reactors" the facility is in compliance with 10 CFR 20.1101(d). This was determined using the COMPLY program (V1.6) and the data from Table B. The COMPLY Code determined the facility was in compliance at Screening Level 1.

Liquid Effluent Releases

There were no discharges of liquid effluents to the environs from the WTR in 2001. All liquid waste was processed and discharged to a public sanitary sewage facility in compliance with 10 CFR 20.2003.

5. A summarized result of the environmental survey performed outside the facility.

Environmental monitoring associated with the WTR decommissioning is in accordance with the programs and requirements of the SNM-770 license. Various environmental media and pathways are sampled under the SNM-770 License. Only media and pathways relevant to the WTR decommissioning are summarized in this report. Since there have been no discharges of liquids to the environs in 2001, the data presented is limited to the media and pathways relevant to airborne releases and direct radiation.

Direct radiation was measured with a series of TLDs deployed throughout the site and along the perimeter of the Central Operations Area. The TLDs contain aluminum oxide TL material with a dose reporting level of 0.1 mrem/quarter. Data collected from the TLDs near the WTR facility is summarized in Table D. Radiation levels recorded include those associated with activities under the SNM-770 license.

An environmental air sampling station is located approximately 3600-ft downwind of the WTR stack. A second station is located approximately 500-ft upwind of the stack. A measured volume of air is drawn through a particulate filter. The filters are collected and analyzed weekly for gross alpha and beta activity using a gas-flow proportional counter. The downwind air samplers are also downwind of several stacks associated with the SNM-770 license.

Surface soil samples are collected annually from four locations north, south, east, and west along the site boundary. The samples are collected to a depth of 15-cm. Gamma isotopic and strontium-90 analyses are performed on each sample.

Vegetation samples are collected annually at the same locations as the soil samples. Gamma isotopic and strontium-90 analyses are performed on each sample.

A summary of the SNM-770 environmental measurements relevant to the WTR Decommissioning Project is contained in Table D.

Table A
WTR Facilities Decommissioning Activities ALARA Summary

WTR Facility Area	Proposed Decommissioning Activity	Estimated Exposure (Person-rem)	ALARA Exposure Goal (Person-rem)	Actual Exposure by SRD (Person-rem) (6)	Status
Pre-Decommissioning Activities	Establish Radiological Controls.	0.050	0.040	0	Inactive - Complete.
Reactor Vessel, Internal Contents, and Biological Shield	Biological Shield sectioning and removal, one piece Reactor Vessel & internal component removal	18.91 (5)	15.128	7.368 (4)	Inactive - Complete.
Sub Pile Room	Components removed, concrete decontamination, and partial or full demolition.	0.850	0.680	0.292 (1), (2)	Inactive - Complete
Rabbit Pump Room	Components removed, concrete decontamination, and partial or full demolition.	0.080	0.064	0.017	Inactive - Complete
Test Loop Cubicles/Dump Tank Pits	Components removed, concrete decontamination, and partial or full demolition.	0.410	0.328	0.208 (1), (2)	Inactive - Complete
Primary Coolant Pipe Tunnel	Piping removed, concrete decontamination, and partial or full demolition.	1.880	1.504	0.683 (2)	Inactive - Complete
Transfer Canal	Water drained, sediment removed, concrete decontaminated, and partial or full demolition.	7.930	6.344	4.945 (1), (2)	Inactive - Complete
Vapor Containment Building and Misc. systems and components	Miscellaneous systems and components decontaminated and/or removed, concrete and structure surfaces decontaminated, and Polar Crane decontaminated.	0.890	0.712	0.527 (3)	Inactive - Complete
Totals		31.000	24.800	14.040	

- (1) Dose attributed to the installation of temporary power and lighting, installation of new ventilation, routine tours, routine maintenance, Asbestos removal, installation of the Truck Lock door, inspection and repair of the Polar Crane, and routine HEPA unit/vacuum maintenance prior to the year 2000 was divided equally between the major activities of Reactor Vessel/Bioshield, Sub Pile Room, Test Loop Cubicles/Dump Tank Pits, and Vapor Containment Building/misc. systems and components as they were preliminary or continuing integral parts of the major activities. Dose attributed to routine tours and HEPA unit/vacuum maintenance for the year 2000 was divided equally between Reactor Vessel/Bioshield and Transfer Canal. Dose attributed to routine maintenance for the year 2000 was divided equally between Reactor Vessel/Bioshield, Transfer Canal, and Vapor Containment Building/misc. systems and components. Dose attributed to routine tours, HEPA unit/vacuum maintenance, and routine maintenance for the year 2001 was divided equally between Transfer Canal, Primary Coolant Pipe Tunnel, and Vapor Containment Building/misc. systems and components.
- (2) Dose attributed to Health Physics support prior to the year 2000 was divided equally between the four identified active major activities in (1) and the Primary Coolant Pipe Tunnel. Dose attributed to Health Physics Support for the year 2000 was divided equally between Reactor Vessel/Bioshield and Transfer Canal. Dose attributed to Health Physics support for the year 2001 was divided equally between Transfer Canal, Primary Coolant Pipe Tunnel, and Vapor Containment Building/misc. systems and components.
- (3) Contains dose attributed to miscellaneous structural removal, existing electrical removal, miscellaneous piping and component removal, and existing ventilation removal in addition to (1) and (2) above.
- (4) Contains dose attributed to the major activity, exploratory work on the Reactor Vessel, core stabilization, and trunnion reinforcement in addition to (1) and (2) above.
- (5) Estimate is for Option (3), which includes the removal of the Biological Shield, attachment of shielding plates to the Reactor Vessel, and down-ending and removal of the Reactor Vessel, with internal components intact, out of the Containment Building through the Truck Lock.
- (6) Data through 11-08-01

**Table B
2001 Solid Radioactive Waste Shipments**

Shipment Id.	Date	Destination	Activity mCi	Gross Pounds	Gross Cubic Feet	Waste Type
LRW 2001-337-RT	10/10/01	Alaron	499.60	5,021	103.5	Pb. Acid Batteries / Activated Metals
LRW 2001-332-RT	9/19/01	Duratek	315.00	17,000	1,216	Compactable
LRW 2001-047-RT	1/25/01	Duratek	312.70	16,500	576	Comp Metals
LRW 2001-151-RT	4/11/01	MSC	301.00	22,000	1,360	Lead-WTR
LRW 2001-128-RT	4/9/01	Duratek	106.00	28,100	2,720	DAW / Metal Comp. S / L
LRW 2001-119-RT	4/4/01	Duratek	98.70	26,750	960	Metal Melt & DAW
LRW 2001-124-RT	3/29/01	MSC	97.00	9,275	113	Lead - WTR
LRW 2001-133-RT	4/4/01	Duratek	80.80	15,250	1,056	Metal Melt & DAW
LRW 2001-241-RT	6/11/01	Duratek	59.20	22,450	1,152	Metal Melt / DAW
LRW 2001-240-RT	6/11/01	Duratek	48.50	16,900	1,152	Metal Melt / DAW
LRW 2001-294-RT	8/16/01	Duratek	44.50	14,300	1,029	Metal Melt / DAW
LRW 2001-321-RT	9/13/01	Duratek	28.60	10,875	467	Metal Melt / DAW
LRW 2001-078-RT	2/21/01	Envirocare	16.90	76,600	1,378	Scabble Dust
Totals			2008.5	281,021	13,282.5	
		Alaron	499.60	5,021	103.5	
		Duratek	1,094	168,125	10,328	
		MSC	398	31,275	1,473	
		Envirocare	16.90	76,600	1,378	

Table C
Summary of Releases from the WTR
Ventilation System

Month (No. of Samples)	Average Gross Beta (Range) μCi/ml	Beta Activity Discharged μCi	Average Gross Alpha (Range) μCi/ml	Alpha Activity Discharged μCi
Jan-01 (4)	9.8E-15 (6.7E-15 - 9.0E-14)	0.15	7.2e-16 (3.6E-16 - 1.3E15)	0.01
Feb-01 (4)	8.3e-15 (4.1E-15 - 1.9E-14)	0.14	3.3E-16 (2.6E-16 - 3.9E-16)	0.01
Mar-01 (4)	8.1E-15 (4.1E-15 - 1.2E-14)	0.14	4.5E-16 (1.8E-16 - 7.7E-16)	0.01
Apr-01 (5)	8.5E-15 (7.3E-15 - 1.1E-14)	0.18	4.9E-16 (1.8E-16 - 1.3E-15)	0.01
May-01 (5)	9.1E-15 (5.4E-15 - 5.4E-14)	0.14	2.6E-16 (-3.3E-16 - 5.4E-16)	0.00
Jun-01 (5)	7.2E-15 (3.5e-15 -2.7E-14)	0.14	5.7E-16 (1.6E-16 - 1.5E-15)	0.01
Jul-01 (4)	6.8E-15 (5.5E-15 - 1.7E-14)	0.10	1.8E-16 (7.9E-17 - 2.6E-16)	0.00
Aug-01 (4)	6.2E-15 (5.3E-15 - 3.3E-14)	0.10	3.3E-16 (1.3E-16 - 1.6E-15)	0.01
Sep-01 (5)	5.3E-15 (2.3E-15 - 7.5E-15)	0.11	6.5E-16 (3.3E-16 - 7.9E-16)	0.01
Oct-01 (3)	4.3E-15 (1.4E-15 - 8.8E-15)	0.05	6.5E-16 (3.6E-16 - 1.1E-15)	0.01
Nov-01	Not Operating	-----	Not Operating	-----
Dec-01	Not Operating	-----	Not Operating	-----
Annual (43)	7.3E-15 (1.4E-15 - 9.0E-14)	1.26	4.6E-16 (-3.3E-16 - 5.4E-15)	0.08

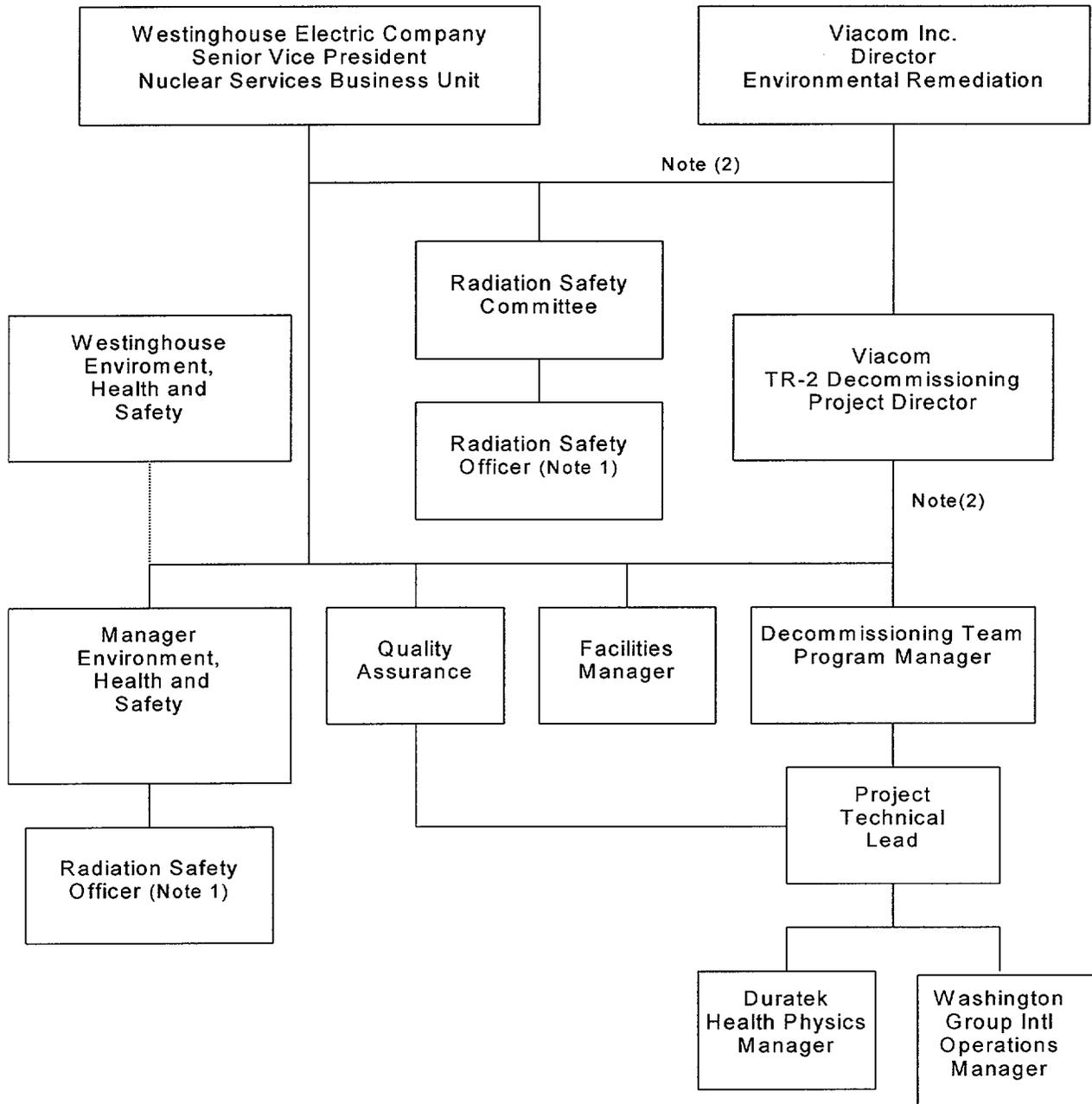
TABLE D
ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Facility: Westinghouse Test Reactor
Docket No.: 50-22

Location: Westmoreland County
Reporting Period: January 1 to December 31, 2001

Medium or pathway Sampled (Unit of Measurement)	Type and Number of Analyses Performed	Lower Limit Of Detection (LLD)	All Indicator Locations Mean (Range)	Control Location Result
Direct Radiation (mrem/year)	TLD (5)	0.1 mrem/qtr	57.5 ± 8.7 (43.4 – 64.9) <u>Location</u> <u>mrem/yr</u> 500 ft S of Rx 43.4 90-ft W of Rx 56.5 200-ft NW of Rx 58.6 400-ft NE of Rx 64.9 1150-ft E of Rx 64.5	52.6 (5400-ft W of Rx)
Air Particulate (pCi/m ³)	Gross Beta (52)	0.003	0.057 ± 0.017 (0.029 – 0.104)	0.056 ± 0.016 (0.028 – 0.097)
	Gross Alpha (52)	0.001	0.002 ± 0.001 (0.000 – 0.006)	0.002 ± 0.001 (0.000 – 0.006)
Surface Soil (pCi/gram-dry)	Gamma Spec (4)			
	Cs-137	0.05	0.58 ± 0.40 (-0.002 – 0.851)	0.165 ± 0.039
	Co-60	0.05	-0.014 ± 0.003 (-0.017 – -0.010)	0.004 ± 0.019
	Strontium-90	0.4	0.222 ± 0.191 (0.044 – 0.430)	0.374 ± 0.320
Vegetation (pCi/gram-ash)	Gamma Spec (4)			
	Cs-137	0.05	0.006 ± 0.012 (-0.006 – 0.021)	0.0249 ± 0.026
	Co-60	0.05	0.007 ± 0.011 (-0.003 – 0.021)	0.0314 ± 0.028
	Strontium-90	0.4	0.434 ± 0.139 (0.258 – 0.590)	0.543 ± 0.26

WTR DECOMMISSIONING PROJECT ORGANIZATION



Notes:

- 1) The Radiation Safety Officer reports to the Westinghouse, EHS Manager and is also the Secretary of the Radiation Safety Committee.
- 2) Denotes a contractual relationship.