



Westinghouse
Electric Corporation

Energy Systems

Box 355
Pittsburgh, Pennsylvania 15230-0355

RS 92-20

May 22, 1992

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Theodore S. Michaels

Subject: Annual Reports - License No. TR-2, Docket 50-22

The Westinghouse Electric Corporation transmits herewith the attached "Annual Inspection of Retired WTR per License TR-2" for 1990 and 1991. This report has been prepared in compliance with the requirements of Facility License No. TR-2, Docket 50-22. The status of the retired facility remains the same as it was at the time of the last report.

If you have any questions regarding this matter, please write me at the above address or telephone me on (412) 374-4652.

Very truly yours,

A. J. Nardi

A. J. Nardi, Manager
Regulatory Services

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Attachment

Copies Transmitted: 3 notarized & 10 conformed

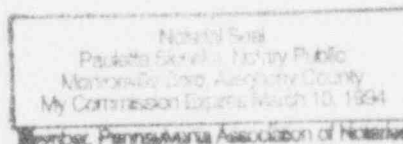
COMMONWEALTH OF PENNSYLVANIA)
COUNTY OF ALLEGHENY)

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Sworn and subscribed before me this

22 day of May, 1992

Paula S. Senella
Notary Public



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ANNUAL INSPECTION OF RETIRED WTR PER LICENSE TR-2

During the period October 10 through October 18, 1991, the facilities of the retired Westinghouse Testing Reactor (WTR), retained under NRC License TR-2, were entered for the purpose of conducting the annual inspection and for performing any preventive maintenance required. Those personnel entering the facilities for the purpose of conducting the inspection were: R. L. Bussard, Manager, Facilities Operation; R. G. Kitzer, Manager, Health and Safety Services; J. T. DiNicola, and D. T. Pinkey, Radsafe Technicians.

The findings and actions taken are summarized below:

- 1) During the past year, several entries were made into the vapor container for general inspections and to ascertain if significant water was accumulating on the floor. Actions were previously taken to reduce water accumulation including covering the canal with plastic sheeting and polyurethane boards; installing two (2) dehumidifiers; and installing a sump pump in a small hole (sump) in a low area of the floor. These actions continue to prove extremely effective and the humidity within the vapor container is being maintained at a very low level and essentially no accumulation of water has been observed on the floor during the various inspections. One (1) of the dehumidifiers was replaced during the fourth quarter of 1990.
- 2) The overall condition of the vapor container was good and no significant moisture was observed on any interior walls, either above or below ground level. Visual inspection of the interior surface showed little or no increased deterioration of the

surface coating. Some rusting was observed on the interior bottom portion of the vapor shell skin; but this condition was essentially unchanged from the last several years. Therefore, no action is deemed necessary relative to the structural stability of the vapor container.

The exterior surface of the vapor container was repainted in September, 1987 and its overall condition is generally good.

- 3) The water level in the canal was measured and found to be essentially unchanged from the observed during the previous annual inspection (November, 1990). The canal low level water alarm was manually activated and responded properly; i.e., audible and visual alarm and printout in the Security Control Center and audible and visual alarm in the Health Physics office.

No work was done under the water in the vapor container canal since the last annual inspection so the conditions remain unchanged. As previously reported, a system was installed in September 1986 to permit the ion exchange processing of the canal water and return of the processed water to the canal. The processing system continues to operate well, and between September, 1986 and mid-October, 1991 a total of 2,177,000 gallons were processed.

As noted in Table 1 of this report, the canal water was sampled and found to have a gross beta-gamma activity of $2.1 \times 10^{-6} \mu\text{Ci/ml}$ which is essentially unchanged from the 1990 value of $1.4 \times 10^{-6} \mu\text{Ci/ml}$. The canal water sample was analyzed radiochemically and the data is shown below.

	1991	1990	1989	1988
<u>Nuclide</u>	<u>$\mu\text{Ci/ml}$</u>	<u>$\mu\text{Ci/ml}$</u>	<u>$\mu\text{Ci/ml}$</u>	<u>$\mu\text{Ci/ml}$</u>
Cobalt-60	3.1×10^{-7}	7.2×10^{-7}	1.8×10^{-7}	1.4×10^{-6}
Cesium-137	1.2×10^{-6}	7.7×10^{-7}	2.9×10^{-7}	4.8×10^{-7}
Cesium-134	N.D.	$\leq 4.0 \times 10^{-8}$	$\leq 4.0 \times 10^{-8}$	$\leq 4.4 \times 10^{-8}$
Strontium-90	1.4×10^{-7}	3.3×10^{-7}	1.4×10^{-7}	2.3×10^{-7}

- 4) Overall housekeeping within the vapor container remains satisfactory. All loose floor tile have been removed and very little debris was observed on the floor.
- 5) The personnel entry doors on the east and west sides of the vapor container were found to be locked at the time of entry, as were the doors leading into the Rabbit Pump room, the subpile room and the cover over the primary coolant pipe tunnel. These areas were unlocked to permit access for this inspection, but were relocked when the inspection was completed.
- 6) The valve on the drainline on the bottom of the reactor vessel (inside the Subpile room) was inspected and found to be in the OPEN position, thereby assuring venting of the vessel. The butterfly valve in the ventilation ducts in the Truck Lock Area was inspected and found to be in the CLOSED position.
- 7) The absolute filter through which the reactor primary coolant system breathes into the Annex area was removed, inspected and replaced.

- 8) As previously noted, several entries were made into the vapor container during the year. The key for the area is maintained by the Site Security Guards, and records of all entries, indicating date and time, purpose and names, are maintained by the Manager, NSD Health & Safety Services.

The changes made in Westinghouse management relative to the administration of License TR-2 since the submission of the 1990 annual report are as follows:

F. J. Gerardine, Manager, Outage Management Services and Waltz Mill, has taken over the landlord senior Westinghouse management position at the Waltz Mill Site, having responsibility for the retired WTR facility.

P. Stafiej, Manager, Health, Security, Radiological and Security Services, is responsible for all Safety and Security functions at the Waltz Mill Site and reports to F. J. Gerardine.

R. G. Kitzer, Manager, Health & Safety Services and Radiation Safety Officer, reports to P. Stafiej.

- 10) Inspection of the snakepit (primary coolant pipe tunnel) in October, 1991 indicated that approximately 21,000 gallons, with a gross beta-gamma activity of $8.5 \times 10^{-7} \mu\text{Ci/ml}$, were present. Since the volume is small, the water was not removed at this time. This water will be processed or discharged in early 1992.
- 11) The results of the radiological survey are shown in Table I, attached. A review of the survey data obtained since 1963 indicate that the radiation and contamination levels are very low and relatively stable. Frequently, some scatter is seen in the data which is attributed to sampling techniques, sensitivity of the counting instrumentation and the relatively low levels of activity present. Any slight changes in a specific set of data from year-to-year are not considered to be significant.

The sampling techniques, equipment and instrumentation used during this inspection were as follows:

- a) Water samples were taken in clean polyethylene bottles at the inlet to the canal ion exchange processing system or as "grab" samples in non-flowing systems. An aliquot of the sample was evaporated to dryness in a two-inch stainless steel planchet and counted in an automatic, thin window gas proportional, alpha-beta anti-coincident counter. The counting efficiency for beta-gamma activity was 44.7 percent and the background was 1.9 cpm.

For specific radionuclide determinations, an aliquot of the untreated sample was analyzed by gamma ray spectrometry using a high resolution germanium detector. The Strontium-90 activity was determined by performing a chemical separation on a portion of the sample and then counting the separated Strontium-90 fraction in the counter described above.

- b) Contamination surveys were performed by taking random smears of approximately 100cm² areas using 3cm filter paper (Whatman 5 or equivalent). The filter paper was then counted in the gas proportional counter described in a), above. A varying number of smears was taken for each area listed in Table 1 and the average value reported.
- c) Air samples were collected using a Staplex high volume sampler with the particles impinging on a lightly greased stainless steel planchet. The sampler flow rate was approximately 40 cfm and the sampling time was 10 minutes or longer. After sampling, the planchet was counted in the gas proportional counter described in a), above.

- d) Radiation surveys were made at random locations within each of the areas shown in Table 1. Measurements were made at waist height using an Eberline Model E-520 meter with a GM detector with a 30 mg/cm² window, and a Ludlum Model 19 Micro R meter with a NaI crystal. The average radiation level for each area was determined and reported in Table 1.

HEALTH PHYSICS PROCEDURE NO. 29

TABLE 1

RADIATION AND CONTAMINATION AREAS SURVEY REPORT
Retried WTR FacilityReference: WTR-172
Appendix (A)
Table 1
(Revised)

License TR-2

Locations	Radiation Levels Beta Gamma mr./hr.	Beta-Gamma Contamination		
		Surface-2 dpm/100cm	Air uCi/ml	Water uCi/ml
1. Reactor Building	<1	<200	MDA $1.3E^{-13}$	N.A.
1. 16-FT Elevation Gen. Bkg.				
2. Rabbit Pump Room Gen. Bkg.	<1	<200	MDA $1.4E^{-13}$	N.A.
3. Sub-Pile Room Gen. Bkg.	<3	<200	$1.1E^{-12}$	N.A.
4. Reactor Top Gen. Bkg.	<1	<200	MDA $1.7E^{-13}$	N.A.
5. Reactor Top - Over Closed Vessel Gen. Bkg.	<1	<200	MDA $1.5E^{-13}$	N.A.
6. Reactor Top Around Trench - Gen. Bkg.	<1	<200	MDA $1.6E^{-13}$	N.A.
7. Canal Wall Top	<1	<200	N.A.	N.A.
8. Canal Water	0.5	N.A.	N.A.	$2.1E^{-6}$
9. Pit-PC Tunnel 16 ft. Elevation	<1	<200	MDA $1.5E^{-13}$	$8.5E^{-7}$

= Average Values Unless Noted
N/A = Not Applicable

ANNUAL INSPECTION OF RETIRED WTR PER LICENSE TR-2

During the period October 26 through November 20, 1990, the facilities of the retired Westinghouse Testing Reactor (WTR), retained under NRC License TR-2, were entered for the purpose of conducting the annual inspection and for performing any preventive maintenance required. Those personnel entering the facilities for the purpose of conducting the inspection were: R. L. Bussard, Manager, Facilities Operation; D. T. Galm, Manager, Health and Safety Services; R. G. Kitzer, Jr., Manager, Industrial Hygiene and Safety; and J. T. DiNicola, K. E. Conaway and J. M. Huber, Radiological Safety Technicians.

The findings and actions taken are summarized below:

- 1) During the past year, several entries were made into the vapor container for general inspections and to ascertain if significant water was accumulating on the floor. Actions were previously taken to reduce water accumulation including covering the canal with plastic sheeting and polyurethane boards; installing two (2) dehumidifiers; and installing a sump pump in a small hole (sump) in a low area of the floor. These actions continue to prove extremely effective and the humidity within the vapor container is being maintained at a very low level and essentially no accumulation of water has been observed on the floor during the various inspections.
- 2) The overall condition of the vapor container was good and no significant moisture was observed on any interior walls, either above or below ground level. Visual inspection of the interior surface showed little or no increased deterioration of the

surface coating. Some rusting was observed on the interior bottom portion of the vapor shell skin; but this condition was essentially unchanged from the last several years. Therefore, no action is deemed necessary relative to the structural stability of the vapor container.

Since the last inspection, the Facilities Operations group improved the lighting and electrical services within the vapor container.

The exterior surface of the vapor container was repainted in September, 1987 and its overall condition is generally good.

- 3) The water level in the canal was measured and found to be essentially unchanged from the observed during the previous annual inspection (October, 1989). The canal low level water alarm was manually activated and responded properly; i.e., audible and visual alarm and printout in the Security Control Center and audible and visual alarm in the Health Physics office.

No work was done under the water in the vapor container canal since the last annual inspection so the conditions remain unchanged. As previously reported, a system was installed in September 1986 to permit the ion exchange processing of the canal water and return of the processed water to the canal. The processing system continues to operate well, and between September, 1986 and the end of October, 1990 a total of 3,129,200 gallons were processed. Of this amount, 1,072,800 gallons were processed since the 1989 annual report was issued.

As noted in Table 1 of this report, the canal water was sampled and found to have a gross beta-gamma activity of $1.4 \times 10^{-6} \mu\text{Ci/ml}$ which is unchanged from the 1989 value of $1.0 \times 10^{-6} \mu\text{Ci/ml}$. The canal water sample was analyzed radiochemically and the data is shown below.

Nuclide	1990(1)	1989	1988
Cobalt-60	7.2×10^{-7}	1.8×10^{-7}	1.4×10^{-6}
Cesium-137	7.7×10^{-7}	2.9×10^{-7}	4.8×10^{-7}
Cesium-134	$\leq 4.0 \times 10^{-8}$	$\leq 4.0 \times 10^{-8}$	$\leq 4.4 \times 10^{-8}$
Strontium-90	3.3×10^{-7}	1.4×10^{-7}	2.3×10^{-7}

(1) = all results in $\mu\text{Ci/ml}$

- 4) Overall housekeeping within the vapor container remains satisfactory. All loose floor tile have been removed and no other debris was observed on the floor.
- 5) The personnel entry doors on the east and west sides of the vapor container were found to be locked at the time of entry, as were the doors leading into the Rabbit Pump room, the subpile room and the cover over the primary coolant pipe tunnel. These areas were unlocked to permit access for this inspection, but were relocked when the inspection was completed.
- 6) The valve on the drainline on the bottom of the reactor vessel (inside the Subpile room) was inspected and found to be in the OPEN position, thereby assuring venting of the vessel. The butterfly valve in the ventilation ducts in the Truck Lock Area was inspected and found to be in the CLOSED position.
- 7) The absolute filter through which the reactor primary coolant system breathes into the Annex area was removed and inspected. This filter was replaced in October, 1989 and did not show signs of deterioration; therefore, the filter was returned to service.

- 8) As previously noted, several entries were made into the vapor container during the year. The key for the area is maintained by the Site Security Guards, and records of all entries, indicating date and time, purpose and names, are maintained by the Manager, ESBU Health, Safety and Security Services.
- 9) No changes were made in Westinghouse management relative to the administration of License TR-2 since the submission of the 1989 annual report.
- 10) The water which was found in the snake pit (primary coolant pipe tunnel) surrounding the vapor container in October, 1989 was processed through Cuno filters and cation ion exchange resin and discharged during December 1989 and January 1990. The volume of water remaining after processing was 2,200 gallons. Inspection of the snakepit in October, 1990 indicated that approximately 3,700 gallons, with a gross beta-gamma activity of $2.1 \times 10^{-6} \mu\text{Ci/ml}$ were present. Since the volume is small, the water was not removed.
- 11) The results of the radiological survey are shown in Table I, attached. A review of the survey data obtained since 1963 indicate that the radiation and contamination levels are very low and relatively stable. Frequently, some scatter is seen in the data which is attributed to sampling techniques, sensitivity of the counting instrumentation and the relatively low levels of activity present. Any slight changes in a specific set of data from year-to-year are not considered to be significant.

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- b) Contamination surveys were performed by taking random smears of approximately 100cm^2 areas using 3cm filter paper (Whatman 5 or equivalent). The filter paper was then counted in the gas proportional counter described in a), above. A varying number of smears was taken for each area listed in Table 1 and the average value reported.
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