

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-219
72-1004

License No. DPR-16

Report No. 50-219/99-11

Licensee: GPU Nuclear Incorporated
1 Upper Pond Road
Parsippany, New Jersey 07054

Facility Name: Oyster Creek Nuclear Generating Station

Location: Forked River, New Jersey

Inspection Period: October 12 and 19, 1999

Inspectors: Kathleen Modes, Health Physicist, Team Leader
Richard Clement, Health Physicist, NMSS
Marie Miller, Senior Health Physicist
Steven Shaffer, Health Physicist

Approved by: John R. White, Chief
Radiation Safety and Safeguards Branch
Division of Reactor Safety

EXECUTIVE SUMMARY

Oyster Creek Nuclear Generating Station
Report No. 50-219/99-11

This inspection was limited to performing a preliminary confirmatory survey inspection which included the collection and analysis of selected soil and water samples from the Forked River Site property. No positive sample results (i.e., soil or water concentrations exceeding the detection sensitivities of the instruments used) were identified by NRC or NJDEP from the samples collected and analyzed, with the exception of one Cesium-137 (Cs-137) result in a soil sample. The single positive Cs-137 result appears consistent with fallout from past nuclear weapons testing (which resulted in non-uniform deposition of trace concentrations of Cs-137 in the environment), and is not a result of NRC licensed activities.

Report Details

Background Information

GPUN intends to sell a portion of their property known as Forked River. The property is approximately one square mile in size and is depicted in Figure 1. The Forked River property is located within GPUN's owner-controlled area and is referenced in the UFSAR documents.

a. Inspection Scope (83726)

The scope of this inspection was to obtain preliminary sample results within the Forked River property in support of NRC's comprehensive confirmatory inspection effort, which is scheduled for November 15-18, 1999. Survey locations were discussed with GPUN and the State of New Jersey. Aerial survey data and other historical site assessment documents were reviewed for identifying measurement and sample locations.

b. Observations and Findings

Water, soil and wipe samples were taken at biased locations throughout the Forked River Property to provide preliminary results to support the design of the upcoming confirmatory survey. The sample locations are identified in Figure 1 (attached). A licensee representative collected the water and soil samples with oversight by NRC and NJDEP staff. The water and soil samples were split between GPUN, the State of New Jersey Department of Environmental Protection, Bureau of Nuclear Engineering, and the NRC. Radiation level measurements were performed at all soil sampling locations using a Ludlum 19 micro R meter (NRC #33510; last calibrated on 6/9/99). The soil samples were surface samples, nominally at 15 centimeters depth over an area of one square meter. The water samples were 500-milliliter grab samples. Wipe samples were taken inside buildings where radioactive material may have been stored and from pieces of equipment that had been stored outside on a concrete pad.

The criterion is listed below. The soil criteria is derived from default deterministic parameters used to calculate a reasonably conservative range of doses that the average member of the screening group could receive. The screening criteria is more restrictive than site-specific criteria and ensures compliance with 10 CFR Part 20, Subpart E. The water analysis results were compared to the U.S. Environmental Protection Agency (EPA) drinking water standard for tritium. The selected instrument sensitivity is the same as used for the licensee's Radiological Environmental Monitoring Program.

SAMPLE CRITERION FOR ANALYSIS		
	Soil (picocuries/gram)	Water (picocuries/liter)
Criterion	Cobalt-60 = 3.7 Cesium-137 = 0.9	Tritium = 20,000
Instrument Sensitivity	Cobalt-60 = 0.10 Cesium-137 = 0.18	Tritium = 2,000 Cobalt-60 = 15 Cesium-137 = 18

The soil samples and water samples were analyzed on a high resolution gamma spectrometry system. In addition, water samples were analyzed for tritium with a liquid scintillation counting system. Gross alpha and gross beta analyses were performed on the wipe samples using a low background gas flow proportional counter. No contamination was identified on the wipes. The NRC's sample results are attached as Tables 1 through 3, and include NJDEP's results for the reported isotopes in Tables 1 and 2. Comparison of the results indicate generally good agreement. With respect to the tritium water results, all results were less than the lower limit of detection (i.e., instrument sensitivity). Apparent variations in values below the instrument sensitivity are not statistically significant. Results less than or equal to two standard deviations are interpreted as not detected.

On October 19, 1999, the inspectors toured the Forked River Site to identify buildings and land areas that would be selected as part of the NRC confirmatory survey scheduled to November 15 through 19, 1999. The licensee agreed to support the logistics for sample collection that will be conducted by NRC with assistance from the Environmental Survey and Site Assessment Program of the Oak Ridge Institute for Science and Education (ORISE).

During this review, the inspectors clarified historical assessment information upon which the licensee based its classification of the buildings and property on the site, including the previous and current storage of various sealed radioactive sources in Buildings 1, 8, 12 and 14 and the former Energy Information Center. The inspectors indicated that sealed source and leak test records would be reviewed during the confirmatory survey effort on November 15, 1999.

c. Conclusions

No positive sample results (i.e., soil or water concentrations exceeding the detection sensitivities of the instruments used) were identified by NRC or NJDEP from the samples collected and analyzed, with the exception of one Cesium-137 (Cs-137) result in a soil sample. The single positive Cs-137 result appears consistent with fallout from past nuclear weapons testing (which resulted in non-uniform deposition of trace concentrations of Cs-137 in the environment), and is not a result of NRC licensed activities.

X1 Exit Meeting Summary

On October 19, 1999, Marie Miller, Decommissioning and Laboratory Branch, NRC RI, discussed the NRC sample results with Doug Weigle and Bill Cooper, from GPUN. The licensee did not indicate that any of the information presented at the exit meeting was proprietary.

LIST OF PERSONS CONTACTED
(in alphabetical order)

October 12, 1999

Rich Brown, GPUN
Richard Clement, NRC/NMSS
Bill Cooper, GPUN
Nick DiNucci, NJDEP/BNE
John Jaskot, GPUN
Ed Lassik, GPUN
Marie Miller, NRC/RI/DNMS
Kathleen Modes, NRC/RI/DNMS
Steven Shaffer, NRC/RI/DNMS
Carol Sheperd-Wilson, NJDEP/BNE
Michael Slobodien, GPUN
Karen Tucillo, NJDEP/BNE
Douglas R. Weigle, GPUN

October 19, 1999

Eric Albequist, NRC contractor
Bill Cooper, GPUN
Marie Miller, NRC/RI/DNMS
Douglas R. Weigle, GPUN

FIGURE 1
Forked River Site
Sampling Locations

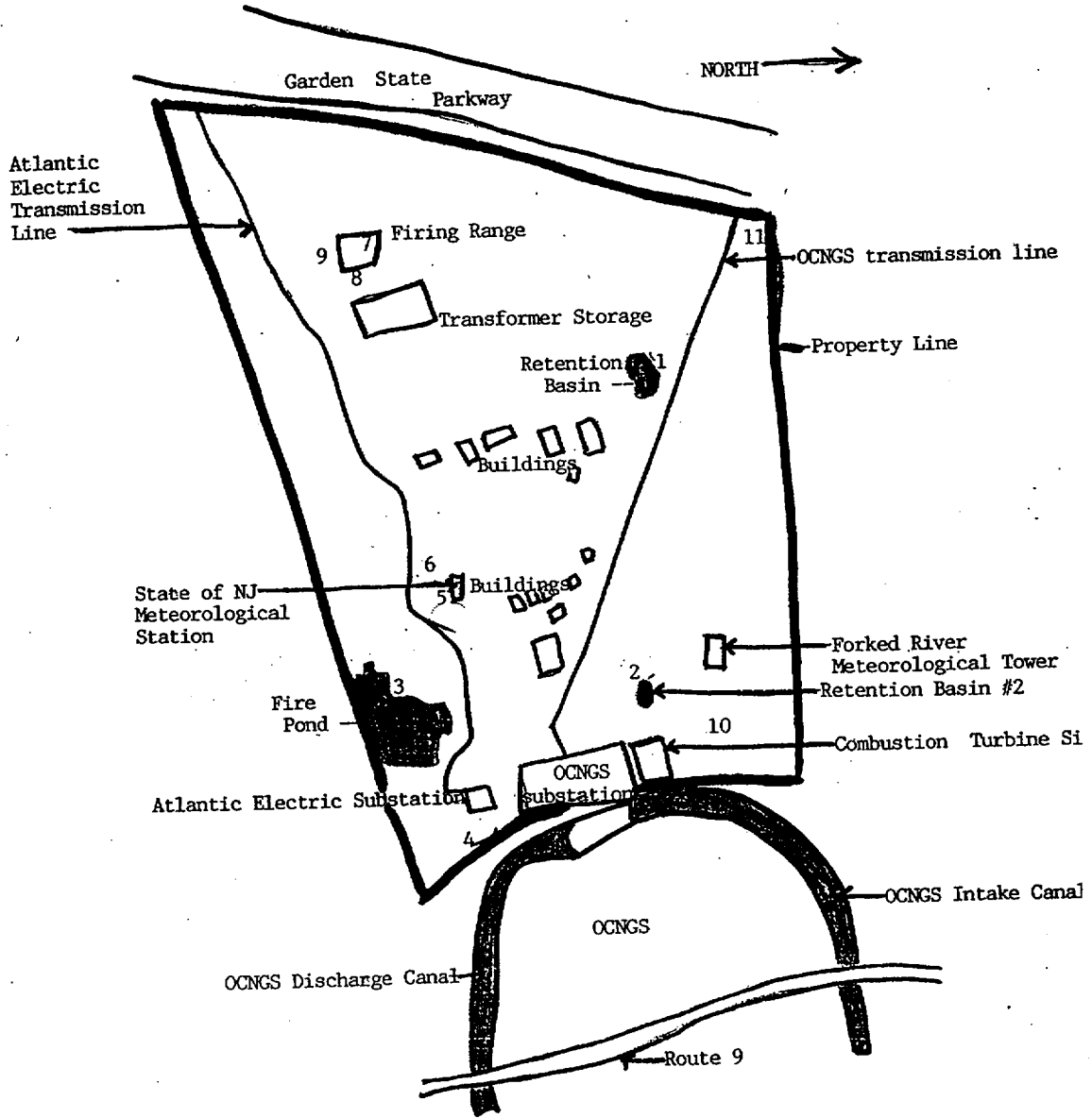


TABLE 1: WATER SAMPLES TAKEN ON 10/12/99					
Map location	Location Description and Geo-Positioning System (GPS) Coordinates	Analyzed For	Radionuclide	Result \pm 1 Standard Deviation (pCi/l)	NJDEP Results (pCi/l)
1	Retention Basin #1	gamma	Co-60	<5	<3
	N 34 48 52.8		Cs-134	<6	<4
	W 74 13 20.8		Cs-137	<6	<4
		tritium	H-3	90 \pm 70	<1000
2	Retention Basin #2	gamma	Co-60	<5	<4
	N 39 48 56.6		Cs-134	<5	<3
	W 74 12 39.4		Cs-137	<5	<3
		tritium	H-3	60 \pm 90	<1000
3	Fire Pond	gamma	Co-60	<6	<3
	N 39 48 37.9		Cs-134	<6	<3
	W 74 12 36.0		Cs-137	<6	<3
		tritium	H-3	50 \pm 60	1100 \pm 700

Footnote: An uncertainty of one standard deviation is reported based on counting statistics alone. Negative and other results less than or equal to two standard deviations are interpreted as including "zero" or as not detected.

TABLE 2: SOIL SAMPLES TAKEN ON 10/12/99

Map location	Location Description and GPS coordinates (degrees, minutes, seconds)	Exposure Rate (uR/hr) at 1 meter	Radionuclide	Result ± 1 Standard Deviation (pCi/g)	NJDEP Results (pCi/g)
4	Southeast of Switchyard	16*	Co-60	<0.021	<0.02
	N 39 48 45.5		Cs-134	<0.023	<0.02
	W 74 12 28.8		Cs-137	0.130 ± 0.011	0.139 ± 0.022
5	Southeast of Bldg. 17	5	Co-60	<0.070	<0.03
	N 39 48 40.9		Cs-134	<0.051	<0.03
	W 74 12 54.1		Cs-137	0.056± 0.014	0.0346± 0.0202
6	Southwest of Bldg. 17	4	Co-60	<0.019	<0.01
	N 39 48 39.4		Cs-134	<0.025	<0.02
	W 74 12 57.0		Cs-137	0.011± 0.006	<0.02
7	Firing Range Berm	4	Co-60	<0.018	<0.020
	N 39 48 31.8		Cs-134	<0.024	<0.030
	W 74 13 36.8		Cs-137	0.159± 0.012	0.151± 0.025

TABLE 2: SOIL SAMPLES TAKEN ON 10/12/99 - continued

Map location	Location Description and GPS coordinates	Exposure Rate (uR/hr) at 1 meter	Radionuclide	Result ± 1 Standard Deviation (pCi/g)	NJDEP Results (pCi/g)
8	Firing Range Parking Lot East	5	Co-60	<0.021	<0.020
	N 39 48 33.0		Cs-134	<0.024	<0.020
	W 74 13 34.7		Cs-137	0.053± 0.008	0.057± 0.017
9	Firing Range Parking Lot Center	3	Co-60	0.014± 0.011	<0.020
	N 39 48 30.6		Cs-134	<0.024	<0.020
	W 74 13 36.0		Cs-137	0.020± 0.008	0.026± 0.014
10	Former Energy Spectrum	6	Co-60	<0.012	<0.010
	N 39 48 58.1		Cs-134	<0.017	<0.020
	W 74 12 40.4		Cs-137	0.231± 0.014	0.232± 0.023
11	Garden State Parkway and 230 KV	4	Co-60	<0.019	<0.020
	N 39 49 6.8		Cs-134	<0.023	<0.030
	W 74 13 40.7		Cs-137	0.129± 0.016	0.164± 0.027

* Footnote: Exposure rate elevated due to proximity to operating reactor.

TABLE 3: WIPE SAMPLES TAKEN ON 10/12/99

Wipe Location	Gross Alpha Result \pm 1 Standard Deviation (dpm/wipe)	Gross Beta Result \pm 1 Standard Deviation (dpm/wipe)
Bldg. 14 whole body counter mixed gamma source	0.2 \pm 0.6	-2 \pm 2
Bldg. 14 whole body counter trash receptacle	0.5 \pm 0.6	-1 \pm 2
Bldg. 14 Training Area - 55 gallon drum	0.2 \pm 0.6	-2 \pm 2
Bldg. 14 Training Area - lead blanket	-0.5 \pm 0.5	-4 \pm 2
Bldg. 1 HP/Chem lab counter top	0.5 \pm 0.7	-2 \pm 2
Bldg. 1 HP/Chem lab oven	-0.2 \pm 0.5	-2 \pm 2
Catwalk near Bldg. 17	0.5 \pm 0.7	-4 \pm 2
Underside of Catwalk near Bldg. 17	0.2 \pm 0.6	-2 \pm 2
Underside of Cask Lid near Bldg. 17	0.5 \pm 0.7	-1 \pm 2
Blue Block Supporting Cask Lid near Bldg. 17	1.2 \pm 0.8	-1 \pm 2

Footnote: Results are reported in units of disintegrations per minute per 100 centimeters squared (dpm/100cm²) at a counting uncertainty of one sigma. Negative and other results less than or equal to two standard deviations are interpreted as including zero or as not detected. The removable contamination limit for gross alpha and beta is 1,000 dpm/100cm².