March 2, 2000

Sander Levin
Site Director(Acting)
GPU Nuclear, Inc.
Oyster Creek Nuclear Generating Station
P.O. Box 388
Forked River, NJ 08731

SUBJECT: INSPECTION NO. 05000219/1999013

Dear Mr. Levin:

On November 15-18, 1999, NRC staff conducted a safety inspection of the owner controlled area referred here as, the Forked River Property, an area adjacent to, and west of your Oyster Creek Nuclear Generating Station. The inspection consisted of observations by the inspectors, interviews with personnel, selective examination of records, and a confirmatory survey of Forked River Property conducted under the supervision of NRC by the Environmental Survey and Site Assessment Program of the Oak Ridge Institute for Science and Education (ORISE). The results from past determinations of Cs-137 from background locations and the results from the analyses of the soil and water samples performed by GPU Nuclear, which were provided by your staff on January 13, 2000, and February 15, 2000, respectively, were also examined as part of the inspection. The preliminary findings of the inspection were discussed with you and other members of your organization at an exit meeting on November 18, 1999. A final exit meeting was held with you and other members of your organization on February 29, 2000. This meeting was open for public observation. The inspection findings were reviewed, including a discussion of the confirmatory sampling results. Representatives from the New Jersey Department of Environmental Protection participated in the inspection and also attended both meetings. The enclosed report presents the results of this inspection.

We determined you adequately characterized the Forked River Property and conducted adequate surveys to demonstrate that residual radioactive material from plant related activities were well below the dose based release criteria of 10 CFR Part 20, Subpart E. However, we noted that the Switchyard, located adjacent to the intake canal, had been excluded from the scoping survey. Current radiological conditions during the operation of the Oyster Creek facility prevented our ability to make independent measurements to confirm that the Switchyard was non-impacted. We understand that during the next Oyster Creek refueling outage you will conduct a radiological scoping survey sufficient to confirm that the Switchyard is a non-impacted area.

Please note that the inspection results do not constitute approval by the NRC for partial release of your facility for unrestricted use. The NRC will inform you in separate correspondence as to whether it does not object to the release of this property following a determination that the criteria of Subpart E have been met. You will remain responsible for assuring at the time of final license termination pursuant to 10 CFR 50.82 that the site as originally licensed meets the

release criteria of Subpart E. That is, you must account for any dose from the released portion of your site in determining the dose levels for the entire original site.

In accordance with Section 2.790 of the NRC's "Rules and Practices," Part 2, Title 10, Code of Federal Regulations, a copy of this letter will be placed in the Public Document Room. No reply to this letter is required.

Your cooperation with us is appreciated.

Sincerely,

/RA/

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

Docket No: 50-219
License No: DPR-16

Enclosure:
Inspection Report No. 50-219/99-13

cc:
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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection No.	05000219/1999013
Docket No.	050-00219
License No.	DPR-16
Licensee:	GPU Nuclear Inc.
Location:	Oyster Creek Nuclear Generating Station P.O. Box 388 Forked River, New Jersey 08731
Inspection Dates:	November 15 - February 2, 2000
Inspectors:	Marie Miller, Senior Health Physicist, Team Leader, Division of Nuclear Materials Safety, Region I Jason Jang, Senior Radiation Protection Specialist, Division of Radiation Safety, Region I Richard Clement, Health Physicist, Division of Waste Management, Office of Nuclear Materials Safety and Safeguards
Approved By:	John R. White, Chief Radiation Safety and Safeguards Branch Division of Reactor Safety

EXECUTIVE SUMMARY

GPU Nuclear Inc.
NRC Inspection Report No. 050-00219/99-13

This inspection was conducted to verify that the buildings and land areas referred here as the Forked River Property (FRP) had been adequately characterized with respect to past activities and potential impacts for licensed activities associated with the 10 CFR Part 50 license for the Oyster Creek Nuclear Generating Station (OCNGS). The inspection included independent measurements of soil and water samples from biased locations within the 657-acre land parcel to determine the adequacy and accuracy of the licensee's procedures and scoping/final status survey results relative to 10 CFR Part 20 Subpart E criteria. The confirmatory inspection was conducted under the supervision of NRC by the Environmental Survey and Site Assessment Program of the Oak Ridge Institute for Science and Education (ORISE).

A review of the licensee's historical site assessment (HSA) and past practices for release of materials determined that the FRP had been adequately characterized. Records indicated that the routine practice for managing contaminated materials was adequate and appeared not to involve the FRP, except for one incident in 1990 that resulted in a small portion of the FRP being classified as impacted (See Section R1). Exempt and sealed sources that were used in a few of the buildings had been inventoried and controlled to prevent inadvertent contamination. Records of past radiological occurrences are now being maintained to ensure safe and effective decommissioning.

This review also included an assessment of results from past liquid and airborne gaseous releases that potentially could have contaminated the FRP. The licensee maintained adequate radioactive liquid and gaseous effluent control programs and had met the applicable regulatory requirements from 1969 to1998.

The survey methodology pertaining to surface contamination and in-situ measurements, which included procedures for in-field calibration and periodic source response checks, in support of the scoping/final status survey, provided an adequate mechanism to meet required detection sensitivities, and to demonstrate that the indicator isotope, cobalt-60, was not detected at any location on the FRP. Laboratory analyses, performed under an approved QA/QC plan, of soil samples using gamma spectroscopy also met required detection sensitivities. Gamma isotopic analyses results from the scoping/final status survey indicated naturally occurring nuclides and cesium-137 concentrations consistent with geographical and offsite background levels. Contract personnel were trained and qualified in the calibration and operation of the radiation detection instruments, and in the design of surveys. The licensee's contractor laboratory had sufficient procedures to perform effective QA/QC programs.

Based on the results of the ORISE independent measurements, we determined that the licensee's scoping/final status survey was adequate. No contamination survey results exceeded the derived concentration guideline levels (DGCL) for cobalt-60 or cesium-137. Surface and subsurface soil samples did not contain any residual radionuclides distinguishable from background and/or were comparable to the respective minimum detectable concentrations. Water and sediment results were consistent with expected backgrounds, with the exception of one water sample. The initial gross alpha and beta measurements were above

the maximum contaminant level for radium-226 and strontium-90. Additional analyses on all four well-water samples confirmed no plant related material. Therefore, all results were below the interim screening values or DCGL for the radionuclides of concern and confirm the adequacy of the licensee's measurements.

However, we noted that the Switchyard, located adjacent to the intake canal had been excluded from the scoping survey and the current radiological conditions during the operation of the OCNGS prevented our ability to make independent measurements to confirm that the Switchyard was non-impacted. We understand that during the next Oyster Creek refueling outage you will conduct a radiological scoping survey sufficient to confirm that the Switchyard is a non-impacted area.

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REPORT DETAILS

R1 Licensee's Historical Site Assessment

a. Inspection Scope (83890)

The licensee's historical site assessment, including the extent of previous radiological occurrences and past practices for unconditional release of materials from the Oyster Creek Nuclear Generating Station (OCNGS), were reviewed to determine if licensed activities at the Oyster Creek site had impacted the Forked River Property (FRP). The characterization methods used for the Forked River site were compared to NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), dated December 1997.

b. Observations and Findings

The licensee's Historical Site Assessment (HSA) for the FRP included a limited review of operational history, interviews with current and past employees regarding work practices, and recollections of radiological incidents. The licensee stated that the HSA was an iterative process, initially started for the entire Oyster Creek site and later focused on the FRP. The inspector reviewed the records that the Decommissioning Project had collected regarding records of spills and other unusual occurrences. Although a file for safe and effective decommissioning records was established as required by 10 CFR 50.75(g) since July 1990, various departments did not forward the required documentation. During the early phases of site characterization, the Decommissioning Project had reassembled this information. The failure to maintain a 10 CFR 50.75(g) file constitutes a violation of minor significance and is not subject to formal enforcement action. To ensure that the required information would be collected and retained as part of the 10 CFR 50.75(g) file after the elimination of the Decommissioning Project, the licensee generated on November 17, 1999, a Corrective Action Progress (CAP) report (CAP No. 01999-1500).

The historical assessment effort identified on-site contamination events regarding the OCNGS. Generally, the records provided sufficient information regarding the disposition of remediated soils and other volumetric materials, including radioactive waste disposal and on-site storage. The inspectors also noted that in 1982 the licensee had applied for and was granted approval in accordance with 10 CFR 20.302 for disposal of soils (17,000 cubic feet) with very low levels of residual contamination generated from an extensive regrading of the radiologically controlled area (RCA). This regulation addresses disposals in a manner not otherwise authorized in the regulations, and also serves as an indication of the licensee's awareness to manage volumetric materials with radiological contamination. In addition, the inspector reviewed the closure plan for the base mat for the Forked River site. The inspector noted that approximately half the soil to refill the excavated area came from stockpiles from the initial excavation, with the remaining 250,000 cubic yards taken from grading the FRP, in accordance with a closure plan approved by the Ocean County Soil Conservation District in 1987. As identified by the licensee's HSA, in 1990 there was one incident where soils from an on-site excavation from inside the RCA, containing trace concentrations of plant-related

radioactive materias were taken to the Firing Range parking lot on the FRP. An Operations Quality Assurance Monitoring Report dated January 1991 documents the issue and the return of the soils to the Oyster Creek site.

The inspector reviewed the licensee's procedures regarding the unconditional release of materials from the RCA. The earliest survey procedures available during the inspection were from 1985, including 9300-ADM-4200.01 - Radiological Surveys, 9300-ADM-4200.02 - Release Surveys, and 9300-ADM-4210.04 - Surface Contamination Surveys. These procedures provided guidance for conduct of surveys and release guideline criteria consistent with NRC and industry standards. Although volumetric criteria was not specifically included in the procedures until about 1990, licensee memorandum from as early as 1981 recognized the need to analyze volumetric samples by gamma spectroscopy. The inspector also noted that Job Order procedures included action statements to contact the Radcon Department before removal of dirt or fill from the site.

With respect to the FRP, the inspector discussed the routine surveys that are periodically conducted in specific buildings on the FRP to identify possible contamination. The inspector reviewed selected survey records from the last two years and determined that the surveillances were being appropriately conducted. The licensee's HSA identified three occasions where contaminated tools had been located on the FRP. These occurrences had been documented as radiological occurrences and no remediation of the area was required. Inventory records were reviewed and correlated to the sealed sources stored and used in the Forked River Buildings.

As described in MARSSIM, impacted areas are areas that have some potential for containing contaminated material. Graded survey approaches are used depending on the level of expected residual contamination (Class 1 through 3, with 3 being an area not expected to contain any residual radioactivity or expected to contain licensed material at a small fraction of the Derived Concentration Guideline Level (DCGL)). Non-impacted areas have no reasonable potential for residual contamination and therefore do not need any level of survey coverage.

The inspector reviewed the licensee's HSA in accordance with the above MARSSIM guidance and agreed with the licensee's assessment that the FRP was not impacted with the exception of the firing range parking lot, identified by the licensee as a Class 3 impacted area.

c. Conclusions

A review of the licensee's HSA and past practices for release of materials determined that the FRP had been adequately characterized. Records indicated that the routine practice for managing contaminated materials were adequate and appeared not to involve the FRP, except for one incident in 1990. The 10 CFR 50.75(g) file had been re-assembled, and adequate corrective actions were taken to ensure this file would be maintained for safe and effective decommissioning.

R2 Implementation of the Radioactive Liquid and Gaseous Effluent Control and the Radiological Environmental Monitoring Programs

R2.1 Regulatory Requirements for Radioactive Effluent and Radiological Environmental Monitoring Programs

NRC regulations require licensees to keep levels of radioactive material in effluents As Low As Reasonably Achievable (ALARA) to ensure that radiation doses to the public resulting from effluent releases or other plant-related radioactive material will continue to remain minimal. To verify whether exposures in the environment are within the limits of 10 CFR Part 20, 10 CFR Part 50, Appendix I plant design objectives, and to ensure that there is no long-term build-up of specific radionuclides in the environment, NRC requires licensees to monitor releases and the environment for radioactivity.

On June 6, 1979, through Technical Specifications (TS) Amendment No. 37, Environmental Technical Specifications (ETS) were imposed upon the licensee. The licensee was required to comply the ETS with respect to sampling, analyzing, and reporting the analytical results for all environmental media, such as surface water, well water, vegetation, air particulates, milk samples, and others.

On August 20, 1980, through Technical Specifications (TS) Amendment No. 49, the licensee was required to comply with the gaseous discharge design objectives of 10 CFR 50, Appendix I, as Limiting Conditions for Operations.

On October 6, 1986, through TS Amendment No. 108, the licensee adopted and incorporated the Radiological Effluent Technical Specifications (RETS) requirements. The licensee is required to comply the projected public dose requirements which are listed in Appendix I to 10 CFR 50. Projected dose calculation methodologies to the public, effluent radiation monitor set point calculation methodologies, and radiological environmental sampling stations are listed in the Offsite Dose Calculation Manual (ODCM).

R2.2 Review of Radioactive Semiannual and Annual Effluent Reports, the Annual Projected Public Dose Assessment Results

a. Inspection Scope (83890)

The purpose of this review was to ascertain the radiological consequence and impact on public health and safety, and the environment, with reference to applicable regulatory requirements, relative to radioactive liquid and gaseous released from, or monitored at, the Oyster Creek site. During this inspection, the inspector reviewed: (1) semiannual and annual effluent reports from the second half of 1969 to 1994 [The licensee also met radioactive liquid and gaseous effluent control requirements during the period from 1994 to 1998. (See Inspection Report Nos.: 50-219/94-04; 50-219/96-02; 50-219/96-09; 50-219/97-02; 50-219/97-10; and 50-219/98-04 for details)]; and (2) the projected public dose assessment results from 1983 to 1998.

b. Observations and Findings

The semiannual and annual radioactive effluent reports provided data indicating total released radioactivity for liquid and gaseous effluents, with the data illustrated in

Figures 1-4. The highest year (1979) for total noble gases and for total iodines releases from OCGNS and the highest year (1978) for longer-lived gaseous particulate activity met the regulatory requirements at the time, which was compliance of 10 CFR 20, Appendix B, Table II. As illustrated in Figures 1, 2, and 5, the release of noble gases, total iodines, and longer-lived particulates in the gaseous effluent pathway was reduced in subsequent years to comply the design objectives of 10 CFR 50, Appendix I as Limiting Conditions for Operations, which became effective in August 1980.

Figures 3 and 4 illustrates for total fission/activation products and tritium release through radioactive liquid discharges. In all cases reviewed, the licensee met applicable regulatory requirements.

The assessment of the projected maximum individual doses (public doses) resulting from routine radioactive airborne and liquid effluents were included in the semi-annual and annual reports, as required. Projected doses to the public were well below the TS limits. For example, the highest projected public total body doses due to radioactive liquid and air dose due to noble gas releases were 0.48 mrem in 1989 (TS limit = 3 mrem/year) and 4.3 mrad in 1986 (TS limit = 10 mrad/year), respectively.

c. Conclusions

The licensee maintained an adequate radioactive liquid and gaseous effluent control program and met all regulatory requirements from 1969 through 1998.

R2.3 Review of Waterborne and Airborne Contaminations through Annual Radiological Environmental Monitoring Program (REMP) Reports

a. Inspection Scope (83890)

The purpose of this review was to ascertain the radiological impact to the environment, with reference to applicable regulatory requirements. During this inspection, the inspector reviewed the annual REMP reports from 1971 to 1998 to identify: (1) a potential for waterborne gross alpha or transuranic contamination in surface water samples; and (2) a potential for gaseous releases that could contaminate the Switchyard on the FRP, which is located adjacent to the intake canal.

b. Observations and Findings

The inspector reviewed past environmental sampling results regarding waterborne contamination, including gross alpha (or transuranic). As shown in Figure 3, the highest release of fission and activation products was 18.8 curies in 1970. The release of fission and activation products has been reduced in later years (about 1974), with the exception tritium, as shown in Figure 4.

During the review of REMP reports, the inspector noted that the 1983 Annual REMP Report indicated that the average total uranium activity was less than the isotopic analytical result for the bay water sample, which is the background or control station sample. The total uranium activity should be higher than or equal to the addition of all uranium isotopes (U-234,U-235 and U-238). The average total uranium activity for the bay water was 2.06 pCi/l, slightly above the detection level. The licensee investigated this matter during this inspection and agreed that the data was incorrectly reported resulting in a false positive indication. Accordingly, based on the inspector's assessment, there were no positive indications of uranium identified during this period.

The licensee's HSA had indicated there was a staff recollection of noble gas contamination of a few workers who had worked in the Switchyard area. The HSA noted that the cause was attributed to a conduit seal being left open in the turbine building. Based on the licensee's scoping survey results from land areas adjacent to the Switchyard and no contamination identified inside the Switchyard Instrumentation Building, the licensee classified this area as non-impacted. However, the scoping survey originally excluded this area because it was not originally part of the pending land sale. Further, because the OCGNS was operating, confirmatory measurements could not be taken to demonstrate that this area was non-impacted.

c. Conclusions

Based on the above findings, the licensee's scoping survey was adequate. However, we noted that the Switchyard, located adjacent to the intake canal had been excluded from the scoping survey and the current radiological conditions during the operation of the OCNGS prevented our ability to make independent measurements to confirm that the Switchyard was non-impacted.

R3 Procedures and Methods Used for Scoping/Final Status Survey

R3.1 Review of Survey Methodology, Radiation Detection Instrument Calibrations and Source Response Checks, and Worker Training and Qualifications

a. Inspection Scope (83890)

The licensee's methodology for building and land area surveys on the FRP was reviewed to determine if licensed material above the DCGL was present. Training and qualification records for GPU Nuclear contract personnel involved in the calibration and operation of radiation detection instruments, used in support of the scoping/final status

survey, were also reviewed. The following procedures were reviewed during this inspection:

(1) SCM Procedure 001, Rev. 1, "Calibration and Field Confirmatory Tests of the Incremental Encoder Included on the SCM," Shonka Research Associates, Inc.;
(2) SCM Procedure 002, Rev. 1, "Source Check Requirements of the PSPC as Installed on the SCM," Shonka Research Associates, Inc.;
(3) SCM Procedure 003, Rev. 1, "Calibration Requirements for the SCM Efficiencies," Shonka Research Associates, Inc.;
(4) SCM Procedure 004, Rev. 1, "Requirements for Completion of a Gross Alpha/Beta and Dose Rate Survey," Shonka Research Associates, Inc.;
(5) SCM Procedure 005, Rev. 1, "Requirements for Completion of an Alpha Survey," Shonka Research Associates, Inc.;
(6) SCM Procedure 006, Rev. 1, "Performance of a position calibration on a "re-count" detector configuration," Shonka Research Associates, Inc.;
(7) SCM Procedure 007, Rev. 1, "Response check of any PSPC detector configuration installed on the SCM," Shonka Research Associates, Inc.;
(8) SCM Procedure 008, Rev. 0, "Conduct of Ops for Surveys Using the SCM/SIMS," Shonka Research Associates, Inc.;
(9) Procedure 2870-PLN-4520.02, Rev. 0, "Radiological Scoping Survey of the Forked River Site," GPU Nuclear; and
(10) Procedure 2870-IMP-4522.08, Rev. 0, "Environmental Affairs Soil Sampling Procedure," GPU Nuclear.

b. Observations and Findings

The results of the licensee's scoping survey was documented as the "Forked River Site, Scoping Survey Final Report," dated July 28, 1998. NIST-traceable calibration and periodic source response checks of the radiation detection instruments used for building surface contamination and land area (in-situ) surveys, as outlined in the reviewed procedures, were confirmed to be conducted.

Two sets of instruments were used in the survey: (1) the Surface Contamination Monitor (SCM) with a Position Sensitive Proportional Counter (PSPC) and Survey Information Management System (SIMS) for building surveys; and (2) the Subsurface Multi-Spectral Contamination Monitor (SMCM), for collection of gamma-ray spectra using multi-channel analyzers, supplemented with two conventional 3-inch by 3-inch sodium iodide (NaI) scintillation detectors for land area surveys. Each NaI detector was fixed in a vertical orientation, unshielded and uncollimated, 1-meter apart and one-half meter above the ground on a wheeled cart. The scan speed for the SCM/SIMS was four inches per second. In-situ measurements were collected at a distance of one-half meter above the ground surface for ten minutes following a one-minute energy drift and source response check. Gamma-ray spectra were collected for ten seconds. MDCs for the SCM and SMCM were reported for cobalt-60 as 700 to 800 dpm/100cm^2, and 0.8 to 0.9 pCi/g (10 second count) and 0.1 to 0.3 pCi/g (10 minute count), respectively. The nominal detection sensitivity established for laboratory analyses for cobalt-60 was 0.1 pCi/g.

The computer data acquisition system (SIMS) used in the SCM was described in NUREG/CR-6450, dated June 1996. Reports of building and soil survey data was provided in Appendices A and B in GPU Nuclear's September 22, 1999, submittal. Soil samples were collected at the same in-situ measurement locations and were split with the NJDEP for independent analyses. Technical information on the SMCM was described in Appendix C of the submittal.

Calibration of the SCM and SMCM was accomplished using NIST-traceable cobalt-60 and/or cesium-137 sources. The emission types and activities of the sources used were appropriate for detecting the radionuclides of concern and to minimize statistical uncertainty associated with low levels of activity for source response checks. Certificates of NIST traceability for the calibration sources were provided in Appendix D of the submittal. Current training certificates, provided in Appendix E of the submittal, for contract personnel conducting the survey described the scope, length, and date of training, and indicated successful completion by a certifying official. Contract personnel participating on the survey were either involved in the research and development of the SCM/SIMS and SMCM systems, and/or were certified Health Physicists.

c. Conclusions

The survey methodology pertaining to surface contamination and in-situ measurements, which included procedures for in-field calibration and periodic source response checks, in support of the scoping/final status survey, provided an adequate mechanism to meet required detection sensitivities, and to demonstrate that the indicator radionuclide, cobalt-60, was not detected at any location on the FRP. Laboratory analyses, performed under an approved QA/QC plan, of soil samples using gamma spectroscopy also met required detection sensitivities. Gamma isotopic analyses results from the scoping/final status survey indicated naturally occurring radionuclides and cesium-137 concentrations consistent with geographical and offsite background levels. Contract personnel were trained and qualified in the calibration and operation of the radiation detection instruments, and in the design of surveys.

R3.2 Quality Assurance of Analytical Measurements

a. Inspection Scope (84750)

The QA/QC program of the contract laboratory, Environmental Radioactivity Laboratory (ERL), was reviewed during the Three Mile Island REMP inspection which was conducted on October 26-30, 1998. The inspector concluded that the ERL continued to implement effective QA/QC programs for the REMP samples, and continued to provide effective validation of analytical results. The programs were capable of ensuring independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample media. (See Inspection Report Number 50-289/98-07 for details.)

The inspector reviewed the following procedures during this inspection:

(1) 6510-ADM-4590.01, QA in the GPU Nuclear Environmental Radioactivity Laboratory (ERL)- General Guidelines;
(2) 6510-ADM-4590.02, ERL Organization and Function;
(3) 6510-ADM-4590.03, Sample Receipt, Login, and Handling;
(4) 6510-ADM-4590.04, Data Review and Reporting;
(5) 6510-ADM-4590.05, Personnel Training; and
(6) 1000-PLN-7200.01 GUN Nuclear Operational QA Plan.

b. Observations and Findings

The above procedures were detailed and easy to follow, and QA/QC requirements were incorporated into the appropriate procedures.

c. Conclusion

The licensee's contractor laboratory had sufficient procedures to perform effective QA/QC programs.

R4 Confirmatory Inspection Report

a. Inspection Scope (83890)

Independent measurements were taken from the FRP to determine if licensed material above the DCGL was present and to confirm the adequacy of the licensee's measurements. Both the NJDEP and the licensee analyzed the soil and water samples.

b. Observations and Findings

Under the supervision of NRC, ORISE performed confirmatory survey activities of various interior and exterior portions of the FRP. Confirmatory survey activities included document reviews, surface scans, surface activity measurements, smear sampling, and soil, water and sediment sampling. Attachment 1 to this report provides the ORISE report, Confirmatory Survey of the Oyster Creek Forked River Property, dated February 2000. The criteria for comparison of the results is also included in the attached report. The principal findings are discussed below:

> The surface scans for beta and gamma radiation did not identify any elevated activity with the exception of known sealed sources in the whole body count room in Building 14 and "slag sand" in the sand blast room in Building 6. (Slag sand is residue from sand-blasting activities. The sand, which is used in this clean-up process contains elevated levels of natural radioactivity, such as uranium and thorium.)
>
> Surface activity direct measurements for beta activity ranged from -360 to 810 dpm/100 cm^2. Removable activity ranged from 0 to 5 dpm/100 cm^2 to -5 to 18 dpm/100 cm^2 for gross alpha and gross beta, respectively.

Surface scans for gamma radiation of exterior areas did not identify any areas of elevated activity.

Radionuclide concentrations in surface and soil samples ranged from less than MDCs to 0.53 pCi/g for cesium-137. All soil results were less than MDCs for cobalt-60. GPU Nuclear provided data from their REMP reports from 1987 to 1994 indicating a cesium-137 concentration at the background station. The maximum concentration reported from this background location was 0.28 pCi/g. However, cesium-137 from fallout from past nuclear weapons testing is deposited non-uniformly in the environment. The highest level reported for soil 0.53 pCi/g is not distinguishable from the variation in cesium-137 in background. Cesium-137 found in New Jersey coastal areas have been reported as high as 2.8 pCi/g in soil from background sample locations.

Radionuclides concentrations in sediment samples for cesium-137 and cobalt-60 ranged from less than 0.02 to 0.66 pCi/g, and less than MDCs, respectively.

Tritium concentration in water samples were all less than the MDC (365 pCi/l), while gross alpha and gross beta activity ranged from 3.7 to 17.1 pCi/l and 5.9 to 15.2 pCi/l, respectively.

Triplicate analyses were performed on the sample yielding the highest gross alpha and beta results. These additional results indicate the higher activity was due to inhomogeneous nature of the water sample or from the decay of short-lived natural radioactivity (e.g., radium-224). Additional gamma isotopic and beta analyses on all four well water samples for possible fission and activation products confirmed no plant-related radioactive material.

Analyses of the soil, sediment and water samples which were conducted by ORISE, NJDEP and the licensee also indicated general agreement.

c. Conclusions

No contamination survey results exceeded the derived concentration guideline levels for cobalt-60 or cesium-137. The soil sample did not contain any residual radioactive material from plant related activities distinguishable from background and/or above the MDCs. Therefore, all results were below the DCGL and confirm the adequacy of the licensee measurements. Individual water samples were collected by the three parties. All water and sediment results confirmed no plant-related radioactive material.

X1. Exit Meeting Summary

On November 18, 1999, Marie Miller, Division of Nuclear Materials Safety, provided a summary of the inspection findings and noted that these findings were preliminary pending completion of the soil and water samples analyses. NJDEP also attended the

meeting and participated in the inspection. The licensee did not indicate that any of the information presented at the exit meeting was proprietary.

On February 29, 2000, John White, Division of Reactor Safety and Marie Miller held a final exit meeting at OCNGS, which was open for public observation. The inspection findings were reviewed, including a discussion of the confirmatory sampling results. In addition to the licensee representatives, five representatives from NJDEP and four members of the public attended the meeting. A second phase of the meeting included a question and answer period with the public. A copy of the NRC's slides is attached (Attachment 2).

PARTIAL LIST OF PERSONS CONTACTED

Licensee

#Sander Levin, Acting Site Director
+George Busch, Manager, Nuclear Safety and Licensing
*Michael Laggart, Manager, Licensing and Vendor Audits
*Beverly Good, Manager, Decommissioning Projects
+Michael Slobodien, Director, Radiological Health & Safety
#Douglas Weigle, Environmental Scientist
Malcolm Browne, Senior Environmental Scientist
Art Walcha, Radioactive Waste Program Manager
Kevin Zadroga, Radcon Supervisor
*Dave Robillard, Senior NSA Assessor
#Bill Cooper, Manager, Radiological Engineering
*Brenda DeMerchant, Licensing Engineer

State of New Jersey Department of Environmental Protection
+Kent Tosch, Chief, Bureau of Nuclear Engineering (BNE)
+Karen Tucillo, BNE
+Nick DiNucci, BNE
+Richard Pinney, BNE
*Carol Shepard-Wilson, B

* Denotes those individuals participating in the exit pre-brief held on November 18, 1999
+ Denotes those individuals particpating in the final exit meeting held on February 29, 2000
# Denotes those individuals who participated in both meetings.

INSPECTION PROCEDURES USED

83890
84750

ITEMS OPEN, CLOSED, DISCUSSED

Open

None

Closed

None

Discussed

None

LIST OF ACRONYMS

FRP	Forked River Property
ORISE	Oak Ridge Institute for Science and Education
MDC	Minimum Detectable Concentration
DCGL	Derived Concentration Guideline Level
MARSSIM	Multi-Agency Radiation Survey and Site Investigational Manual
HSA	Historical Site Assessment
CAP	Corrective Action Progress
RCA	Radiologically Controlled Area
TS	Technical Specification
ETS	Environmental Technical Specification
RETS	Radiological Effluent Technical Specification
OCNGS	Oyster Creek Nuclear Generating Station
ODCM	Offsite Dose Calculation Manual
REMP	Radiological Environmental Monitoring Program
SCM	Surface Contamination Monitor
PSPC	Position Sensitive Proportional counter
SIMS	Survey Information Management System
SMCM	Sub-Surface Multi-Spectral Contamination Monitor
ERL	Environmental Radioactivity Laboratory
NJDEP	New Jersey Department of Environmental Protection
BNE	Bureau of Nuclear Engineering