

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

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License No. DPR-16
Licensee: GPU Nuclear Corporation
1 Upper Pond Road
Parsippany, New Jersey 07054
Facility Name: Oyster Creek Nuclear Generating Station
Location: Forked River, New Jersey
Inspection Period: May 15, 1995 - May 19, 1995
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Date

Inspection Summary: This inspection report documents the inspection conducted to evaluate the effectiveness of licensee controls in identifying, resolving, and preventing issues that degrade the quality of plant operations or safety. These licensee controls include: safety review committees, root-cause analysis programs, corrective action programs, self-assessment programs, and other processes that provide for the incorporation of operating experience feedback. Previously, during NRC Inspection Report 50-219/95-06, the resident inspectors completed a part of this evaluation. During this inspection, the remaining areas, including self-assessment activities, safety review committee activities, and operating experience feedback were evaluated.

Results: No violations of NRC requirements were identified during this inspection. In general, the evaluation concluded that the licensee's controls were effective at identifying, resolving and preventing recurrence of problems. Specifically, the inspectors noted good management attention and emphasis on the expanded use of the Deviation Report System, as the primary method for tracking potential problems. Further, it was concluded that the reports from this system received excellent management review to ensure appropriate and timely actions were taken by assigned organizations. The inspectors also noted an improving trend in both equipment failure rates and in human error event rates over the last five years. This performance related evidence clearly supported the inspectors' overall conclusion.

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DETAILS

1.0 INSPECTION OBJECTIVE AND SCOPE

The objective of this inspection was to conduct a performance based evaluation of licensee management systems to determine whether issues, problems, or conditions potentially adverse to quality or plant safety are identified, raised to the proper level of management, assessed, and resolved.

The inspection was conducted using the guidance in NRC Inspection Procedure 40500, "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems." There are several process elements through which problems or trends are identified and evaluated. Some of these elements at Oyster Creek include deviation reports, quality deficiency reports, material nonconformance reports, root cause analysis, corrective actions, self-assessments, self-checking, employee concerns, industry experience, system engineer evaluations, quality assurance audits, trending, performance indicators, and various review committees.

During a prior inspection (see NRC IR 50-219/95-06), the licensee's problem identification and corrective actions systems were assessed as effective, except for some isolated cases of repeat findings. During this inspection, the team observed portions of the remaining activities, interviewed staff and management, and reviewed and evaluated several products of the above activities. The inspection results are described below under the following three major headings: Operating Experience Feedback; Self-Assessment; and, Safety Review Committee Activities.

2.0 Operating Experience Feedback

The inspector evaluated the adequacy of the licensee's programs that implement operational experience feedback. The evaluation focused on the effectiveness to assess, to inform appropriate personnel of the results, and to initiate corrective actions for information obtained both within and outside the licensee's organization. The types of information reviewed were NRC Bulletins (BUs), Generic Letters (GLs) and Information Notices (INs), Vendor Information Received, EPRI Reports, other licensee 10 CFR Part 21 Notifications, and Oyster Creek Transient Assessment Reports (TARs).

The GPUN Procedure 5000-ADM-7370.02, Review of Industry Operating Experience, establishes a consistent method for screening, evaluating, and distributing selected nuclear industry operating experience information, and for tracking actions that may result from the lessons learned. Under Applicability and Scope, it states that, "It does not encompass the entire operating experience program for GPUN. Other elements of the total program are managed by each of the site functional departments." At OCNCS, Procedures 2000-ADM-1200.01, Nuclear Network, and 2000-ADM-1200.02, Operating Experience Review Program, are the implementing documents. These procedures specify that the Licensing Section is responsible for NRC Bulletins and Generic Letters actions, and that the Plant Analysis Section's Operating Experience Coordinators (OECs) are responsible for the coordination of all other operating experience reviews.

2.1 NRC Bulletins (BUs)

The inspectors reviewed the short listing of bulletins issued since January 1, 1994, and selected Bulletin 94-01, Potential Fuel Pool Draindown Caused by Inadequate Maintenance Practices at Dresden Unit 1, for detailed review. The list of bulletins considered were mostly not applicable to OCNGS. Bulletin 94-01 was addressed for action to permanently shut down power reactors with spent fuel in the spent fuel pool, and for information to all holders of licenses authorized to possess spent fuel. The licensee said that no response to this bulletin was required because of its "for action" address. Later they provided documentation of related changes made to insure spent fuel pool integrity and cooling ability in 1994. These changes were made in response to NRC Information Notice 93-83, Potential Loss of Spent Fuel Pool Cooling Following a Loss of Coolant Accident (LOCA).

The inspectors discussed the possibility that NRC information, such as this bulletin, can have limited applicability even when addressed specifically to other plants. In the case of Bulletin 94-01, at least two of the conditions, potential siphon paths and leak detection/water inventory program, can apply to OCNGS. The licensee has detected and is evaluating a relatively small spent fuel pool continuous leak. The inspectors felt that followup to bulletins was adequate.

2.2 NRC Generic Letters (GLs)

The inspectors reviewed the short listing of generic letters issued since January 1, 1994, and selected GL 94-02, Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors, for detailed review. This issue was the subject of numerous NRC correspondence, including GL 86-02, IN 88-39, BU 88-07, BU 88-07 Supplement 1, IN 92-07, and industry responses such as General Electric's 10 CFR Part 21, dated October 28, 1988 and the Boiling Water Reactors Owners Group reports NEDO-31960; dated June 1991, and NEDO-31960 Supplement 1, dated March 1992. In GPUN's response to GL 94-02, dated September 9, 1994, the licensee states that they have implemented the interim corrective actions specified in BU 88-07, Supplement 1 at OCNGS. In addition, GPUN, by application for license change; dated October 9, 1991, as supplemented March 9, April 27 and December 15, 1994, proposed technical specification changes to ensure a sufficient response to regional thermal hydraulic oscillations in the reactor core to prevent violation of the Minimum Critical Power Ratio (MCPR) safety limit and limits MCPR to 1.47. These technical specification changes were approved and issued by the NRC as Amendment No. 176, dated December 29, 1994.

The inspectors reviewed the subject correspondence including the December 1994 amendment and the September 9, 1994 GPUN response to GL 94-02. In this response, the licensee was to strengthen the procedural controls intended to avoid power oscillations by defining a new exclusion region procedurally as an area on the power/flow map where intentional operation is prohibited and inadvertent entry into the region requires an immediate exit. In addition, an immediate reactor trip will be required upon observed reactor instability, and a buffer zone was specified. The inspectors observed that a power/flow curve

with the exclusion region has been posted on control room panel 3F, as committed to by GPUN. However, the Safety Parameter Display System changes, to define the instability region, color code it, and provide a message display and alarm information, have not been made. Discussions with the licensee indicated the computer software changes are being worked and should be implemented by the June 1995 date committed to in the September 9, 1994 letter. The inspectors concluded that proactive and timely corrective actions have been taken to implement GL 94-02 requirements at OCNGS.

2.3 NRC Information Notices (INs)

The inspectors reviewed twelve INs and found that the quality of the documented IN reviews have improved over time. This appeared to correlate with assigning them to OECs for action. As an example, the review of IN 95-02, Problems with GE CR2940 Contact Blocks in Medium-Voltage Circuit Breakers resulted in a Deviation Report being prepared and the issue closed out with the preparation of MNCRs for the two possible breakers affected at OCNGS.

2.4 In-House Significant Deviation Reports (DRs), Critiques, Independent Trip Review Group Reports (PTRGs), Transient Assessment Reports (TARs), Minor Transient Reports (MTRs), Human Performance Enhancement System Reports (HPESRs), Significant Events at TMI, etc.

The above reports have been developed by the licensee to inform the GPUN staff of operating experiences at OCNGS. In accordance with Procedure 2000-ADM-1200.02, each of these reports generated will be reviewed against the screening criteria for reporting the event of interest to other facilities. The OECs are to assist in the preparation of the event report and the data entry.

The inspectors reviewed one Significant DR, four Critiques, two TARs, four MTRs, and one HPESR. In addition, a new type of in-house document, the Assessment of Reactivity Management at Oyster Creek, was reviewed. The inspectors found each of these reports to be complete and the TARs and the MTR to provide an excellent level of detail and assessment.

2.5 Vendor Information Received

The Vendor Information (VI) program at OC is prescribed by the GPUN Procedure 5000-ADM-7316.03, Control of Technical Manuals and Vendor Technical Information. This procedure specified that the Vendor Document Control (VDC) group will identify and distribute each manual at each site. The process for backfit review, new manual review and vendor technical information are addressed with procedure flow charts for each site (OCNGS or TMI). The inspectors were shown a computer listing of about 3,600 technical manuals currently active at OCNGS.

The inspectors had requested a listing of all information received from the vendors since January 1, 1994 be available at the start of the inspection. This listing consisted of 79 documents received from General Electric (SALS and SILs), Fisher Controls (FINs), Foxboro (NINs), ITI Movats (MUTNs), Limitorque (Bulletins), Namco (TBs), Rosemount (10CFR2's), Westinghouse

(BTMIs), Whiting, and others. From this list, the inspectors selected six recently closed vendor information request forms for detailed engineering review. When the VDC group receives a new or updated vendor document, an engineering Technical Functions Assigned Action Item (TFAAI) request is initiated, an assigned engineering reviewer is selected, the distribution determined and the document is entered in the computer database. The VDC manager also determines applicability for OCNCS by performing a search of the Generation Maintenance System (GMS). The inspectors found the applicability determinations, the relation to other information sources (IN 95-020 on Rosemount transmitters), the engineering evaluations and recommendations (GE SIL 552 on fuel assembly degradation from metal debris), and the dissemination of VI to responsible site and industry personnel (Limitorque torque switch problem to the MOV Users Group) to be a very strong program.

3.0 Self-Assessment Activities

The inspector reviewed a sample of the recent (1995) self-assessment and audit activities in the operations and maintenance areas. In addition, monthly Safety Review Group reports were reviewed, as well as, the 1995 Critical Component Failure Trend Report. Overall, the reports were found to include critical evaluations of both human and equipment performance. Generally, the scope of the self-assessments were good, the findings were well supported by the information contained in the reports, and excellent recommendations were made for improvements. It was noted that the trends of both human errors and equipment failures were improving (declining) over the last five years, indicating that the licensee's corrective action program is effective.

As an example of the licensee self-assessments, the following discussion regarding the 1995 Operations Self-Assessment of the 1990 Plant Operations Self-Assessment (POSA) Corrective Actions is provided. During the assessment, the licensee found concerns with their tracking of corrective actions and with maintaining sufficient documentation to provide an auditable record for review.

This assessment is still under management review for development of final corrective actions; however, the operating department was already commencing action to ensure proper tracking of departmental action items and ensuring that the completed actions provided an auditable record. The 1995 self-assessment reviewed all 84 action items resulting from the 1990 POSA. The conclusion of the review found that 27 of these actions were very effective, 26 were effective, and 31 were not effective. Of the 31 found not effective, three general reasons were identified, either: (1) the action was completed, but the weakness was not resolved; (2) the action was not completed, but the weakness was resolved through other initiatives; or, (3) the action was not completed. For issues found where actions were either not completed or did not prevent recurrence of the identified weakness, a total of eleven specific action items were developed to correct these issues (most involved various aspects of improved training for licensed operators/senior operators). The specified actions appeared to appropriately address the identified concerns. The remaining actions that were not completed, but for which the weakness was resolved through other initiatives, posed an additional concern regarding the lack of an effective tracking program for operations departmental action

items. The inspector was informed that an improved tracking system was just recently developed to prevent such problems; however, this type of system was not in use after the 1990 POSA, which led to actions not being handled properly.

In conclusion, the inspector found that the licensee's self-assessment and audit programs review the major functional areas. From the detail and recommendations of the selected self-assessments for review, the inspector concludes that the scope, analysis, findings and evaluations of the licensee's self-assessment program provide meaningful results and trending information regarding problem resolution and improved performance. The inspector determined that the self-assessments have been effective; however, as indicated by the 1995 operations self-assessment, additional management attention is warranted to ensure that assigned actions are both completed and that the supporting closure documentation is sufficient to reasonably conclude the effectiveness of the completed action.

4.0 Safety Review Committee Activities

4.1 Independent Onsite Safety Review Group

The Independent Onsite Safety Review Group (IOSRG) reports to and takes direction from the Director, Nuclear Safety Assessment (formerly Director - Independent Safety Review). The IOSRG, required by TS 6.5.4.2 reviews significant procedures, evaluates facility operations and assesses facility conformance to safety requirements. The IOSRG, whose members have no responsibilities in other divisions, consists of the Manager, Nuclear Safety Assessment (formerly Manager, Nuclear Safety) and three professional staff. The IOSRG is responsible for the areas: operations, maintenance and engineering. In addition to being manager of IOSRG, the Manager of Nuclear Safety Assessment is responsible for quality assurance assessment and human performance.

IOSRG identifies significant safety issues by attending plan-of-the-day meetings, log reviews, deviation report reviews, in-plant monitoring, review of maintenance work requests, assess plant equipment and review of major plant modifications.

The Manager, Nuclear Safety Assessment meets daily with his staff to discuss plant safety issues and on a monthly basis issues an Oyster Creek Nuclear Safety Assessment Report to the Director, Nuclear Safety Assessment. In addition to monthly reports, IOSRG also issues special report critiques of significant operational events.

The inspector attended a daily meeting where several safety issues were discussed. One example was the concern of taking a service water booster pump out of service that would affect the chlorination of the system, which in turn would affect the operation of the No. 2 emergency service water system. The inspector found that such discussions regarding safety concerns were very constructive.

The inspector also reviewed the March 1995 and April 1995, monthly Oyster Creek Nuclear Safety Assessment reports. The reports were thorough, comprehensive and well documented, and both reports provided a very good summary of Oyster Creek operational events for their respective month. IOSRG and senior management use the monthly summaries to trend safety concerns. In addition to monthly reports, IOSRG also critiques significant operational events and issues special reports of such. One example is the assessment of the emergency diesel generator (EDG) modification during the 15R outage. The assessment addressed several immediate corrective actions and several recommendations. One significant recommendation indicated that the System Performance Team (SPT), as well as the management involved with the EDG modifications, did not understand the scope fully; and therefore, did not exercise prudent scope control and allocation of resources. Opportunities were missed by both the SPT and management to question and limit the 15R scope. IOSRG recommended that both SPT's and management establish controls to ensure clear scope definition and prudent scope control. The inspector found that this critique was comprehensive and well documented and the corrective actions and recommendations were appropriate. Relative to an assessment regarding a scram signal that was initiated from an inaccurate main steam isolation valve (MSIV) position indication, IOSRG made the observation that a task was initiated in 1992 to evaluate this problem and that as of March 1995, no change had been implemented to rectify the valve indication short-comings. The assessment also indicated that a modification has been designed to correct this problem. The modification is currently in the review and approval process.

On a monthly basis, the Manager, Nuclear Safety Assessment and human performance staff members discuss safety concerns and human performance with the Oyster Creek Plant Director. As a result of these briefings and issuance of Nuclear Safety Assessment Reports the Oyster Creek Plant Director incorporates IOSRG recommendations into the plant tracking system.

As discussed previously, IOSRG and senior management use the monthly summaries of Oyster Creek operational events to trend safety issues. The Director of Nuclear Safety Assessment also issued an annual report dated January 30, 1995, regarding the trend of Nuclear Safety assurance for both Oyster Creek and TMI-1. The report indicated that equipment performance at Oyster Creek during 1994 remained satisfactory, notwithstanding recognized ongoing problems such as age-related degradation (e.g., piping deterioration, reactor vessel issues). Although some equipment availability goals were not met, the plant's operating experience was excellent. Human performance showed evidence of improvement during the period. Rates of human events were lower than in the previous two years; although, a series of high visibility errors occurred near the beginning of the 15R outage. The Director, Nuclear Safety Assessment indicated that the overall assessment for Oyster Creek is that the level of assurance continued to improve in 1994.

The inspector reviewed a sample of the Oyster Creek IOSRG Recommendation Tracking report. A significant number of issues have been closed in a timely manner and open items continue to be tracked by IOSRG. IOSRG reviews and updates the tracking system on a periodic basis. The review indicated that

not all responses showed agreement with IOSRG recommendations, although most responses were positive.

The Safety Issues Assessment Program (SIAP) provides: (1) a single prioritized list of nuclear safety issues affecting Oyster Creek; (2) monitors the progress of resolving nuclear safety issues and assesses whether adequate resources are being applied; (3) is a tool for establishing priorities and focusing resources; and, (4) is used by management and the GORB to assure that existing GPUN programs are effective in identifying and resolving Nuclear Safety Issues. The SIAP is not an issue resolution program, but serves to guide priorities and lines of inquiry for the IOSRG. The SIAP receives a good level of management attention.

The inspector has concluded that IOSRG has the experience and management support to perform a very important role in ensuring safety at Oyster Creek. The reports are comprehensive and well documented, with well-founded, comprehensive recommendations. Although a few recommendations are rejected by the GPUN organization responsible for resolving safety concerns, most recommendations are accepted.

4.2 General Office Review Board

The Oyster Creek safety review utilizes an off-site General Office Review Board (GORB). The GORB is not required by the TSs. GORB is an advisory board to the President, and does not meet the classical definition of an offsite safety review group. The primary responsibility of the GORB, as defined in Administrative Procedure 1100-ADM-1010-01, is to independently consider potentially significant nuclear and radiation safety matters, including related management aspects of those matters, and to advise the president of GPU Nuclear Corporation. A secondary responsibility is to consider potentially significant non-radiological, environmental and occupational safety matters. The Oyster Creek GORB is chaired by the Director of Nuclear Safety Assessment (formerly Director of Independent Safety Review), and consists of a minimum of nine members, five of which are outside members. The GORB members are recommended by the President of GPUN and approved by the Board of Directors. The Chairman is appointed by the President of GPUN.

The Oyster Creek Board is divided into the following sub-committees: Operating, Maintenance and Surveillance Committee; QA and Risk Assessment Committee; Engineering Committee; and Radiation Control Committee. Each committee has a chairman (a GORB member) and members who need not be GORB members. The GORB has scheduled meetings as needed. The GORB conducts an independent assessment of the implementation of the Quality Assurance Program for the President, GPUN on an annual basis. The GORB review of the QA program includes NDE/ISI Programs, use of corrective action systems, Cooperative Management Audit Program, and QC Audit and Monitoring activities.

The inspector reviewed the GORB annual assessment regarding the Quality Assurance Program, dated December 5, 1995. During 1993, the GORB identified problems with the duration and timeliness of QA Audits at the Oyster Creek site and at the corporate offices. A GORB recommendation to correct these problems was made. Based on audit duration and timeliness improvements, the

recommendation was subsequently closed. The GORB QA Committee has continued to follow this issue and has found that audits, with few exceptions noted, are being completed within target time frames. The committee concluded that GPUN's QA program was being effectively implemented.

The GORB also identified two concerns related to Technical Functions' quality performance. The concerns related to documentation of deficiencies and use of corrective action systems, and control of computer software and microprocessors. Technical Functions proposed that the Oyster Creek Deviation Report System be used for documentation and tracking of plant equipment potential operability issues. The GORB indicated that control of computer software is a GPUN quality concern as well as a potential regulatory issue. The GORB also stated that corrective action for both of these concerns is moving slowly; however, the GORB made no recommendation regarding this matter.

The inspector audited two Oyster Creek GORB Executive Summaries, dated February 7, 1995 and April 21, 1995, regarding GORB meetings held on January 11 and 12, 1995 and April 12 and 13, 1995. The safety issue discussions were very detailed and thorough. As a result of the meetings, GORB made no new recommendations and had only one remaining open item related to piping degradation analysis. That issue was opened in 1994, as a result of a prior GORB recommendation. When GORB issues an action item or recommendation, it tracks the item until it concludes that closeout is appropriate.

The inspector considers GORB to be an asset to the President of GPUN. GORB's strength comes from the extensive background of its members (the Oyster Creek participants have a combined nuclear experience of approximately 300 years) and that a minimum of five of the participants are from outside GPUN, thus bringing broader experience to GORB.

4.3 Nuclear Safety and Compliance Committee

The Nuclear Safety and Compliance Committee (NS&CC or the committee) is a group comprised of three outside members of the GPUN Nuclear Board of Directors, formed in 1984, to help ensure nuclear and radiation safety at GPUN nuclear facilities. The NS&CC monitors GPUN nuclear operations and meets bi-monthly with the other Board of Director Members and reports the Chairman of the Board of Directors on a semi-annual basis. The reports are responded to by GPUN management. An onsite staff of two contractors provide independent safety compliance reviews for the NS&CC. The contractors are supplemented by two GPUN staff members who report to the committee. The NS&CC staff performs daily reviews of ongoing activities and provides information and insights for the committee members. The inspector audited the NS&CC reports dated April 15, 1994 (Report No. 20) and October 15, 1994 (Report No. 21) to determine the type of findings and GPUN's management responsiveness to them.

The reports indicated that independent evaluations focused on operator performance, procedure utilization, and maintenance activities as they relate to compliance and safety. The reports addressed issues related to management attitude to safety, facility operation, maintenance/material condition of the plant, technical support, training, radiological and environmental controls,

and emergency preparedness. The reports provided balanced assessment, emphasizing both positive and weak performance indicators in the areas reviewed.

The inspector determined that the NS&CC demonstrated the ability to identify significant safety problems that should be brought to the attention of the Board of Directors. Over the period covered by report Nos. 20 and 21, the most significant problems identified by the committee in Report No. 21 involved material deficiencies, related to the biological fouling of containment spray heat exchangers, and that performance deficiencies occurred at an undesirable rate. Report No. 20 indicated that there is strong management oversight in routine operations and a need for enhanced review and coordination of infrequently performed evolutions. Management response to NS&CC concerns were addressed in letters to the NS&CC Chairman, dated June 30, 1995 and January 6, 1995.

The inspector determined that management response was appropriate and priorities have been established to resolve NS&CC significant safety concerns. Significant items of safety concern that reflect on-site activities are included in the Station Action Item Tracking System maintained by the Director OC. The inspector determined that the NS&CC is a very good self-assessment process and that GPUN management is responsive to the committee findings.

5.0 Exit Meeting

The inspectors met with licensee management at the conclusion of the inspection on May 19, 1995, to discuss the preliminary findings of the inspection. The licensee took no exception to the preliminary conclusions presented at that time.