

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

REPORT NO. 50-219/92-07  
DOCKET NO. 50-219  
LICENSE NO. DPR-16  
LICENSEE: GPU Nuclear Corporation  
Oyster Creek Generating Station  
P.O. Box 380  
Forked River, New Jersey 08781  
FACILITY: Oyster Creek Generating Station  
INSPECTION AT: Forked River, New Jersey  
INSPECTION DATES: April 6 - 10, 1992

LEAD INSPECTOR: A. Finkel  
A. Finkel, Senior Reactor Engineer  
Performance Programs Section

May 15, 1992  
Date

REVIEWED BY: Norman J. Blumberg  
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Performance Programs Section  
Operations Branch, DRS

5/15/92  
Date

INSPECTION SUMMARY: Inspection from April 6 - 10, 1992 (Inspection No. 50-219/92-07)

AREAS INSPECTED: Unannounced safety inspection by one region-based inspector to review the licensee's maintenance program implementation with emphasis in the area of preventative maintenance.

RESULTS: One violation was identified in the area of corrective action. Preventive Maintenance Procedure No. 2400-WMS-1220.18, requires that vendor data, notices, bulletins, and other industry information be reviewed and required action taken as applicable to plant equipment. The failure to take corrective action when notified of a potential failure in a General Electric 4160 volt breaker through a Service Advice Letter (SAL) indicates that

the licensee tracking and evaluation system for handling this type of information failed to alert management of a potential problem. The same type of information that was reported in the GE SAL was issued in an NRC Information Notice No. 90-41, which also did not have any action taken by the licensee through their tracking system.

The delay in staffing the licensee Diagnostic Evaluation Team (DET) program presented to the NRC during a meeting in December 1991 is another area that may negatively impact the effectiveness of the proposed upgraded preventative maintenance program. The four months' delay that has developed in the starting of this program has a direct impact on the effectiveness of the proposed tasks discussed with the NRC.

The configuration control of equipment serviced on contract with vendors is an area where control and documentation of work is a weak area. This area of configuration control of vendor work on plant equipment is to be addressed as a task within the PM upgrade program described as part of the DET program.

## DETAILS

### 1.0 PERSONS CONTACTED

Attachment 1 provides a listing of persons contacted during the inspection.

### 2.0 MAINTENANCE PROGRAM IMPLEMENTATION (MODULE 62700)\*

#### 2.1 Introduction

An inspection was performed to assess the adequacy of the licensee maintenance program and associated implementing procedure. The inspection included verification of procedure implementation in the area of preventative maintenance programs and work associated with plant equipment important to safety.

#### 2.2 Maintenance Activities Selected for Review

Two specific maintenance activities were selected for a review in order to assess the licensee's general conduct of maintenance and maintenance related activities. The inspection activity included the diesel generator and power 4160 volt breakers and vendor work history on safety-related equipment.

To assess these work activities, the inspector reviewed in-process work orders and held discussions with both maintenance and engineering personnel associated with the work. The documentation associated with each maintenance activity is listed in Attachment 2.

##### 2.2.1 Diesel Generator Breaker Failure

On April 5, 1992, a 4160 volt General Electric Magna-Blast circuit breaker failed to stay closed, resulting in Diesel Generator No. 1 to be declared inoperable by the licensee. A Prop Spring on the breaker closing mechanism broke, thus preventing the breaker from maintaining a closed-in position.

During a review of the licensee's preventative maintenance program for the General Electric (GE) 4160 volt breakers, the inspector noted that a GE Service Advice Letter (SAL) No. 348.1 was issued to the licensee on December 7, 1990, describing a failure mechanism of the Prop Spring on the 4160 volt vertical lift (Type AM and VVC) and horizontal drawout (Type AMH) breakers. The General Electric SAL recommended that all nuclear safety-related or critical breakers be inspected to verify that the Prop Spring is still functioning. It also recommended that the Prop Spring be replaced before the breaker accumulative operation cycles reach 2000.

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\* The number in parentheses is the NRC Inspection Procedure.

On June 12, 1990, the NRC issued an Information Notice No. 90-41, "Potential Failure of General Electric Magna-Blast Circuit Breakers and AK Circuit Breakers," which described Prop Spring failures at three nuclear operating sites. In each case, the Prop Spring failed below the 2000 cycle operating point.

Both the General Electric SAL and the NRC Information Notice 90-41 were received by the licensee and distributed as required by plant procedures. The Plant Engineering function received the above information; however, a decision was made not to replace this spring until the 14R outage, which is scheduled for January 1992.

The plant engineer who made the decision not to replace the Prop Spring on the licensee's 4160 volt breakers is no longer with the organization, and the licensee could not reconstruct the reason for not inspecting or replacing this spring or putting a caution note in the 4160 volt breaker preventive maintenance procedure.

A licensee inspection of all 4160 volt breakers was performed on April 7, 1992, to record the present breaker counter cycles. Of 46 breakers in service, 16 breakers have over 1000 cycles recorded; and, of these 16, 10 breakers had over 1200 cycles recorded on their breaker counters. The diesel generator breaker that failed had recorded 1756 cycles on its counter. Based on the findings of this inspection, the licensee is developing a 4160 volt Prop Spring replacement program.

The failure of the licensee to take prompt corrective action in response to both the General Electric Service Advice Letter No. 348.1, December 7, 1990; the NRC Information Notice 90-41, June 12, 1990; and the failure to add this information to their preventative maintenance program does not comply with their Preventive Maintenance Administrative Procedure No. 118, Section II.A., which requires the Maintenance Director to review PM technical requirements and assure all field activities are properly documented. This is considered a failure to take prompt corrective actions on a safety-related component and is a violation (50-219/92-07-01).

### 2.2.2 Safety-Related Equipment Configuration

The inspector's review of preventative maintenance (PM) component history records of the 4160 volt breakers indicated that the equipment configuration was not readily discernible. The breaker records did not identify which Service Advice Letters/Service Information Letters (SALs/SILs) were incorporated by GE when they performed their factory PMs on this equipment. Also, upgrades described in the GE maintenance manual for these breakers could not be readily identified as to their incorporation status in the equipment. The licensee was in the process of obtaining their breaker status from GE through their GE Vendor Manual Subscription Service program. However, the configuration of equipment, such as: motors, valves, etc., modified or reworked by other licensee's contractors also has to be verified. The configuration status of equipment worked on by the licensee's vendors or contractors is a

generic issue that is to be addressed by the licensee. This item is considered to be an unresolved issue. (50-219/92-07-02)

### 2.3 Licensee Diagnostic Evaluation Team (DET) December 1991

The results of a licensee's evaluation of NRC Diagnostic Evaluation Team (DET) findings were presented to the NRC during December 1991. The licensee informed the NRC staff that a "Component Maintenance Team" program would be functioning by February 28, 1992, and that an upgraded maintenance program would be in place and operating by April 30, 1992, with a program completion date scheduled within two to two and one half years later. Five team leaders had been assigned to the component maintenance task teams; however, the estimated 12 - 14 fulltime staff personnel have not been assigned to the team leaders. The inspector verified that the team leaders were providing only a token time effort on their assigned task elements for this program.

Recognizing that the upgraded maintenance tasks described in the DET evaluation have slipped approximately four months, the Director of Operations and Maintenance has been given the authorization to staff both the Team Leaders and working staff function with personnel on a full time basis. This authorization was approved by licensee senior staff on April 8, 1992. Even though the licensee has incurred a four month slip in the implementation of this program, they are expecting to complete the maintenance program tasks within the time span discussed in their December 20, 1991, presentation to the NRC.

### 3.0 FOLLOW-UP OF PREVIOUS INSPECTION FINDINGS (MODULE 92701)\*

(Closed) Unresolved item 91-16-01; Instrument Setpoint Calculations

The original Safety System Outage Modification Inspection (SSOMI) findings were documented in NRC Inspection Report No. 89-81 which was conducted from October 17 - 21 and October 31 through November 4, 1989. An update of the findings of IR No. 89-81 were documented in IR No. 91-16. At that time all the SSOMI items were listed as an unresolved item and given IR No. 91-16-01.

The inspector verified that the licensee has either performed studies to address the unresolved item No. 91-16-01 or has changed procedures and made plant modifications during their 13R outage that was performed from March through June 1991.

The original NRC IR No. 89-81 and the updated report NRC IR No. 91-16 listed the SSOMI findings with just a bullet symbol and SSOMI title. In addressing the SSOMI subjects in this report, the inspector has added on an item number after each subject the inspector verified.

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\*The number in parenthesis is the NRC Inspection Procedure.

- SSOMI Item 1

"The historical drift for instrument loop 13 is greater than calculated drift and has the potential to exceed the Technical Specification limit. Instrument loop 13 contains qualified SOR differential pressure switches. GPUN is planning on replacing these switches with improved SOR switches during the 13R refueling outage (March - June 1991). This instrument loop has a potential maximum drift of 0.36 inches of water column above the Technical Specification limit. This does not present a safety concern. The drift would result in approximately a 0.01 psig charge in the instrument setpoint. The vacuum breakers would open at 0.513 psid vs. 0.50 psid and would still accomplish their safety function of protecting the torus from negative design pressure of 1 psid."

### Results

The inspector reviewed the licensee's letter to the NRC, June 11, 1991 (C321-91-2162), which stated that further evaluation of data obtained subsequent to the May 29, 1990, letter, indicates that the drift range of the instruments currently installed is acceptable, and the switches considered as replacements have been determined to offer no improvement. Therefore, they have decided not to replace the DPS 66 switches during the 13R outage (March - June 1991). The licensee is continuing to assess the performance of their existing instruments.

- SSOMI Item 2

"Instrument Loop 3 - GPUN will change the instrument setpoint and/or calibration tolerance. A maximum potential drift of 1.88 psig below the Technical Specification limit would result in an insignificant delay of core spray injection. Based on the rate of reactor depressurization, either due to a pipe break or assisted by the Auto Depressurization System, the core spray injection time delay is insignificant."

### Results

The inspector reviewed a memorandum dated January 30, 1990, Reference RE17, "Core Spray Permissive Setpoint;" the licensee stated that Reference 3 calculated a 95% confidence value for total setpoint uncertainty (including calibration tolerance) of 17.88 psig, based on a historical surveillance data set of 36 points. Since then, they have obtained 88 more data points, (Ref. 3, GPUN calculation C1302-640-5350-001, Rev. 0, dated 5/5/90, "Oyster Creek Technical Specification Drift Calculation"), making the total number of data points equal to 124. With the significant amount of new data, they have recalculated and come up with a total setpoint uncertainty of 15.70 psig. This was acceptable for loops RE17A and C, but is still slightly (0.8 psig) outside the corrected technical specification limit for RE17B and D.

Also, note that the technical specification limit was exceeded only three times in 124 trials. In other words, they currently are in line with a 95% confidence level, since they have not exceeded the limit 97.6% of the time. The licensee is still collecting data on the subject; however, they do not plan to change the setpoints at this time.

- SSCMI Item 3

"Instrument Loops 4, 5, and 6 - These snap-acting switches are experiencing abnormal drift and are in the Long Range Plan (LRP) for replacement during the 13R refueling outage. GPUN plans to replace the switches with an instrument having better drift characteristics. Originally, these instruments were ITT Barton switches with mercury contacts. However, because of seismic reasons, the mercury contacts were replaced with snap-acting switches in 1978-1979. GPUN is planning on replacing these switches with new snap-acting ITT Barton switches."

### Results

The inspector's review of maintenance work orders and quality control records verified that Switches 41P15, 41B05S, and 41B11s were replaced during the 13R outage.

- SSOMI Item 4

"Instrument Loop 7 - This loop provides an operational bypass of low condenser vacuum and main steam line valve closure signals to the RPS actuation circuit, and it is utilized to permit plant operation to generate enough steam to establish turbine seals and condenser vacuum only during plant start-up. Currently, this loop is calibrated every refueling outage. For the historical data analysis, only 6 data points were available. GPUN will make a setpoint change to reduce the probability of exceeding the Technical Specification limit for this instrument loop. This function is an operational bypass and is not associated with accident mitigation."

### Results

The inspector reviewed the data documented in a memorandum dated January 30, 1990, Reference R1516, "RPS Operating Bypass," the licensee stated that: Reference 3 above calculated a 95% confidence value for total setpoint uncertainty of 43.59 psig, based on a data set of 6 data points. The licensee did not recommend a setpoint change at this time because:

1. The technical specification limit was not exceeded during the time the data was collected 3/82 to 3/89.
2. Six data points are not enough data to make a positive conclusion. Ref. 3 used 30 data points as a minimum.

3. RE16 pressure switches are identical to RE17 pressure switches, and they are all located in the same environment on RB elev. 51 instrument racks RK01 and RK02.
4. A significant setpoint change was already made on 5/31/84 in the conservative direction from 608 to 587 psig for RE16A and from 606 to 582 psig for RE16B.

For the above reasons, the licensee recommends that they not make another setpoint change at this time. They will continue to monitor RE16 surveillance data.

The RE16 surveillance frequency is currently every refueling outage. At this frequency, the licensee may never amass 30 data points. Therefore, a procedure change to increase the frequency to just prior to every restart should be evaluated (RE16A and B can only be surveillanced when the plant is shut down). They are proceeding under this approach at this time. The inspector determined this to be an acceptable approach.

- SSOMI Item 5

"Instrument Loop 8 - GPUN is planning replacement in 14R refueling outage (starting January 1993). The Oyster Creek Final Safety Analysis Report analyzed transients for reactor pressure vessel pressurization. They are: Turbine Trip without Bypass, and Main Steam Isolation Valve Closure with Anticipated Transient without Scram (ATWS). For both of these events, the drift of this instrument loop, combined with the low probability (0.00048) of having insufficient Electro-Matic Relief Valves (EMRVs) available, does not present a safety concern. IA83s are scheduled to be installed during the 14R outage."

## Results

The inspector verified that this task item is listed in the maintenance integrated schedule for the 14R outage.

- SSOMI Item 6

"GPUN will revise the plant procedures to provide additional guidance to assure that the channels are recalibrated prior to approaching a situation where 95% level of significance is compromised. In a memorandum dated January 30, 1990, Reference APRMs, IRMs, and SRMs, the licensee stated that:

"Their analysis of the surveillance data for APRMs and IRMs concluded that the existing weekly surveillance interval is appropriate and no additional guidance is necessary to preclude a compromise of the 95% confidence level. "A significant setpoint change was already made on 5/31/84 in the conservative direction from 608 to 587 psig for RE16A and from 606 to 582 psig for RE16B. These setpoints provide more margin than RE17 setpoints and, therefore, should be acceptable."



## Results

The inspector verified that a procedure change to record weekly surveillance data still needs to be evaluated. This does not affect the acceptance of this item, based on the results of the data described in the January 30, 1990, memorandum and the scheduled task assigned to engineering for an evaluation for a surveillance procedure change if the need arises.

- SSOMI Item 7

"Instrument Loops 5 and 6 are Source Range Monitors. These loops are surveilled weekly, but are not required to be recorded. Therefore, there is no data to perform a historical drift analyses. However, these loops use hardware similar to loops 3 and 4. Based on the experience with loops 3 and 4, plus the weekly surveillance, the performance of these loops is considered satisfactory. GPUN is currently evaluating a procedural change to record the surveillance and to assure a 95% confidence that Technical Specifications will not be exceeded. These source range monitors monitor the neutron flux during startup, shutdown, and refueling. These monitors are withdrawn from the vessel after startup. Engineering analysis results taken by the licensee are described in memorandum dated May 8, 1991. Actions were taken during the 13R outage to address the above concern. Other actions are to be completed during the 14R outage."

## Results

The inspector verified that this task is listed in the maintenance schedule for the 14R outage.

- SSOMI Item 8

"Instrument Loop 7 - This instrument loop monitors the radiation levels in Air Ejector Off-Gas process steam and isolation off-gas system for radiation levels which exceed the predetermined value. During the cycle 11R outage, electronics for this instrument loop were replaced with state-of-the-art hardware. This hardware is manufactured by General Electric and is being marketed as the NUMAC system. The performance of this instrument loop has significantly improved since this replacement. Currently, the instrument setpoint is the same as the Technical Specification limit. GPUN will change the instrument setpoint to provide margin to the Technical Specification limit. If the instrument loop drifts above the Technical Specification limit, a delay of isolation to the steam jet air ejectors would occur. The Turbine Building RAGEMs monitors this effluent path and provides quantification of any releases to the environment. A note on RN12 setpoint change has been added to the log as Standing Order #1."

## Results

The actions taken, or planned to be taken, by the licensee during outage 14R are adequate to close this unresolved item.

## Conclusion

The inspector review of actions taken or scheduled to be taken by the licensee on the eight SSOMI items discussed above were determined to be adequate engineering approaches to close the original findings.

### **(Closed) Violation 89-81-03: Operable Scram Functions Less Than Required by Technical Specifications**

An NRC Augmented Inspection Team Report 50-219/89-81 identified a violation of Technical Specification requirements in that the scram function trip setting for low vacuum had drifted below the required 23 inches of Hg in four out of six sensing elements for both trip systems resulting in the number of operable systems being less than required. The licensee reported that the cause of this violation was attributed to sensing element drift, and the lack of margin for drift in the "as-left" setpoint specified in the calibration procedure. The "as-left" setpoint specified was 23 + .5 -0 inches Hg vacuum; whereas, the T.S. limit was greater than, or equal to, 23 inches Hg vacuum.

NRC inspection of April 8 - 12, 1991, Report No. 50-219/91-13, closed 5 commitments out of a total of 9. The remaining 4 commitments listed below were reviewed and closed as noted.

- Commitment No. 2 - Evaluate the T.S. requirements for revision or elimination of the low vacuum scram function.

Status: Completed. A decision was made to change T.S. Table 3.1.1 to require a minimum of one operable trip system and a minimum of three instrument channels per operable trip system. The engineering has been completed on this task, and the T.S. submittal is scheduled to be completed by May 1992.

- Commitment No. 3 - Conduct operator self-verification training.

Status: Completed. Training was started during the 3rd quarter of 1990 and was completed during the 2nd quarter of 1991. Attendance list of personnel documented as part of procedure 6231-PGD-2612, "Licensed Operator Requalification Program" data records.

- Commitment No. 4 - Review the guidance for use of information/caution tags.

Status: Completed. Procedure 108, Revision 52, "Equipment Control" was issued October 10, 1991. This revision included requirements in Section 4.9.1 for the use of information tags on any component that was out of service to alert operators to this condition. Training has been given on this latest revision of procedure 108.

- Commitment No. 7 - Revise the Operations Plant Manual (OPM) to explain the operation of the condenser low vacuum scram sensing and trip mechanism as appropriate.

Status: Completed. The turbine controls section of the OPM was issued April 15, 1991. The condenser vacuum and the sensing and trip mechanism function has been discussed in this issue.

The completion of Commitment Nos. 2, 3, 4, and 7 above and subsequent NRC review closes this NOV.

#### 4.0 MANAGEMENT MEETINGS

Licensee management was informed of the scope and purpose of the inspection at an entrance meeting conducted on April 6, 1992. The findings of the inspection were periodically discussed with licensee personnel during the course of the inspection. The inspectors met with licensee representatives (denoted in paragraph 1.0 above) at the conclusion of the inspection on April 10, 1992. The inspectors summarized the scope and findings of the inspection as described in this report.

#### Attachments:

1. Persons Contacted
2. Documents Reviewed

Attachment 1Persons ContactedGPU Nuclear Corporation

- \*J. Bartor, Director, Oyster Creek Nuclear Generating Station
- \*B. Barrett, Plant Operations Director
- \*T. Blount, Licensing Engineer
- \*G. Busch, Manager, Oyster Creek Licensing
- \*T. Dempsey, Manager, Plant Engineering
- \*R. Fitts, Quality Assurance Auditor
- \*L. Lambers, Maintenance Director
- \*S. Levin, Director, Operations and Maintenance
- \*P. Thompson, Site Auditor
- \*T. Quinterry, Manager, Maintenance Assessment

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- \*J. Nakoski, Resident Inspector
- D. Vito, Senior Resident Inspector

The inspector also contacted other administrative and technical personnel during the inspection.

\*Denotes those attending the exit meeting of April 10, 1992.

Attachment 2Documents ReviewedDocuments Associated with Specific Tasks

- General Electric 4160 Volt Circuit Breakers

Service Advice Letter (SAL) 348.1, "Prop Spring Failure."

GE Vendor Manuals GEH-3160M and GEL-88761J

Nuclear Network Information Service Report NWRA001A, April 8, 1992.

GE Manual Update Summary: VMSS-145, "AM-4.16 - 210 - 6, 7, 8 Magna-blast circuit breakers."

4160 Volt Breaker Preventive Maintenance Procedure - No. A100-SME-3915.03, September 21, 1990.

Preventive Maintenance Administrative Procedure No. 118, Revision No. 13

NRC Information Notice No. 90-41, June 12, 1990, "Potential Failure of General Electric Magna-Blast Circuit Breakers and AK Circuit Breakers."

4160 Volt Breaker (GE) Integrated Counter Report.

- GPU Nuclear Corporation DET Status Presentation, December 20, 1991

Oyster Creek Plan for Excellence Schedule, C.3, December 17, 1991

DET Status Presentation - December 20, 1991

Proposed Preventive Maintenance Program No. 2400-WMS-1220.08, Revision D  
Maintenance Team Responsibility Guideline, December 19, 1991

- Outage Schedule Dates

13R Outage - March - June 1991

14R Outage - Scheduled for January 1993

- Notice of Violation 89-81-03

NRC Inspection Report 50-219/91-13, April 8 - 12, 1991

Operation's Plant Manual Module 51, "Turbine Control System," April 13, 1991

Work Practices Lesson No. 0001 and Attendance List  
Equipment Control Procedure No. 108, Revision 52, October 15, 1991

• Unresolved Item 91-16-01

Oyster Creek Technical Specification Instrument Loops Error and Drift Calculation -  
Technical Support Program Summary No. 1, May 8, 1991.

Technical Specification Instrument Loop Setpoint Adequacy, January 30, 1990.

Technical Specification Instrumentation Loops Error and Drift Calculations - Technical  
Support Program Summary No. 1, November 2, 1990.

BA 402879 - RPS/ESG Instrument Upgrade Memorandum, June 12, 1991.

Switch Replacement Cancellation Letter, June 11, 1991, No. C321-91-2162.

Technical Specification Setpoints Letter, May 29, 1990, No. 5000-90-1929.

Licensee Event Report Revision (LER) No. 89-023, Revision 1, May 18, 1990.

Administration of Setpoints Procedure No. 125.4, Revision 1, August 24, 1990.