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REGION I

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Report No. 84-15

Docket No. 50-333

License No. DPR-59 Priority -- Category C

Licensee: Power Authority of the State of New York

P.O. Box 41

Lycoming, New York 13093

Facility Name: J.A. FitzPatrick Nuclear Power Plant

Inspection At: Scriba, New York

Inspection Conducted: June 29 - July 31, 1984

Inspectors: L.T. Doerflein 8/28/84
L.T. Doerflein, Senior Resident Inspector date

W.J. Lazarus 8/30/84
W.J. Lazarus, Project Engineer date

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Approved by: S.J. Collins 8/30/84
S.J. Collins, Chief, Reactor Projects Section 2C date

Inspection Summary:

Inspection on June 29-July 31, 1984 (Report No. 50-333/84-15)

Areas Inspected: Routine and reactive inspection during day and backshift hours by one resident inspector and one region-based inspector (66 hours) of licensee action on previous inspection findings, licensee event report review, operational safety verification, followup on licensee event, review of licensee's maintenance program, surveillance observations, review of Shift Technical Advisor retraining, and review of periodic and special reports.

Results: No violations were identified in seven of eight areas inspected. Two violations were identified in one area (Failure to make the required notification following identification of degradation of primary containment integrity and failure to follow radiation protection procedures, details paragraph 5).

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DETAILS

1. Persons Contacted

- *R. Baker, Technical Services Superintendent
- R. Burns, Vice President, Nuclear Support-BWR
- T. Butler, Outage Coordinator
- *V. Childs, Senior Licensing Engineer
- R. Converse, Superintendent of Power
- M. Curling, Training Superintendent
- *W. Fernandez, Maintenance Superintendent
- *B. Gorman, Chemistry General Supervisor
- *H. Keith, Instrument and Control Superintendent
- *D. Lindsey, Assistant Operations Superintendent
- R. Liseno, Operations Superintendent
- *C. McNeill, Resident Manager
- E. Mulcahey, Radiological & Environmental Services Superintendent
- *R. Patch, Quality Assurance Superintendent
- T. Teifke, Security & Safety Superintendent

The inspector also interviewed other licensee personnel during this inspection including shift supervisors, administrative, operations, health physics, security, instrument and control, maintenance and contractor personnel.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Inspector Followup Item (333/83-29-01): The inspector reviewed the contractor's report on the analysis of the High Pressure Coolant Injection (HPCI) turbine stop valve stem failure and noted that the failure was due to a combination of 1) the presence of a zone in the stem surface that consisted of abnormal microstructure, intergranular attack and low hardness, 2) abnormally high axial tensile loads, and 3) the stress concentration effects of sharp fillets at the point of failure. As noted in paragraph 5.d. of inspection report 50-333/84-08, the licensee was investigating the cause of the excessive tensile stress when cracks were again discovered in the HPCI turbine stop valve stem. The licensee subsequently determined that the stop valve balance chamber pressure adjustment was low, causing the steam forces under the stop valve main disc to catapult the valve full open on a turbine quick start. The abnormally high forces associated with this type of opening resulted in the damage to the stop valve stem. General Electric had issued Service Information Letter (SIL) No. 352, "HPCI Turbine Stop Valve Steam Balance Chamber Pressure Adjustment" on February 18, 1981, to warn of potential stop valve damage with improperly adjusted balance chamber pressures, however, the licensee had not yet acted on the SIL. The licensee has since replaced the HPCI turbine stop valve stem and properly adjusted the steam balance chamber pressure. The licensee has revised LER 83-49 to include the information noted above. The licensee also stated that a copy of the failure analysis would be sent to the Terry Steam Turbine Company to review and identify any possible generic deficiencies with the design or manufacture of the stop valve stem.

3. Licensee Event Report (LER) Review

The inspector reviewed LER's to verify that the details of the events were clearly reported. The inspector determined that: reporting requirements had been met; the report was adequate to assess the event; the cause appeared accurate and was supported by details; corrective actions appeared appropriate to correct the cause; the form was complete, and generic applicability to other plants was not in question.

LER's 84-013* and 84-014* were reviewed.

*LER's selected for onsite followup.

LER 84-013 reported a reactor trip during a startup due to high reactor pressure. The high reactor pressure resulted when the turbine bypass valves failed closed during the startup of the main turbine. Details of this event are described in paragraph 8. of inspection report 50-333/84-12.

LER 84-014 reported a violation of primary containment. Details of this event are described in paragraph 5. of this report.

4. Operational Safety Verification

a. Control Room Observations

Daily, the inspectors verified selected plant parameters and equipment availability to ensure compliance with limiting conditions for operation of the plant Technical Specifications. Selected lit annunciators were discussed with control room operators to verify that the reasons for them were understood and corrective action, if required, was being taken. The inspectors observed shift turnovers biweekly to ensure proper control room and shift manning. The inspectors directly observed the operations listed below to ensure adherence to approved procedures:

- Routine Power Operation
- Issuance of RWP's and Work Request/Event/Deficiency forms

No violations were identified.

b. Shift Logs and Operating Records

Selected shift logs and operating records were reviewed to obtain information on plant problems and operations, detect changes and trends in performance, detect possible conflicts with Technical Specifications or regulatory requirements, determine that records are being maintained and reviewed as required, and assess the effectiveness of the communications provided by the logs.

No violations were identified.

c. Plant Tours

During the inspection period, the inspectors made observations and conducted tours of the plant. During the plant tours, the inspectors conducted a visual inspection of selected piping between containment and the isolation valves for leakage or leakage paths. This included verification that manual valves were shut, capped and locked when required and that motor operated valves were not mechanically blocked. The inspectors also checked fire protection, housekeeping/cleanliness, radiation protection, and physical security conditions to ensure compliance with plant procedures and regulatory requirements.

No violations were identified.

d. Emergency System Operability

The inspector verified operability of the following systems by ensuring that each accessible valve in the primary flow path was in the correct position, by confirming that power supplies and breakers were properly aligned for components that must activate upon an initiation signal, and by visual inspection of the major components for leakage and other conditions which might prevent fulfillment of their functional requirements.

- Emergency Diesel Generator Fuel Oil and Air Start Systems
- Fire Protection Water System
- 125V DC Power System

No violations were identified.

5. Followup on Licensee Event

At approximately 12:00 p.m. on June 23, 1984, during a scheduled reactor shutdown, the licensee degraded primary containment integrity when the inner and outer drywell entry hatch doors were open simultaneously, for about three minutes total, during a series of personnel entries and exits. At the time of the event the average reactor coolant temperature was approximately 450°F and reactor pressure was approximately 600 psig.

Prior to the event, two Health Physics technicians wearing "SCOTT" portable air breathing equipment had entered the primary containment for the initial radiological survey. During the entry no lighting was available in the airlock which exists between the inner and outer hatch doors. After a short time, one of the technicians had to leave containment when his air equipment alarm bell rang. The technician was unaware that, during his exit, the inner airlock door apparently had bounced slightly open and when the locking plate was moved to the locked position, it held the inner door ajar about 4 to 6 inches, while allowing the mechanical interlock to be met and the outer door to be opened. As the technician exited the airlock a licensed operator, who was also wearing portable air breathing equipment and was entering the containment to perform an inspection, entered the airlock and shut the outer door. The operator then entered containment by pushing the inner door, being held ajar by the locking plate, inward which provided enough movement to allow the operator to pass through. When their respective air equipment alarm

bells rang, the second technician and the operator separately exited the containment by pulling the inner air lock door inward, slipping by the door, and then opening the outer door while the inner door was still ajar. The licensee estimated that each containment entry and exit for which the inner door was ajar while the outer door was open lasted approximately one minute, for a total of three minutes. The operator, who exited containment last, shut but did not lock the outer air lock door. He then informed the control room of the problems with the air lock doors and another operator was dispatched who locked the outer door within about five minutes. The inspector noted that although licensee management was aware of the degradation of primary containment integrity, the licensee did not notify the NRC Operations Center of the event. This is a violation of 10 CFR 50.72(b)(2)(iii)(D) which requires that the NRC be notified, via the Emergency Notification System, as soon as practical and in all cases within four hours of the occurrence of any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident (333/84-15-01). Technical Specifications (TS) require that when primary containment is required, (the reactor is critical or reactor water temperature is greater than 212 degrees F) that at least one door in each airlock be closed and sealed. However, TS 3.7.A.8a states that, if primary containment cannot be maintained, an orderly shutdown be initiated and the reactor be in a cold condition within twenty four hours. Since the licensee was already in the process of shutting down at the time of the event for other reasons (all rods were full in by 12:30 p.m.) and the reactor water temperature was less than 212 degrees F by 8:00 p.m., the TS action statement was satisfied and the breach of primary containment integrity was technically not a violation of the Technical Specifications.

The inspector discussed the breach of primary containment integrity with the personnel involved and attended the licensee's critique of the event. Based on his review, the inspector determined that the event was caused by a failure of the personnel involved to recognize that primary containment integrity was required at the existing plant conditions, and a mechanical failure of the interlock designed to prevent this occurrence. The failure to recognize that containment integrity was required and was in a degraded condition during this event raises concerns over the adequacy of personnel training which the licensee has been requested to address in his response to this inspection report.

During his review the inspector also noted that the operator who entered the primary containment utilized an Extended Radiation Work Permit (RWP). Extended RWPs, are used for routine or repetitive functions throughout the plant. The inspector pointed out to the licensee that an initial containment entry in "SCOTT" portable air breathing equipment while control rods were being inserted was not a routine function. Section 2.2.5, Guide to Issuing RWPs, of "Radiation Protection Procedures," Revision 6, dated June 9, 1982, requires that only Special RWPs be issued for areas where the radiation and contamination levels are unknown. Since the operator entered the primary containment while the initial radiological surveys were in progress, the containment was an unknown area and a Special RWP was required for entry. The inspector informed the licensee that failure of the operator to use a Special RWP for his containment entry was a violation of Section 2.2.5 of the Radiation Protection Procedures (333/84-15-02). Based on his review, the inspector determined that the operator adhered to all appropriate radiological protection practices during the containment entry.

6. Review of Licensee's Maintenance Program

The inspector reviewed the licensee's maintenance program to determine whether:

- equipment failures are evaluated for frequency and root causes;
- maintenance errors are detected, evaluated, and corrected; and
- licensee records are organized in such a way to support the above evaluations.

a. Licensee Evaluation of Failures

The inspection involved a review of licensee Work Requests, Occurrence Reports (OR's), Licensee Event Reports (LER's), equipment history records, and associated administrative procedures. The principle purpose of this review was to determine whether there was any indication of repetitive failures of equipment, and if so, whether the licensee properly evaluated the failures and corrected the root cause. Examples of repetitive failures identified were:

- Main Steam Line Radiation Monitor setpoint drift
- Emergency Service Water (ESW) Pump breakers inoperable
- High Pressure Coolant Injection (HPCI) Stop Valve stem cracks
- HPCI Reactor High Water Level Switch trip setpoint drift
- Residual Heat Removal Pump discharge check valve failures
- Main Steam Line Low Pressure Switch setpoint drift
- Drywell Hydrogen and Oxygen Analyzers inoperable

In each of the above cases the licensee has identified the repetitive nature of the failures, and has taken or is taking appropriate action to correct the root cause. However, there is no programmatic review of Occurrence Reports (from which LER's and Work Requests are generated) to evaluate the occurrence as to whether it represents a repetitive failure. In the case of the Main Steam Line Radiation Monitor setpoint drift, 21 Occurrence Reports (and 3 LER's) were written before the Plant Operating Review Committee (PORC) Chairman ordered an evaluation. That evaluation was completed in January, 1984, and resulted in making several changes to the calibration procedure to prevent recurrence of this problem. The PORC is tasked with reviewing OR's to determine if an LER is required. Review of the repetitive nature of OR's at this level would also be appropriate to more promptly identify this type of problem. The licensee stated that he would review this matter and determine how to screen OR's for repetitive failures. The inspector will examine the results of this review during a subsequent inspection (333/84-15-03).

b. Maintenance of Equipment History

One of the primary reasons for the above described lack of promptness in identifying and correcting the root cause of repetitive failures is that there is no rigorous maintenance/analysis of equipment history. The Instrument and Control Department maintains data concerning "as found" settings for each instrument in the calibration program. If routinely reviewed, this data would provide timely information indicative of instrument aging or failure. Presently data is only reviewed in the event of questions regarding a particular instrument. Equipment history for mechanical and electrical components is primarily maintained (for safety-related equipment) by the Nuclear Plant Reliability Data System (NPRDS). Information relative to component reliability can be retrieved for the limited number of components for which data

is recorded. The licensee has recognized the limitations of their present systems of monitoring equipment reliability and have begun installation of a Computer Operated Material Management System (COMMS), which is discussed in 6.d. below.

c. Identification and Evaluation of Maintenance Errors

Two of the LER's reviewed attributed the cause of the occurrence to be personnel error/procedural inadequacy during maintenance. These occurrences concerned:

- improper adjustment of ESW pump breaker overcurrent trip devices, which made the ESW pump inoperable, and
- calibration of the turbine speed indication on the Reactor Core Isolation Cooling System turbine instead of the HPCI turbine; resulting in both systems being inoperable simultaneously.

In both cases, management identified the errors and took prompt action to correct the root cause. No inadequacies were identified in this area.

d. Computer Operated Materials Management System (COMMS)

To correct the identified deficiencies of their present system for monitoring equipment history and trending, and to improve control of maintenance, the licensee is in the process of installing a system known as the Computer Operated Materials Management System which will consist of a large component identification data base, and will be used for inventory/procurement of parts, scheduling of preventive maintenance, issuance of work requests, and maintenance of equipment history for trending purposes. The compilation of the component data base is nearing completion, and the licensee expects to be able to use the system for preventive maintenance scheduling by the end of this year, and to have the system fully operational in about two years. The inspector will continue to follow the implementation of this system.

7. Surveillance Observations

The inspector observed portions of the surveillance procedures listed below to verify that the test instrumentation was properly calibrated, approved procedures were used, the work was performed by qualified personnel, limiting conditions for operation were met, and the system was correctly restored following the testing:

- F-ISP-3, Reactor High/Low Water Level Instrument Functional Test/ Calibration, Revision 10, dated August 3, 1983, performed July 2, 1984.
- F-ISP-64-1, Main Steam Radiation Monitor Instrument Calibration, Revision 13, dated May 23, 1984, performed July 5, 1984.

- F-IMP-17.5, Main Control Room Air Supply Radiation Monitor Functional Test/Calibration, Revision 4, dated June 6, 1984, performed July 31, 1984.

During the performance of F-IMP-17.5 the technicians noted discrepancies between the procedure and the data sheet. The inspector noted that the two technicians stopped testing and had the typographical errors on the data sheet corrected by their supervisor prior to resuming the calibration. The inspector also noted that this was the first time this calibration had been performed since the procedure was revised in June 1984. The licensee stated that he would initiate a procedural revision to correct the data sheet. The inspector had no further questions regarding this calibration.

No violations were identified.

8. Shift Technical Advisor Retraining

The inspector selected and examined the training records of twelve Shift Technical Advisors (STA's) and verified that they received retraining in accordance with Indoctrination and Training Procedure (ITP) No. 16, "Qualification and Training for Shift Technical Advisors," Revision 2, dated August 30, 1983. During this review, the inspector noted that the one STA who failed to meet the overall exam average requirement had a waiver, written by the Technical Services Superintendent and approved by the Resident Manager, to allow him to perform duties as a STA. The inspector determined that this was acceptable with respect to procedure ITP-16.

No violations were identified.

9. Review of Periodic and Special Reports

Upon receipt, the inspector reviewed periodic and special reports. The review included the following: Inclusion of information required by the NRC; test results and/or supporting information consistent with design predictions and performance specifications; planned corrective action for resolution of problems, and reportability and validity of report information. The following periodic report was reviewed:

- June 1984 Operating Status Report, dated July 9, 1984.

10. Exit Interview

At periodic intervals during the course of this inspection, meetings were held with senior facility management to discuss inspection scope and findings. On August 1, 1984, the inspector met with licensee representatives (denoted in paragraph 1) and summarized the scope and findings of the inspection as they are described in this report.