

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-333/92-02

Docket No. 50-333

License No. DPR-59

Licensee: New York Power Authority

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection At: Scriba, New York

Inspection Conducted: January 13-23, 1992

Inspectors: A. E. Lopez-Goldberg, Reactor Engineer

Leonard J. Privity
Leonard J. Privity, Sr. Reactor Engineer,
Systems Section, EB, DRS

2/26/92
date

Approved by: Jim Inapp For P. K. Eapen
Dr. P. K. Eapen, Chief, Systems Section,
Engineering Branch, DRS

2/26/92
date

Inspection Summary

Areas Inspected: The focus of this inspection was the control of design changes and modifications. Also included in the inspection scope were organization, engineering work backlog and the review of actions on previous NRC inspection findings.

Results: An unresolved item was opened in Section 2.0 to follow NYPA's corrective actions concerning a potential programmatic problem with the modification process. NYPA is taking prompt action to address this problem by agreeing to document and summarize by March 16, 1992, the results and the status of various actions taken for a comprehensive solution. Significant engineering organization changes have been made in 1991. It was apparent to the inspectors that NYPA was committed to provide the needed resources for their engineering organization in accordance with the Results Improvement Program goals for improving engineering performance.

1.0 Objective of the Inspection

A well implemented design change program is essential in order to assure that changes to the plant do not degrade safety systems, structures and components. The objective of the inspection was to determine if plant modifications conformed with the requirements of the plant technical specifications, 10CFR 50, the safety analysis report, the licensee's QA program and applicable modification and design control manual procedures. This objective was accomplished by an in-depth review of one modification (Section 2.0) and a review of several modifications (Section 4.0) in the closeout phase.

2.0 Design Changes and Modifications (37700)

Modification No. F1-88-204 - Replacement of Residual Heat Removal Service Water (RHRSW) and Emergency Service Water (ESW) Strainers

This modification was prepared to replace the existing RHRSW and ESW duplex strainers which are original plant equipment. The existing strainers were becoming frequent maintenance items due to corrosion of the strainer body and baskets, plus deterioration of the internal epoxy lining. The new strainers were scheduled for installation during the current refueling outage.

Several aspects concerning the development of this modification were reviewed. The following items were discussed with various licensee engineering personnel:

1. the strainer equipment specification,
2. the preparation of the modification package, and
3. the modification installation and testing requirements.

Strainer procurement specification JAF-SPEC-RHRSW/ESW-00070 served as the technical basis for the procurement of the RHRSW and ESW strainers. It was prepared in accordance with the licensee's design control manual (DCM) procedures. In general, the inspector found that the specification comprehensively described the design, fabrication, and testing requirements applicable for strainer manufacture and assembly. For example, the specification included the applicable seismic design requirements, the intended pathway for strainer installation into the RHRSW and ESW pump rooms, and the requirements for the inlet and outlet valves needed for flow control.

The strainer purchase order was placed in early 1991 with a scheduled delivery date of August 31, 1991. This initial planning was appropriate for support of outage activities. However, due to procurement coordination problems, the strainers were not yet on site. The main problem involved the supply of the butterfly valves which serve as inlet isolation valves to each strainer chamber. For this procurement NYPA

had directed its supplier to provide these valves as commercial grade equipment. NYPA had decided that they would qualify them as safety related equipment for ESW and RHRSW system use. However, NYPA later determined that this valve qualification process was not feasible. This series of events caused NYPA to cancel implementation of this modification during the current outage. A new modification that was not previously planned would now be required to upgrade the original strainer bodies, including the procurement of new strainer elements. This new modification had just been initiated.

The inspector identified additional concerns regarding NYPA's engineering performance for this modification. The first concern involved the implementation of an ingress installation requirement included in NYPA Specification JAF-SPEC-RHRSW/ESW-00070, so that the strainers could be installed into the RHRSW/ESW pump rooms via the 3' x 7' doorway. However, a review of the strainer manufacturer's detail drawings by the inspector and NYPA's cognizant design engineer indicated that the strainer assembly may not fit through this installation pathway. Further NYPA review was necessary to assess the constructability aspects of utilizing the 3' x 7' doorway or a 4' x 4' pump hatchway. A second inspector concern involved NYPA's error in not planning to include the strainer outlet check valves in their inservice testing (IST) program. NYPA attributed this error to weak communication by the cognizant design engineer and weakness in the original modification manual (MCM) procedure, MCM-3, "Modification Package Preparation, Review and Approval," which did not require an IST program review/approval signoff for the modification package. Modification F1-88-204 was issued per the guidance of the original MCM-3 procedure. The current MCM-3, Revision 1 procedure requires an IST program review/approval signoff during the modification package review process.

Although the above concerns and problems are related to one modification, the inspector noted that broader modification program problems may exist. Furthermore, the probable root causes for these concerns and problems were weaknesses in technical oversight, planning/scheduling and communication and teamwork. These and other weaknesses had recently been identified by an NRC diagnostic evaluation team inspection and NYPA's Results Improvement Program as root causes for declining performance at FitzPatrick. At the exit interview on January 17, 1992, NYPA agreed to promptly inform the inspector concerning a plan of action for responding to the above concerns and problems. During a telecon on January 23, 1992, NYPA's design engineering manager informed the inspector of NYPA's preliminary conclusions resulting from their review of seven 1992 refueling outage modifications as follows:

1. Specific checks concerning ISI/IST program reviews need to be included in NYPA's Design Control Manual (DCM), Procedure 13, "Conduct of Engineering."
2. Training for NYPA design and project engineering personnel is needed to ensure that ISI and IST program issues are properly addressed during the modification process.

Furthermore, NYPA's design engineering manager identified the following action items and completion dates to provide a comprehensive solution:

1. Review approximately 5 additional 1992 refueling outage modifications to ensure that issues identified during this inspection, including any impacted programmatic areas, are properly addressed. NYPA intends to complete this review by February 7, 1992.
2. Review a sample of Category I, 1990 refueling outage modifications to ensure that the ISI and IST program issues are properly addressed. NYPA intends to complete this review by February 22, 1992.
3. Revise DCM-13 to strengthen the ISI and IST program reviews. NYPA intends to complete this item by June 25, 1992.
4. Revise modification F1-88-204 to resolve the problems and concerns identified during this inspection. NYPA intends to complete this revision by February 15, 1992.
5. Conduct training of NYPA design and project engineering personnel concerning ISI and IST program issues and their impact in the modification process. NYPA intends to complete this training in accordance with NYPA's Results Improvement Program schedule.
6. NYPA will document and summarize the results and status of the above actions in a letter to NRC, Region I by March 16, 1992.

This item is unresolved pending satisfactory completion of the above action items by NYPA and subsequent NRC review of these corrective actions (URI 50-333/92-02-01).

In conclusion, NYPA was taking prompt corrective actions to satisfactorily resolve the inspector's concerns. Based on an initial review of seven 1992 refueling outage modifications, the safety significance associated with these concerns was minor since no immediate plant hardware issues were identified. Also, NYPA had identified other long-term action items to provide a comprehensive solution.

3.0 Engineering Organization and Staffing

As a result of a nuclear generation department staffing study conducted for NYPA by an independent contractor, significant engineering organizational changes have been made in 1991. These changes involved additional staff and engineering reorganization with the most significant changes affecting the site engineering group (SEG). The intent of the engineering reorganization was to align the onsite technical services department such that it would be less involved with the modification process details and hence more responsive to the daily operational needs of the plant.

These changes necessitated a major expansion in mid-1991 of the previous SEG which consisted then of about six field engineers. The new SEG was expanded to include four sections -- field engineering, mechanical/electrical engineering, electrical/I&C engineering and plant drawings. All personnel are located onsite. Each section supervisor reports to the SEG manager who reports to the director of project engineering at NYPA's corporate office.

The SEG manager is familiar with the modification process, having served as the electrical/I&C supervisor in the previous technical services department alignment. The inspector discussed the current engineering organization with the SEG manager. Also, the inspector observed the interaction of various engineering personnel at the periodic meeting held with all plant working groups to discuss significant engineering issues. While it is premature to assess the impact of the engineering organizational changes, the SEG manager noted that other measures in addition to permanent staff are being taken to improve NYPA's engineering performance. For example, a contract was being negotiated to obtain engineering services for the performance of narrow scope items such as the execution of relatively simple modification work (e.g., material substitutions or closeout of minor modifications).

From the inspector's discussions with various personnel, it was apparent that NYPA was committed to provide the needed resources for improving its engineering performance consistent with the Results Improvement Program action items.

4.0 Engineering Work Backlog

4.1 Closeout of Complete Modifications

During a recent Diagnostic Evaluation Team inspection at FitzPatrick, the team identified a backlog of 550 installed modifications that were not closed out as complete, with approximately 514 installed more than a year ago.

In early 1992, the licensee formed a Modification Closeout Group (MCOG) which was comprised of 4 part-time personnel. They researched the Modification Status Data Base and found that there were approximately 447 modifications that were 100% installed under the pre-January 1, 1991 system [Work Activity Control Procedure (WACP) 10.1.6] and 133 modifications 100% installed under the post January 1, 1991 system [Modification Control Manual(MCM)-19], that were not closed out yet.

The MCOG cited that the reasons for the backlog were the following:

- a. lack of NYPA management attention and priority,
- b. lack of resources,
- c. no formal schedule for a plan to complete the modifications, and
- d. modification responsible engineers leaving or reassigned to other projects.

NYPA management has recognized these problems and has placed a heightened priority to the modification closeout process. They will add the modification close out backlog to their Management Goals and Performance Indicators, P50-36, by March 2, 1992, to aid in their follow-up.

On a part-time basis, the MCOG has made reasonable progress by closing out approximately 98 WACP modifications and 46 MCM-19 modifications. Beginning February 2, 1992, the MCOG will add three full-time members, and have 4 full-time/part-time members and one supervisor. The MCOG has developed a schedule to complete all of the WACP modification backlog by July 1, 1993; to close out all of the MCM-19 modifications installed prior to the 1992 refueling outage by July 1992; and to close out all modifications installed during the 1992 refueling outage within 60 days after the end of the outage.

The inspectors sampled two 100% installed modifications: Modification M1-89-008, a minor modification that provides a permanent filter/regulator and lubricator for the air supply to the 33AOV-D-1 valve; and modification F1-88-116, a major modification that provides a means of connecting and manually valving in a flow path for venting the control rod drive mechanism vent discharge into the reactor building drain system. These modifications were found to be complete and consistent with the station procedures. No unacceptable items were identified.

4.2 Engineering Work Requests (EWR)

At Fitzpatrick, EWRs are a part of the regular work request (WR) system. However, they are a unique subset of the regular WR system since they generally involve only engineering work and do not directly involve any plant hardware work. The EWRs represent a significant block of engineering work which should be planned, scheduled and executed in the short and long term within the engineering organization.

The EWR backlog had increased in 1990 from 100 to 440 open EWRs. The inspector determined that the EWR backlog at the end of 1991 was slightly less (about 415) than the 1990 year backlog. Also, inspector discussions with the licensee's technical services and SEG managers and their personnel indicated that the open EWRs were appropriately assigned for action.

The inspector reviewed for safety significance a random sample of 12 EWRs in three safety related systems. The inspector had certain comments on two of these EWRs. EWR 73281 had been initiated in May 1990, by maintenance personnel to perform a safety evaluation concerning disassembly of 24-inch, gate valve 10RHR-81B. This evaluation would be needed for the current outage to support safe rigging of heavy loads associated with the valve disassembly and repair. The inspector determined that this engineering work had not yet begun. The second item involved EWR 88153. It identified the requirement to perform a root cause analysis concerning the emergency service water (ESW) system, LOOP A, keepfull check valve (46 ESW-40A) which failed its surveillance test (ST-8R) on November 19, 1991. The inspector determined that the technical services system engineering personnel had appropriately evaluated the immediate safety implications of the failure, including a change to the frequency for ST-8R from quarterly to every two weeks for both LOOP A and B keepfull check valves. Also, they were evaluating the long term corrective actions, including the completion of a root cause analysis. The status of the evaluations was well documented in engineering memorandum JSEM-91-077. In this memorandum the inspector noted a teamwork issue involving the implementation of the ESW keepfull system per modification M1-91-124. This modification had been completed during the last outage without fully incorporating a systems engineering recommendation to install manual valves upstream and downstream of the keepfull check valves. Such an installation would enable reverse flow testing as well as maintenance on these check valves without requiring a 24-hour LCO during plant operations. However, the downstream manual valves were not installed which will require a future modification.

No unacceptable items were identified.

5.0 Licensee's Action on Previously Identified Inspection Findings

5.1 (Closed) Violation 91-04-C1

This item involved NYPA's failure to implement certain intended actions contained in a safety evaluation concerning the weld repair in the pressure seal area of valve 13AOV-22. These intended actions included either the installation of a new valve during the 1990 refueling outage or the performance of a fatigue analysis to evaluate the effect of the additional stress concentration on the operating life of the valve. In a letter dated May 3, 1991, to the NRC, NYPA addressed the corrective actions taken to complete the prescribed actions addressed in the Safety Evaluation JAF-SE-88-019 and to prevent recurrence. The licensee stated that the fundamental cause of this violation was that the commitment was not tracked by JAF's Action Commitment Tracking System (ACTS).

As a corrective action, MCM-4, "Nuclear Safety and Environmental Evaluations," was revised. The inspector verified that this change now requires action items resulting from any safety evaluations to be included in ACTS. As a means of independent verification of the ACTS, an independent inspection of three licensee event reports (LERs) was conducted to ensure that the corrective actions were in the ACTS and being addressed. LERs 91-06, 91-013, and 91-018 were checked and the inspector found that all of the commitments were located in the ACTS and being acted upon. However, similar to an observation noted in a Diagnostic Evaluation Team (DET) inspection conducted in late 1991, it was cumbersome to track the status of all the corrective actions associated with LERs. To improve the tracking of action items, the licensee is planning to institute an Action Item Tracking System for the White Plains office, Indian Point 3, and FitzPatrick. This system is intended to supersede all of the current action tracking lists, and is scheduled to be fully operational by September 1, 1992.

This item is now closed.

6.0 Exit Meeting

At the close of the inspection on January 17, 1992, an exit meeting was conducted with the licensee's representatives (listed in Attachment A) to discuss the results of this inspection. Subsequent to the exit meeting, the inspector had a conference call with licensee representatives as noted in Section 2.0. During these discussions, the licensee did not identify that this inspection involved any proprietary material.

APPENDIX A

Persons Contacted

Licensee

- * M. Colomb, General Manager - Support Services
- * R. Converse, Resident Manager
- * T. Dougherty, Director - Project Engineering
- * J. Erkan, Supervisor - Field Engineering
- * T. Herrmann, Supervisor - Systems Engineering
- * S. Kohr, Senior Project Engineer
- * R. Liseno, General Manager - Operations
- * T. Moskalyk, Supervisor - Mechanical/Civil Engineering
- * D. Ruddy, Manager - Site Engineering
- * H. Salmon, Resident Manager - In Training
- * G. Tasick, Manager - Quality Assurance
- * K. Vehstedt, Manager - Technical Services

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- * W. Cook, Senior Resident Inspector - FitzPatrick
- * R. Plasse, Resident Inspector - FitzPatrick