U. S. NUCLEAR REGULATORY COMMISSION
REGION 1

DOCKET/REPORT NO: 50-333/95-13

LICENSEE: New York Power Authority (NYPA)
Lycoming, New York 13093

FACILITY NAME: James A. FitzPatrick Nuclear Power Plant (JAF)

DATES: July 10-14, 1995 & July 24-28, 1995

INSPECTORS: George W. Morris, Reactor Engineer

Fred L. Bower III, Reactor Engineer — Date 9/11/95
Systems Section
Division of Reactor Safety

APPROVED BY:

Eugene M. Kelly, Chief — Date 9/11/95
Systems Section
Division of Reactor Safety

Summary: Management oversight of the Results Improvement Program (RIP) was evident and progress has been made in closing RIP items. An Engineering Reorganization Plan was effective in aiding orderly transition from the previously centralized engineering to a de-centralized organization. There was a good interface between the Design Engineering and Technical Services (TS) groups, and measures have been instituted to ensure good communications and effective support to the plant. Technical Service's system engineering presentations were performed well, and provided plant management with a detailed system status.

Appropriate procedures exist to ensure that modifications and engineering services, developed by outside contract organizations, are reviewed by New York Power Authority (NYPA) staff before their use. The modification closeout process was adequate, and the selective use of post-modification critiques and planned use of multi-disciplined, multi-departmental modification teams were good initiatives. Effective actions are being taken to reduce the backlog of modifications exceeding the closeout timeliness goals. Good progress was also noted in reducing the overall number of temporary modifications (TMs) installed in the plant.

NYPA is effectively using insight from the JAF individual plant examination (IPE) regarding plant modifications and procedure changes. Management expectations for use of IPEs have been documented, and some recommendations have been implemented; however, many of these expectations have not been fully developed, and implementation has been both informal and sporadic. The development of 21 Design Basis Documents to date (14 in 1994) was considered good; however, failure to maintain the controlled document database up-to-date, to reflect the most current revisions of engineering documents, was designated an unresolved item (URI 50-293/95-013-01).

TABLE OF CONTENTS

DETAILS

1.0 INSPECTION SCOPE

The objective of this inspection was to continue an NRC evaluation of the effectiveness of the engineering and technical organizations at the New York Power Authority's (NYPA) J. A. FitzPatrick (JAF) site. This evaluation included reviews to verify: (1) the effectiveness of the design engineering and technical support organizations; (2) the adequacy of the modification closeout process; (3) the status of temporary modifications; (4) the effectiveness of the control of contractors; (5) the effectiveness of White Plains office support; (6) the status of Results Improvement Program (RIP) engineering issues; (7) the use of Individual Plant Examination (IPE) information; and (8) management involvement and oversight. This was accomplished by reviewing various engineering activities, plant modifications, technical work assignments and self-assessment documents, and discussing these reviews with NYPA personnel.

2.0 ENGINEERING AND TECHNICAL SUPPORT ORGANIZATIONS (37550)

The inspectors focused on the two organizations that provide onsite engineering support; the JAF Design Engineering organization and the Technical Services Department. During the evaluation, the inspector reviewed and assessed the following functions: communications; workload; backlog and prioritization; and performance indicators.

2.1 Organization

Design Engineering (DE)

The JAF Design Engineering organization is NYPA's onsite corporate design authority within the Nuclear Engineering Department (NED). An October 1993 evaluation of the Nuclear Engineering Department concluded that engineering support to the JAF plant could be improved by relocating most corporate engineering functions to the site. This recommendation was expected to take 2 to 3 years to implement. The internal structure of the former Site Engineering Department was realigned in late 1994 and NYPA adapted an transition organization that was structured like the final planned JAF Design Engineering organization. The realignment maintained the separate Mechanical/Civil and Electrical/I&C groups, and combined the drafting, field engineering functions, and planning and scheduling functions into one engineering support group. In NRC Report 95-05, it was noted that the transition of corporate personnel to the site would take longer than the June 1995 schedule originally anticipated.

During this inspection the inspectors observed that the Design Engineering organization was stable with all directors, managers and supervisors in place. NYPA's realignment of both the on-site and White Plains Office (WPO) engineering staffs to JAF Design Engineering and a partial relocation of the WPO engineering personnel assigned to JAF was completed by June 1995. The final relocation of the remaining WPO design engineering staff reassigned to JAF is scheduled for July 1996. All design staff now report to a supervisor at the site, but some of the engi ers currently located at the WPO have been granted an extension to actually delay moving until next year. This affects

approximately 16 of the 78 design engineering personnel assigned to JAF. Almost all the design engineering personnel were direct NYPA employees, with the number of contractors declining steadily. The WPO will continue to maintain a technical staff which supports engineering programs common to both JAF and Indian Point 3 (IP3). There were approximately 74 full-time NYPA employees in these shared groups. The JAF Design Engineering organization was functioning as the responsible design organization and a positive working attitude was evident.

The functional responsibilities defined in Nuclear Administrative Procedure (NuAP)-3.7, "Delineation of Engineering Responsibilities," Revision 1, dated May 8, 1995, for all the organizations that perform engineering activities, has been updated to reflect the transition of corporate activities to the site. Nuclear Engineering Reorganization Transition Action Plan PEP-APL-95-021 is a management tool that has been used effectively to aid in the orderly transition from the previous centralized Nuclear Engineering Division to a de-centralized organization. The use of action plans is discussed further in Section 9.4.

Technical Services (TS)

The TS Department is the plant engineering organization that provides the daily technical assistance for emergent plant problems. TS is also the site focal point for prioritizing engineering work and determining if modifications proposals warrant further evaluation toward modification development. Currently, the TS part of the site operations organization and the TS manager reports to the General Manager, Operations. A major component of the TS Department is the system engineering group. Additionally, the TS Department contains the lead reactor analyst, technical programs and administrative support, and support groups for fire protection, preventive maintenance engineering, and the site interface with the General Electric Company.

The Technical Services (TS) staffing levels were reviewed, and as of this inspection, the department staffing included 9 managers or supervisors and 34 technical personnel. There are currently 23 system engineers in the TS Department, with an average of 3 to 4 systems per engineer. No system engineer has responsibility for more than 5 systems.

2.2 Communications

The inspectors observed various engineering and interdepartmental meetings at both the JAF site and at the WPO. At the White Plains Office, the Vice-President, Nuclear Engineering, meets every morning with his Directors and key staff in the WPO to review important matters that affect engineering and technical support. In the absence of the Vice-President, the meeting is scheduled among the Directors. Daily phone calls are conducted with the Engineering Directors at both sites. Periodically, the site Engineering Directors come to the WPO to attend the daily management meetings.

Both TS and DE were noted to be active participants in the daily site department managers' meeting, which included a review of the plant status, daily priorities, actions items, Deficiency/Event Reports (DERs), industry information, and outage concerns. A weekly Outage Planning meeting reviews the modifications planned for the next refueling outage. This meeting is attended by representatives from all plant departments. The status of the most significant technical issues facing the plant are reviewed at the monthly engineering meeting. The meeting is chaired by the Site Executive Officer and attended by engineering management from both the site and WPO. An agenda is published prior to the meeting identifying the technical issues to be discussed and the individual responsible for the presentation. Monthly Engineering Quality Review Team (EQRT) meetings are also held at each site. The purpose of these meetings is to identify problems with engineering products and propose solutions. The EQRTs are discussed further in report Section 9.2.

The DE and TS staffs are co-located within the same office space. During this inspection period, the communications and interface between these two engineering groups appeared to be excellent. The inspectors concluded that DE and TS maintain daily contact with other site groups, and measures have been instituted to ensure good communications and effective support to the plant. Regular communications are also maintained between the site and the corporate office. Management oversight and direct involvement at all levels in the engineering groups were observed.

2.3 Workload, Prioritization, and Backlog

Design Engineering

Design Engineering addresses and prioritizes its tasks based on two major areas: Action Commitment Tracking System (ACTS) items and plant-defined major tasks. In order to maintain its focus on these long-term commitments, DE was organized around three sections. Two sections, the Electrical/I&C and the Mechanical/Civil sections address longer-term tasks and the Plant Support group in the Engineering Support section initially addresses the emergent design basis items required to support plant operations.

Previous efforts to reduce the large backlog of plant equipment and engineering discrepancies had required significant engineering resources, and made it difficult to complete all engineering preparations for outage modifications. This inspection identified the following NYPA actions, which have the potential to address this concern: (a) Refueling Outage 12 (RFO-12, October 1996) goals and a milestone plan has been issued; (b) the RFO-12 modification list is scheduled for approval by October 1, 1995, 1 year before the start of the outage; and (c) NYPA plans to prioritize their outstanding work and limit to 20 the number of modifications implemented during outages.

The Director of Design Engineering, through his Design Engineering Support group, is in the process of developing detailed multi-level scheduling tools to aid the engineering managers and supervisors planning and controlling the engineering efforts. Action Plan JSED-APL-95-011, "Improving Design Engineering Work Management," dated June 27, 1995, describes this initiative.

The goals of this project are to develop a resource-loaded schedule with cost controls that will enable proper ranking of work and will provide status reports and performance indicators. The milestones for this action plan call for having a resource-loaded schedule by August 31, 1995, and for having accurate and up-to-date management information reports available by October 31, 1995. The inspectors considered the engineering work controls project a potentially significant improvement of management controls.

Technical Services

Procedure TSSO-23, "Technical Services Work Management," Revision 0, dated September 27, 1994, defines the requirements for management, prioritization, tracking and reporting of TS work activities. The Technical Services Tracking (TST) system is a tool to plan and set priorities, develop a resource-loaded schedule to forecast individual workloads to determine if deadlines are realistic, and to communicate workload tasks within TS. The inspectors discussed the implementation of the TST system with several TS supervisors and engineers. Implementation varied slightly among groups, but typically, the engineers are responsible for managing their individual workload in TST. The engineers then meet with their supervisor weekly, or on some other established periodicity, to discuss the workload and set priorities. Graphical reports of trends of outstanding work in the TST database have also been developed for use as performance indicators. The inspectors noted that items are continuing to be worked off faster than the new work items that are added. Technical Services has effectively implemented the TST system to manage the TS workload.

Technical Services and the system engineers also have the lead in the initial screening and prioritization of engineering work in accordance with JAF Administrative Procedure AP-10.07, "Engineering Work Prioritization and Planning," Revision 0, dated May 13, 1994. Using a screening form from AP-10.07, the system engineer screens proposed modifications to determine whether they have a potential impact on public safety, personnel safety, regulatory compliance, plant availability and/or economic performance. Potential public safety impacts include those items that could reduce or remove: operator work-arounds, control room deficiencies, and challenges to safety systems. If the proposed modification passes the initial screening, then it is subjected to a more in-depth benefit/risk review that is used to prioritize engineering tasks. Currently, JAF is attempting to schedule the next 5 years of outage and non-outage work and modifications. Plans are to cancel low priority work that cannot be scheduled within the next 5 years. NYPA has recently expressed a need to limit the number of modifications installed in each outage (to approximately 20) and will continue to use need and benefit evaluations, economic payback, and safety benefits for setting the priorities for modifications.

2.4 Performance Indicators (PIs)

Design Engineering

JAF Design Engineering currently issued a monthly report of performance indicators that includes trends in the number of open and backlogged modifications, and the number and trends in modification closeouts, engineering work requests, document change requests, and engineering change requests. At the beginning of the 1994-95 refueling outage, the trends in these areas all showed a decrease in the size of Design Engineering's workload over the previous year. During this inspection period, the inspectors noted that DE continues to issue the same monthly report of performance indicators. With few exceptions, the trend of these performance indicators is generally level or trending slightly downward.

DE has begun development of new performance indicators. One of these was the Action Commitment Tracking System (ACTS) that was begun in June 1995. The ACTS PI provides a weekly status for: (1) cumulative (total open, median age, oldest); (2) per period (closed, new, extended, overdue); (3) forecast (3-week look ahead, 6-month due date distribution); and (4) overdue assessment (by week and quarter). The inspectors reviewed several of these status reports and noted that the number of outstanding ACTS items for each DE group was on a level trend. Although the oldest ACTS item was approximately 4 years old, DE was close (approximately 128 days) to its median goal of 120 days. The inspectors also noted that the trend of overdue ACTS items has been downward; however, the number of ACTS items with extended due dates has not been trended and the number of extensions was consistently greater than the number of ACTS items closed out. The inspectors concluded that this new performance indicator has the potential to be beneficial; however, the new ACTS performance indicator is too new to assess its effectiveness.

The status of engineering work requests (and their work-off ratio) is also trended. The work-off ratio is based on the size of the backlog relative to the number of work requests closed. A goal for a work-off ratio of less than 2 months has been established for JAF. The performance indicator report for June 1995 documented a total backlog of 441 and a backlog work-off ratio of 4.3 months. The work-off ratio is currently on a downward trend; however, the year-end projected work-off ratio for JAF engineering was 6.3 months.

Technical Services

The TS Department workload consisted mainly of Action Commitment Tracking System (ACTS) items, Design Change Requests (DCRs), Reliable On-line Maintenance (ROME) items. These items, as well as completed Component Quality Classifications, Temporary Modification Reviews, Operability Reviews, Equipment Failure Evaluations, and Engineering Qualification Cards are reported on the Technical Services Department Performance Indicators Report periodically.

NRC IR 94-24 reported a workload that consisted of a total of 549 work items, as identified by the TS Department performance indicators for the period ending October 15, 1994. The TS Department received 440 new work items since August 15, 1994, while 397 items were closed. Overdue items had been reduced drastically from 397 items on September 30, 1993, to 12 on October 15, 1994. During this inspection period, the inspectors reviewed the two TS Department performance indicator reports issued between October 15, 1994, and June 15, 1995, noted that the current TS workload consisted of a total of 515 work items. During this period, the TS Department received 1539 new work items (between October 15, 1994, and June 15, 1995) while 1605 items were closed. TS had 11 overdue items during this 8-month period ending on June 15, 1995. Based on these performance indicators, the inspectors considered that the TS Department were effectively managing their work load.

3.0 MODIFICATION CLOSEOUT PROCESS (37550)

Modification turnover and closeout are governed by Modification Control Procedure MCM-19, "Modification Turnover and Closeout," Revision 4, dated October 19, 1994. The procedure utilizes two forms to track turnover and closeout, respectively. Attachment 4.1 to MCM-19, the "Modification Turnover Document" (MTD) identifies any requirements or limitations from the installer, operations, training, or engineering. This insures that the installation is complete, procedures have been changed, operator training is complete and Type A control room drawings have been redlined prior to the modification being turned over for operation. Attachment 4.2 of MCM-19, the "Modification Closeout Checklist" (MCC) provides a list of 57 items that must be addressed before a modification can be closed out, including: procedure and design document updates, FSAR updates, Plant Equipment Database updates, simulator and training program updates, and program updates.

DE is developing a modification status database maintenance and retrieval system to aid in tracking modifications through closeout. The goal is to have no modification closeouts over 60 days old. As of July 25, 1995, there were 55 modifications that were still open past the 60-day goal. Of these, 9 modifications had been installed prior to December 1993. This was a reduction from a high of 113 just after the recent refueling outage in April 1995. Approximately 14 major and 28 minor mods were installed during the last refueling outage. The inspectors reviewed the closeout status of three of those modifications. All three modifications had been turned over to operations. Although not a formal or proceduralized process, modification critiques are performed on some modifications in accordance with a DE standing order. For the three modifications reviewed, a modification critique had been performed on one (modification M1-87-069), and a second (F1-92-377) had been prepared but not yet approved.

3.1 Major Modifications

F1-92-377, Control Room/Relay Room CO_2 and HVAC System

This contractor-developed modification changed the relay room CO_2 vent path so that the required gas concentration will be maintained throughout the room during CO_2 discharge. It also provided for isolation of the relay room HVAC system during CO_2 discharge to prevent entrainment into the control room.

Previous NRC inspections noted that this modification was designed by an outside organization and encountered many problems during the installation. As of the last NRC engineering inspection (IR 95-05), a total of 4 DERs and 44 ECNs had been written against the modification package, mostly during the ISEG and QA audits in January 1995. Two DERs reported conditions adverse to quality and the 44 ECNs included 146 detailed items. Of these, one represented a "design error," eleven represented "inadequate design detail," and ten represented "inadequate walkdown/constructability reviews." Most of the remaining items were administrative in nature, and were attributed to personnel error; however, they all related to the technical content and quality of the modification package.

As of this inspection, this modification had been turned over, but not closed out. The post-modification critique indicated that 55 ECNs were required, with 23 design items and 62 construction-related items. NYPA's identification of the need to review the modification process - because of the problems experienced with this CO_2 design change - is discussed in Section 5.0.

3.2 Minor Modifications

M1-87-069, Emergency Diesel Generator (EDG) Air Start Solenoid-Operated Valve (SOV) Filters

Modification M1-87-069 was installed in the EDG air start system because several air start solenoid valves had stuck open due to the presence of rust particles. Failure of these valves can cause internal damage to the air start motor pinion gears. The modification added stainless steel filters, bypass check valves, and associated tubing to the air start solenoid valve supply lines. The use of stainless steel components avoided the replacement of major carbon steel components in the system such as accumulator tanks and piping.

The modification critique for this modification documented problems with the modification and the number of ECNs required to complete the installation. Although the body of the critique identified the problems and recommended corrective actions, none had been documented in the "Recommendations" section at the back of the critique. NYPA agreed that this was a weakness with the review and approval of this critique. The inspectors reviewed four additional modification critique forms and found no other examples of this weakness.

M1-88-238, Cross Connect from the Fire Protection (FP) Header to the Emergency Service Water (ESW) Supply to the Emergency Diesel Generators (EDGs).

This modification installed a removable cross-connection from the main FP header to the ESW supply to the EDGs. The modification provides a beyond design basis alternate means to supply cooling water (≈1100 gpm) to the EDGs and was installed as a result of a commitment made after the JAF individual plant examination (IPE) study was completed in August 1991.

During NRC Inspection 95-05, the inspectors reviewed the engineering package and noted: (1) the QA classification information and breaks were not depicted on the drawings, (2) the connecting fire hose did not have a component ID tag installed and had not been entered into a plant component classification database, (3) the cabinet label did not reflect the storage of the connecting hose, and (4) no periodic test of the fire hose had been specified.

NYPA agreed that all component classifications and classification breaks should be shown on the drawing, a component ID tag would be installed on the fire hose, the storage cabinet label would be changed to indicate the presence of the hose, and that the fire hose will be visually inspected every 6 months. NYPA indicated that these items would be resolved and incorporated prior to closeout of the modification and plant startup. From a review of plant records and drawings during this inspection period, the inspectors determined that the previously identified issues had been resolved.

The inspectors found that the modification had been turned-over on January 20, 1995; however, the modification was not closed within the 60-day goal for closeout. The inspectors reviewed the affected procedures to verify that they had been updated, and noted that not all of the necessary procedure changes had originally been identified. Engineering managers recognized the inspectors' concern and identified that the planned use of multi-disciplined and multi-department modification teams should address this issue, in part.

3.3 Conclusions

The inspectors concluded that the modification closeout process was adequate. As indicated by the reduction in the number of modifications to be closed out, effective actions are being taken to reduce the backlog. The selective use of post-modification critiques, and the planned use of multi-disciplined modification teams were considered to be noteworthy initiatives.

4.0 TEMPORARY MODIFICATIONS (37550)

Temporary modifications (TMs) at JAF are performed by the operations department with assistance from Technical Services as necessary. Procedure AP-05.02, "Control of Temporary Modifications," Revision 3, dated July 3, 1995, contained guidance for the development, installation, and removal of temporary modifications. NYPA personnel have submitted several procedure change requests (PRCs) to address procedure weaknesses and to

enhance and streamline the TM process. These PRCs have not been incorporated, but a revision to Procedure AP-05.02 was in draft form. To determine the effectiveness of JAF's TM process, the inspectors reviewed the number of installed TMs, and reviewed related procedures governing their approval and installation.

Number of Installed Temporary Modifications

As described in Procedure AP-05.02, NYPA expects TMs at JAF to be installed for the shortest time necessary, normally less than 3 months. The Nuclear Generation Department Monthly Performance Indicator Report for June 1995 indicated that the goal for JAF is a total of 45 temporary modifications installed. The inspectors reviewed the temporary modification index and the computer printout of all active jumpers on July 26, 1995, and noted that there were 33 TMs installed. The inspectors noted that this is a significant improvement from the 61 installed as of October 11, 1994 (NRC IR 94-25) and the 50 installed as of February 17, 1995 (NRC IR 95-05), but is up slightly from the 1995 low of 29 temporary modifications installed in May 1995. The inspectors also noted that there were 11 TMs installed for longer than 1 year, with the oldest having been installed on April 6, 1991. Discussions with NYPA personnel indicated that five of these oldest modifications, associated with the auxiliary boiler and its drains, are scheduled for removal after the completion of a related permanent modification in August 1995. The inspectors also noted that the percentage of safety-related temporary modifications installed was relatively small.

Review of Installed TMs and TM Surveillances

Procedure AP-05.02, "Control of Temporary Modifications," Revision 3, dated July 3, 1995, provided requirements for the periodic review of installed temporary modifications. These reviews are performed through surveillance test procedures. Temporary Modifications are reviewed by operations personnel weekly, quarterly, and annually to ensure that there is a need for continued installation, changes in plant status do not impact the technical and safety reviews and that a method of resolution has been established. The inspectors reviewed the records of the last weekly, quarterly, and annual surveillance of installed TMs. The inspectors also reviewed a selected sample of installed TMs.

During the review of the completed weekly surveillance ST-1X, "Protective Tags, Jumpers, Lifted Leads, and Temporary Modifications Audit," Revision 0, dated October 29, 1993, the inspectors noted that the AP-05.02 surveillance requirement, to verify that affected drawings are updated within 30 days to reflect installed TMs was not included in, or being implemented by the weekly surveillance. The inspector also found that TM 94-246, to install portable demineralizers, has been installed since November 10, 1994, but the drawings have not been updated. The inspectors noted that JAF personnel took appropriate and prompt corrective action to initiate a DER 95-1160 to investigate this issue.

During the review of TM 95-059 (installed March 8, 1995), there were three controlled copies of the same system diagram in the control room that required update to reflect the installed temporary modification. The inspectors found that one of these three was not updated and noted that the drawing had been revised in June 1995. JAF personnel stated that they believed that this drawing was not re-updated after it was revised in June 1995. The inspectors noted that the periodic surveillances did not identify that the drawing had not been updated. The inspectors also noted that the failure to re-update drawings after revision was previously identified as an issue by Quality Assurance in a 1992 adverse quality report, AQCR-92-328. The inspectors noted that JAF personnel promptly initiated DER 95-1159 to investigate this issue.

Conclusions

The inspectors noted that efforts to address TM procedure weaknesses, and to enhance the TM process, are ongoing. The inspectors concluded that NYPA has made good progress in reducing the overall number of TMs installed in the plant.

5.0 CONTROL OF CONTRACTORS

NYPA utilizes contracted engineering services in two modes: staff augmentation and outside engineering services. Individual contracted engineers, interns, and temporary employees report directly to a NYPA supervisor and follow the NYPA work procedures as if they were NYPA employees. These personnel complete the qualification process required for the tasks that they performed and they receive some of the same initial and continuing training that is provided for permanent NYPA engineering staff. Major engineering tasks, which cannot be handled within the NYPA Nuclear Engineering Department because of time or manpower constraints are contracted with outside engineering firms. Fourteen modifications were completed during the 1994/1995 refueling outage. Nine of these were designed by organizations outside NYPA. Modification Control Manual Procedure MCM-12, "Review and Acceptance of Modification Packages," provides the method of ensuring that modifications developed by outside organizations are reviewed by NYPA staff before their use. The MCM specifies that, although all documents are subject to review, each individual document is not required to be reviewed. The NYPA responsible engineer and his supervisor determine the extent of review based on the type, complexity, and importance of the document. Attachment 4.1 to MCM-12 provides a checklist of items to be considered when reviewing modification packages prepared by outside organizations.

MCM-12 is used in conjunction with Design Control Manual (DCM)-11, "Control, Review, Comment, and Acceptance of Vendor Documents," to review and accept engineering and design documents originating from outside of NYPA. DCM-11 provides detailed administrative instructions for controlling the document reviews and four attachments to DCM-11 provide guidelines for reviewing: modification packages, vendor drawings, vendor manuals, and other vendor information. An inspector concern related to NYPA's implementation of DCM-11 is documented in Section 6.1 of this report.

Quarterly, the Operations Review Group (ORG) analyzes Deviation and Event Report (DER) data for the purpose of identifying adverse trends. The first quarterly report for 1995, JORG-95-195, dated May 3, 1995, identified an increase in DERs that had "work practices" as the cause. The ORG report noted that one-third were attributed to contractors and offsite personnel, and examples of deviations associated with contracted plant modifications were provided. Section 3.1 of this report provided an example of a contractor-developed modification with a large number of engineering change notices (ECNs). The ORG report recommended that DE "...review the major modification process from conceptual design through post work testing; understanding of the complete impact on plant operation, maintenance and testing and; necessary revision of plant programs and procedures. Pay particular attention to the use and oversight of contracted engineering support in the process." The inspectors considered this recommendation valid and, in general, found the ORG report to be clear, detailed, and insightful.

6.0 WHITE PLAINS OFFICE SUPPORT PROGRAMS MANAGEMENT

6.1 Document Control

The document control center (DCC) controls the originals of all engineering documents, and maintains a data base which shows the latest revision of all documents, and issues controlled copies to the sites for their use. The DBD program provides an easy method to cross-check referenced design documents to the DCC database. However, the 21 DBDs issued only cover 34 systems.

The inspectors obtained a sample of engineering documents from the controlled document database and compared the revisions to those used in the development of the related system design basis documents (DBD). The inspector observed discrepancies between the two documents in that the DCC database referred to an earlier revision than used for the DBD. The DBD preparer used a document revised after the DBD freeze date (October 18, 1993) and the drawing submittal, which had been sent to the responsible engineer on March 17, 1994, and had never been received in DCC. The DBD was issued December 28, 1994.

NYPA indicated that after each DBD was issued, DCC performed a cross-check of the documents referenced in that DBD. To date, of the 3500 documents referenced in the DBDs, approximately 255 discrepancies were noted by DCC. One DBD, issued in 1993, had not yet been reviewed by the NYPA DCC for missing referenced documents. These reviews were informal assessments and no documented follow-up was evident; upon further questioning by the inspector, it appeared that almost 200 documents were still not in DCC.

Control of vendor-supplied documents is governed by the NYPA Design Control Manual, Procedure DCM-11, "Control, Review, Comment and Acceptance of Vendor Documents." DCM-11, Section 6.1.2, "Correspondence," does however indicate that the Records Management System will be on distribution for all transmittal letters. The NYPA document control procedures do not require an outside vendor's submittal of original documents directly to the DCC.

In response to the inspectors' concern, NYPA issued DER 95-1138 and Action Plan NGES-APL-95-003 to resolve this issue and assess the generic implications. They immediately contacted the original architect/engineering (A/E) vendor as a first effort to locate the missing documents. Following the end of the onsite inspection period, NYPA notified the inspectors that only 21 documents from the original A/E remained to be re-verified. In addition, they provided a sample review of calculations associated with modifications, performed by outside organizations for the last refueling outage. No problems were uncovered with this sample review, although further NYPA efforts to maintain the controlled document database up-to-date, to reflect the most current revisions of engineering documents, will remain unresolved **(URI 50-293/95-013-01)**.

6.2 Design Basis Documents

Twenty-one DBDs were prepared for the WPO by Stone and Webster Engineering Corporation (SWEC) and General Electric (GE). Three pilot DBDs were issued in 1991, 4 were issued in 1993 and the remaining 14 in 1994 (the final 11 in December 1994).

NYPA performed two formal DBD pilot validations (RHR and ATS) as part of the DBD program, and one DBD (ESW part of SW) was informally validated using the SSFI technique. However, future validations have been postponed until 1996. The DBD group has proposed that the order of the DBD validation be based on the IPE results when validation resumes, and has recommended that the 125 Vdc system be the first.

Questions raised during the DBD preparation stage resulted in 800 Design Document Open Items (DDOIs). Two-hundred ninety (290) open DDOIs remain and are being tracked by ACTS. NYPA has indefinitely deferred resolution on another 196 DDOIs based upon a number of factors including low safety significance. These items will no longer be tracked by ACTS, but will remain identified in the DBDs. The inspectors reviewed the methodology used by NYPA to justify deferral of the low priority DDOIs, and agreed with their approach.

The development of 21 DBDs (14 in 1994) was considered good; however, only three of the 21 DBDs have been validated. The validation process for the remaining DBDs is scheduled to resume in 1996.

7.0 STATUS OF RESULTS IMPROVEMENT PLAN ENGINEERING ISSUES

Phase I of the JAF Results Improvement Plan (RIP) was developed in 1991 and was organized to correspond with the management and department improvement plans. Phase II of the RIP reformatted the open issues and actions items in groups aligned with the Nuclear Generation Business Plan Key Objectives: (1) Safety - Nuclear and Industrial; (2) Professionalism; (3) Performance; (4) Regulatory Compliance; and (5) Cost Management.

The inspector noted that during Phase I of the RIP, approximately 50 action items were identified for Technical Services to address four major issues. After the reformatting for Phase II of the RIP, 35 carried-over items were assigned to TS for resolution. In 1994, eight new action items were developed for TS. The inspector observed that TS has completed the majority of the RIP items initially assigned to it, and is working on more recently identified continuous improvement items that are associated with updating the surveillance test program.

Phase I of the RIP identified 14 issues and approximately 100 action items for engineering to address. After the reformatting for Phase II, approximately 50 items were assigned to engineering for resolution. Approximately 80% of the RIP items assigned to design engineering have been closed. The majority of the outstanding items are in the areas of design basis, licensing basis, and configuration management. The inspectors observed that these areas are similar to the document control issues raised in Section 6.0 of this report. The inspectors noted that to affect continued improvement, a new round of significant initiatives are in progress or are planned in some of the areas where RIP action items had been closed. One example is the activities to improve design engineering work management. The Design Engineering manager noted that an updating of the RIP was warranted to maintain the RIP as a "continuous improvement plan" as a third phase of the project.

JAF Administrative Procedure (AP)-03.09, "Results Improvement Program" provides the formalized controls for the RIP, including assigning specific responsibilities and providing direction concerning periodic review and assessment of the RIP. A status report of the plant leadership team's meetings to review the RIP indicate that they have been meeting two or three times a month. The status report also provides statistics of progress made including the number of RIPs items, the number due, the number closed, and the number of schedule extensions granted.

The plant leadership team has effectively used the Senior Assessment Engineer and Quality Assurance to independently assess progress of the RIP and some good recommendations have been identified. For example, Audit 95-10J, "Results of Actions Taken to Correct Deficiencies," dated June 16, 1995, identified that the management expectations for department self-assessments were unclear and were not being fully implemented as intended. As a result, clearer and more detailed guidance concerning department self-assessment programs was added to AP-03.07, "Internal Appraisal" and a schedule for completing these self-assessments starting in 1996 has been established.

8.0 USE OF INDIVIDUAL PLANT EXAMINATION (IPE) INFORMATION

Insights and Recommendations

An NRC Staff Evaluation dated May 9, 1994, found that the James A. FitzPatrick Nuclear Power Plant (JAF) Individual Plant Examination (IPE), dated August 1991, was consistent with Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities." The inspectors performed a review to determine what actions had been taken to disposition the insights and recommendations to reduce the risk of core damage and loss of containment heat removal from Section 7.3 of the IPE.

The majority of the insights and recommendations from the IPE have been reviewed and dispositioned. Five modifications and five procedure changes, which are among those having the greatest risk reduction, have been implemented. Six insights and recommendations have been entered into the Action Commitment Tracking System (ACTS) and are scheduled for formal evaluation and disposition by January 1996.

Management Expectations

The inspectors also performed a review to determine what policies and procedures were in place regarding the use of probabalistic risk assessment (PRA) information, as well as to assess the effectiveness of their implementation. The inspectors concluded that Nuclear Administrative Policy (NuAP) 3.8, "Individual Plant Examination," dated June 11, 1992, has established sound management policies for the use of PRA and the IPE. Some specific examples include: (1) development of implementing procedures; (2) maintaining a "living" IPE by recalculating the core damage frequency on a biennial basis; (3) reviewing major modifications for their impact on the IPE prior to implementation; and (4) reviewing emergency operating procedure changes for their impact on the IPE prior to implementation. Additional guidance was also provided concerning the development of risk-based technical specifications, maintenance programs and testing programs, and the use of IPE information as an evaluation tool.

IPE Program Implementation

The inspectors noted that implementing procedures generally have not been developed, and that implementation of the policies has been informal and sporadic. Discussions with the Reactor Engineering/Nuclear Safety Analysis (RE/NSA) staff in the WPO indicates that - although no implementing procedures for maintaining a "living" PRA are currently in place - a new Nuclear Safety Analysis Procedure NSA-1.0, "Individual Plant Examination Maintenance," is being drafted. Plant changes identified to the RE/NSA staff have been evaluated and the IPE model has been updated as needed. Data gathering is in progress to update the quantification of the IPE to support the development of the IPE for external events (IPEEE). The RE/NSA staff expects the quantification and update will be completed prior to May 1996, and therefore, will meet the management expectation for a biennial update.

Currently, the RE/NSA staff is notified of plant modifications through the receipt of copies of modification turnover documents. The inspectors noted that the management expectation to review major modifications for their impact on the IPE prior to implementation was not being met by reviewing the modifications during the turnover and closeout period. Discussions with engineering personnel indicated that a similar issue was raised by the JAF Senior Assessment Engineer during his March 1995 report (95-02). RE/NSA personnel demonstrated that their draft IPE maintenance procedure addresses the issue, but could not identify when the procedure would be issued.

An open 1994 ACTS item identified that JAF site administrative procedures did not implement the NuAP 3.8 policy for reviewing emergency operating procedure changes for their impact on the IPE prior to implementation. A May 1995 revision to Administrative Procedure AP-02.02, "Development of Emergency Operating Procedures," specifies providing RE/NSA with approved temporary EOP changes. The inspector noted that this partially addresses the management policies in NuAP 3.8.

The inspectors discussed the slow progress in implementing the management policies in NuAP 3.8 with various WPO personnel. During this discussion, the inspector noted that the NuAP was under revision to reflect title changes resulting from Nuclear Generation group reorganizations; however, the RE/NSA group was unaware of this revision. The inspector observed that there appeared to be no ownership of this procedure. NYPA took timely and effective corrective action to create ACTS items to draft and approve an ownership matrix for the NuAPs.

The inspectors reviewed other actions that NYPA has taken to use their IPE and found that, good PRA training had been provided to JAF personnel. Graphs identifying the most risk-significant systems and those with the greatest potential for risk reduction were posted within the JAF engineering offices. Initiatives are also being investigated in the areas of risk-based approaches to technical specifications, inservice testing, inspection, and graded quality assurance. Further, the RE/NSA group has provided support to the plant by providing IPE insights in support of licensing submittals, and plant personnel used IPE insights during the development of the preventive maintenance and System Performance and Trending Programs.

Safety Review Committee's Review of the IPE

The inspectors reviewed the portions of the meeting minutes for Safety Review Committed Scheduled Meeting 07-94, dated July 21, 1994, that related to the JAF IPE. The minutes provided a good level of detail of the discussions, noting that the existence of the NuAP 3.8 concerning application and maintenance of the IPE. the SRC created open item 94-75 recommending that an ACTS item be opened to track the establishment of the IPE program and its implementing procedures. The inspectors noted that this ACTS item currently remains open, although with a scheduled due date of July 28, 1995. The inspectors also noted that the due date has been extended three times. The inspectors concluded that the SRC was proactive in reviewing the IPE shortly after its approval by the NRC; however, response to the SRC open item to establish and implement an IPE program has been somewhat slow.

Conclusions

The inspectors concluded that although reviews and implementation have not been completed, NYPA has been effectively using the insights and recommendations regarding plant modifications and procedure changes from Section 7.3 of the IPE. Clear management expectations for NYPA's use of IPEs have been documented and some have been implemented; however, many of these expectations have not been fully developed and formally implemented.

9.0 MANAGEMENT INVOLVEMENT AND OVERSIGHT

9.1 Engineering Assurance Program

The Engineering Assurance (EA) Program for the Nuclear Engineering Division was established in December 1994. An experienced NYPA engineering manager in the White Plains Offices was appointed as the Manager of Engineering Assurance. The EA program charter indicates that the purpose of the EA program is to provide a performance assessment and trending vehicle to track and measure the effectiveness of the engineering process and to institute improvements. The inspectors reviewed the scope, plans, and progress of the EA program to date.

The EA Manager is establishing and trending performance indicators to aid in the assessment of the modification process. One of these indicators comes from the Systematic Engineering Self-Assessment Process (SESAP). The SESAP formally grades and trends available information from organizations outside engineering such as the NRC, Quality Assurance, Independent Safety Evaluation Group, Safety Review Group, etc. to identify strengths and weaknesses in the performance of engineering and technical support. The first SESAP reviewed eight assessment documents from April and May 1995 and identified strengths in work management, self-assessment, and management oversight. Weaknesses were identified in design control. The SESAP process was too new to identify trends, or for the inspectors to assess its effectiveness.

Under the direction of the EA program, Engineering Quality Review Teams (EQRTs) were established at both the J. A. FitzPatrick (JAF) and Indian Point 3 sites. At JAF, the EQRT was comprised of members from both the engineering organization as well the "customer" organizations that include: Operations, Maintenance, Planning, Quality Assurance, Construction Services, etc. Plant management showed strong support for the EQRT by appointing experienced plant personnel to represent their respective departments. Clear guidelines for the EQRTs have been developed and distributed. This guideline states that the purpose of the EQRT is to provide a constant process where the engineering products and services are reviewed, deficiencies identified and improvements implemented. In particular, the EQRTs are tasked with reviewing the design products for safety-related modifications valued over a certain dollar amount, and has met twice since its establishment in May 1995.

The inspectors concluded that the processes developed have the potential to contribute to continual improvement that the engineering organization intends; however, the Engineering Assurance Program has not been in place long enough to more fully assess the effectiveness of its implementation.

9.2 Action Plans

NYPA management was effectively using action plans to obtain the status of programs and solve specific problems. Administrative controls for these action plans are contained in JAF AP-03.12, "Action Plans" and Nuclear Engineering Administrative Procedure (NEAP)-27, "Engineering Action Plans." The procedures for developing action plans require documentation of an objective, applicable background information and references, a logical listing of the actions and completion dates necessary to achieve the identified goal. Action plans have been developed in numerous areas such as the engineering reorganization, configuration management, inservice inspection, etc. One example of an effective sound action plan was JSED-APL-95-011, "Improving Design Engineering Work Management," dated June 27, 1995. This action plan detailed goals, indicators and deliverables planned to address the actions necessary to improve the work processes of Design Engineering. The inspectors observed that the action plan was clearly written, logical, and detailed.

9.3 Peer Groups

The Nuclear Engineering Reorganization Transition Action Plan (PEP-APL-95-21) identified NYPA's intention to establish peer groups. The purpose of the peer groups was to exchange information and ideas related to specific program areas, ensure regulatory compliance, and identify areas to improve quality and cost effectiveness. Nuclear Engineering Administrative Procedure (NEAP)-25, "Program Engineering Peer Groups," Revision 0, dated April 10, 1995, provided the appropriate controls for establishing and operating peer groups.

Discussions with WPO engineering personnel indicated that one pilot peer group had been established to develop a NYPA-wide special processes program to address welding, inservice inspection, and related issues. The inspector verified that a peer group charter had been developed and a meeting agenda and minutes were documented for the teams first meeting in March 1995.

9.4 System Presentations

The Technical Services Department has scheduled weekly system presentations since May 1994. Procedure TSSO-24, "Systems Presentations," Revision 0, dated September 20, 1994, identifies that the purpose of these presentations is to provide management with information from a specific system perspective, and inform management of key system issues challenging the reliability of the system. The inspectors verified that system presentations were continuing. The inspectors considered the presentations to be a noteworthy self-assessment measure that provided plant management with a detailed system status.

The inspectors attended a presentation for the Main Turbine Generator System conducted on August 26, 1995. This presentation was attended by the Site Executive Officer, the General Managers of Operations and Maintenance, the Director of Design Engineering, the Technical Services manager, and several other department managers and staff personnel. This presentation was extensive and contained an in-depth review of current issues associated with the system. Typical items that are reviewed include, but are not limited to: temporary modifications, control room deficiencies, limiting conditions for

operations, operating experience (both internal and external), nuclear plant reliability data reporting, corrective, preventive and predictive maintenance, deviation and event reports, configuration management and document control, and modification and work request status. Thoughtful and probing questions were presented during the meeting.

9.5 Conclusions

Management involvement in design engineering was evident in the daily, weekly, and monthly engineering meetings. In addition, a number of programs including: engineering assurance, action plans, and peer groups are being implemented or are under development and are aimed at improving the engineering products and resource allocation. System presentations continued to be a noteworthy self-assessment initiative that provided plant management with a detailed system status. Regular meetings and close interactions between the DE and TS groups, and with other site organizations, reflect direct involvement and active participation at all levels of the engineering and technical organizations.

10.0 MANAGEMENT MEETINGS

The scope and purpose of the inspection were discussed at entrance meetings conducted on July 10 and 24, 1995.

During the course of the inspection, the findings were discussed periodically with managers, supervisors and other licensee representatives. On July 14, 1995, a briefing was conducted with engineering management personnel at NYPA's WPO at the conclusion of NRC inspection activities at that location. An exit was conducted on July 28, 1995, at which time the preliminary findings of this inspection were summarized and the conclusions were presented. The licensee acknowledged the preliminary findings and conclusions, with no exceptions taken. Further, the bases for the conclusions did not involve proprietary information.

The following individuals attended the exit meeting held at the JAF site on July 28, 1995:

New York Power Authority

Michael J. Colomb, General Manager-Operations
Thomas Dougherty, VP - Nuclear Engineering
Floyd C. Edler, Technical Services Manager
Jim Kaucher, Director, Design Engineering, IP3
Sheldon Kohr, Supervisor, Design Engineering
Doug Lindsey, General Manager - Maintenance
Dan Ruddy, Director, Design Engineering
Harry Salmon, Site Executive Officer
Thomas Savory, DE Manager, Electical/I&C
George Tasick, Manager, Mechanical Design Engineering
Dave Topley, Acting General Manager - Support Services
Dan Vandermark, QA Manager
Dave Wallace, Manager, Engineering Support
Art Zaremba, Licensing Manager

U.S. Nuclear Regulatory Commission

Neil Perry, Resident Inspector (acting)