U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report:	50-286/94-31
License:	DPR-64
Licensee:	New York Power Authority
Facility:	Indian Point 3 Nuclear Power Plant
Location:	Buchanan, New York
Inspection Period:	December 28, 1994 to February 11, 1995
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Approved by: _____ March 10, 1995
Curtis J. Cowgill III, Chief — Date
Projects Branch 1

Areas Inspected: Plant operations; maintenance; engineering; plant support; and, safety assessment and quality verification.

Results: Inspection results are summarized in the attached executive summary.

EXECUTIVE SUMMARY

Indian Point 3 Nuclear Power Plant

NRC Inspection Report No. 50-286/94-31

Plant Operations: NYPA continued the performance improvement outage throughout the reporting period. The reactor was maintained safely in the cold shutdown condition. Performance of a complex surveillance test with known inadequacies presented unnecessary challenges to the operators. The special evolution manager's decision to proceed with the test conveyed an inappropriate message toward procedural use and adherence.

Restart Action Plan (RAP) Item 2.III.6, Procedure Upgrade Program, was closed. The procedure upgrade process and associated administrative procedures were sound. The quality of the recently upgraded procedures was good, and management involvement and attention were evident.

RAP Item 2.IV.5, Operability Determination, was closed.

Maintenance: NYPA has not been fully effective in addressing improper electrical wire terminations, and cable and jumper installations. In the past year, there were eight similar events, and, during this period, another event occurred during the control room damper B modification.

Deficient conditions identified in electrical panels indicate that instrument and controls personnel have not fully understood management expectations in this area. Subsequent NYPA corrective actions, however, were thorough.

RAP item 2.II.3, Surveillance Test Program, was closed. NYPA's improvement plan was comprehensive and established an administrative and operational framework for an effective program. Quality Assurance assessments were of high quality.

Engineering: As a result of an excellent investigation of the extent of identified deficiencies, NYPA identified significant weaknesses in the modification acceptance testing process. This identification showed a strong commitment to plant safety. At the end of the period, actions were still in progress to address this issue. This issue is RAP item 2.III.13.

RAP item 2.II.11, Debris Plugging of ECCS Strainers, was updated. Overall assessment of the issue was good, however, no formal evaluation of peeling paint on the containment dome was performed.

RAP items 2.II.15, Main Turbine Overspeed; 2.II.17, Fan Cooler Units; 2.II.22, Boric Acid Heat Trace; 2.II.23, Service Water Heat Trace; and, 2.II.26, Control Rod System, were closed. Regarding RAP item 2.II.26, NYPA was aggressive and thorough in the resolution of the issue.

Plant Support: The implementation of the radiological protection and security programs was observed and found satisfactory. A regional in-office review of revisions to the Emergency Plan and Emergency Plan Implementing Procedures

found that the changes were acceptable and did not decrease the effectiveness of the program.

Safety Assessment/Quality Verification: RAP item 2.III.1, Corrective Action, was closed. NYPA made significant improvements in the area of corrective actions and provided the framework for an adequate corrective action process. The resolution of more significant problems, which have senior management involvement, had been thorough and effective. However, several weaknesses in addressing less significant DERs were observed including a high rejection rate of DERs by the ORG and QA. Several continuing initiatives were noted including the development of new threshold guidelines, increased management review of completed DERs, and additional training in DER evaluations.

A DER was reviewed concerning an adverse trend with service water relief valve deficiencies. The issue is left unresolved pending NYPA review of the extent of the deficiencies. (URI 94-31-01)

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1.0 SUMMARY OF PLANT ACTIVITIES

The New York Power Authority (NYPA) continued the performance improvement outage throughout this inspection period. The reactor was maintained safely in the cold shutdown condition. NYPA completed the service water window, the last system window scheduled for this outage. At the end of this inspection period, significant and emerging work included safety injection system modification and maintenance, station blackout surveillance testing and modification acceptance testing audit and assessment.

2.0 PLANT OPERATIONS (71707, 92901)

2.1 Operations Safety Verification

Using the insights from the Indian Point 3 (IP3) Nuclear Power Plant Individual Plant Examination, and applicable drawings and checkoff lists, the inspectors independently verified safety system operability by performing control panel and field walkdowns of the following systems: reactor coolant pump oil collection system, containment sumps, power operated relief valve system, residual heat removal system, service water system, component cooling water system, and the emergency diesel generators. These systems were properly aligned for the existing plant conditions.

The inspectors observed plant shutdown operations, and verified that the plant was operated safely and in accordance with licensee procedures and regulatory requirements. Regular tours were conducted of the following plant areas:

- Control Room
- Control Building
- Diesel Generator Building
- Primary Auxiliary Building
- Containment Building
- Containment Penetration Areas
- Spent Fuel Building
- Screenwell Structure
- Auxiliary Feed Pump Building
- Turbine Building
- Intake Structure
- Access Control Points
- Yard Areas

During the course of the inspection, discussions were conducted with operators concerning knowledge of recent changes to procedures, facility configuration, and plant conditions. The inspectors verified adherence to approved procedures for ongoing activities observed. Shift turnovers were witnessed and staffing requirements confirmed. The inspectors found that proper control room access and a professional atmosphere were properly maintained. Inspectors' comments or questions resulting from these reviews were resolved by licensee personnel.

Control room instruments and plant computer indications were observed for correlation between channels and for conformance with technical specification (TS) requirements. Operability of engineered safety features, other safety related systems, and onsite and offsite power sources were verified. The inspectors observed various alarm conditions and confirmed that operator response was in accordance with plant operating procedures. Compliance with TS and implementation of appropriate action statements for equipment out of service were inspected. Logs and records were reviewed to determine if

entries were accurate and identified equipment status or deficiencies. These records included operating logs, turnover sheets, and system safety tags.

2.2 Safety Injection System Recirculation Switches Testing

On February 2, 1995, NYPA conducted procedure 3PT-R003A, Safety Injection System Test Recirculation Switches. This procedure tests the logic and function of the recirculation switches that are used to swap from the injection mode to the recirculation mode following a loss of coolant accident (LOCA). The procedure tests all eight recirculation switches in sequence.

Because several portions of the test secure the residual heat removal (RHR) system, NYPA elected to conduct those portions of the test as a special evolution per the guidance of AP-19.1, Special Tests or Evolutions. The required special evolution briefing was conducted and personnel appeared to be prepared and knowledgeable of the test. During the briefing, test personnel reviewed precautions and potential problems that could arise from the performance of the procedure.

Prior to the test the inspector raised concerns related to the quality of the procedure, which was last revised in August 1993. The primary concern was that the procedure did not specify the initial conditions assumed to be in effect for each portion of the test. As a result, the operators were relied upon to determine and establish the required prerequisite plant conditions for each test section. The inspector considered that the lack of procedural guidance to establish plant conditions presented unnecessary challenges to the operators and was outside of the intent of AP-4, Procedure Use and Adherence. Because the procedure did not supply sufficient detail, the operators developed extra steps and made notes on the procedure as where to perform the extra steps.

Additionally, the procedure contained numerous notes and cautions that required actual manipulation of plant equipment. The procedure did not require documentation of the actual test configuration of the breakers (i.e. racked fully in or in the test position), which could add some confusion in troubleshooting test anomalies.

These concerns were discussed with the operations manager, who was assigned as the special evolution manager. The operations manager agreed with the inspectors assessment that the procedure did not meet NYPA's current expectations regarding procedure quality and content. However, the operations manager decided to continue with the procedure because the evolution was being controlled as a special evolution and the operators covered the "extra" steps during the brief.

An example of extra steps, which were taken by the crew but were not specified in the procedure, was noted during the performance of section 3.5, Testing of Recirculation Switch 3. The procedure contained the following caution: "Ensure the plant can sustain a momentary loss of RHR." Based on this caution, the operators determined that they would secure the RHR pumps and isolate the flowpath from the refueling water storage tank (RWST) to the reactor by adopting steps from the normal RHR operating procedure.

Because the steps chosen by the operators shut two flow control butterfly valves, which are prone to seat leakage, the operators experienced an increase in pressurizer level of 1% per 2 minutes when the normal isolation valves were opened per the following procedure steps. The operators anticipated the leakage and took action to reclose the isolation valve when the leakage was identified. The operators discussed the options with the test personnel and operations manager and decided that the leakage into the pressurizer was acceptable for the anticipated short duration of the test. Operators then reopened the isolation valve and proceeded to complete the section without further problems.

The inspector noted that the operators proceeded cautiously and were alert in anticipating the leakage past the butterfly valves; however, the inspector considered the procedure deficient in not establishing the proper configuration to prevent the flow of water from the RWST to the pressurizer or addressing the possible flowpath.

After the completion of switch three, the test was secured due to problems with test equipment that resulted in several service water breakers not operating in the test position.

On February 7, 1995, NYPA continued testing per the procedure. The crew elected to restart the procedure at a mid-point in the switch two test sequence. The objective was to resume testing where they encountered problems and not repeat steps that were completed satisfactorily. To accomplish this objective, the crew reviewed the procedure and annotated steps not applicable (N/A) in accordance with AP-4. When the operators placed switch two in the on position, component cooling water (CCW) pump No. 33 started unexpectedly. The operators secured from the test to determine the cause of the pump start. Upon subsequent investigation, operators discovered that the steps to place CCW pumps 32 and 33 in trip pullout were erroneously annotated as N/A.

A DER was initiated and a critique was conducted to determine the root cause of the problem. During the critique, senior management questioned the operations department application of AP-4 regarding the use of N/A to start in the middle of a complex test sequence.

As a result of the DER, NYPA decided to rewrite the test prior to reperformance. Additionally, NYPA was reviewing surveillance tests that have not been upgraded as part of the procedure upgrade program prior to performance. The operations department was also evaluating their procedure adherence practices regarding the use of N/A and restarting midway into procedure sections.

On February 15, 1995, NYPA reperformed the test using the newly revised procedure. The inspector reviewed the procedure and found that it was significantly improved; however, during the performance of the test, NYPA identified several additional areas for improvement. The inspector witnessed the pre-evolution brief and the conduct of the test and found them well performed. The formality of communications between the test personnel, both in and out of the control room was excellent.

Conclusion

Based on the complexity of the recirculation switch surveillance test and the number of required operator work around steps, the inspectors considered the test inadequate. The inspector was concerned that the special evolution manager's decision to proceed with the test may have conveyed an inappropriate message concerning procedural use and adherence and it may undermine NYPA's efforts in communicating appropriate standards to its staff. The inspector noted that NYPA senior management involvement resulted in the problem resolution and the subsequent test performance was exemplary.

The inspectors noted that the decision to perform the surveillance test with known deficiencies was inconsistent with recent performance; for example, the operation of the condensate system for cleanup was delayed because it was determined that the procedures required upgrading and an engineering test to perform testing of valve MOV-882, the RHR pump suction isolation valve, was written and performed as a special evolution due to the possible effects on plant conditions.

2.3 (Closed) NRC RAP Item 2.III.6, Procedure Upgrade Program

This inspection was conducted to assess the adequacy of site administrative and technical procedures to support the restart and safe operation of IP3. The inspection consisted of two site visits (November 7-10, 1994 and February 6-10, 1995), interviews with NYPA management, training and operations personnel, field observations including the simulator, and a review of existing and upgraded procedures. Based on the findings and observations detailed below, the inspector concluded that NYPA had implemented a procedure upgrade program that (1) identified the procedures necessary for plant restart and operation, (2) provided adequate guidance for procedure development and use, and (3) demonstrated the usability of the upgraded procedures through field walkdown and simulator verification, as appropriate.

During an inspection in 1993, the NRC identified that many IP3 organizations had weak or missing procedures and that a number of recent plant events had causes traceable to procedural inadequacies. (Details of the NRC's findings may be found in Special Inspection 50-286/93-80.) NYPA also recognized the need to upgrade the procedures in several departments and commenced an effort in May 1993. Inadequate procedures and related issues became the subject of NRC Restart Action Plan (RAP) item 2.III.6. NYPA implemented an evaluation of the procedures issue, which concluded that the root cause for the problems was a "lack of consistency and uniformity in the preparation and resolution of written procedures." Six contributing causes were also identified, including a lack of accountability, lack of clear management expectations on procedure use and administration and inadequate training.

NYPA undertook a number of corrective actions to address the problems defined in NRC RAP issue 2.III.6 These included:

- rewrote Administrative Procedure 3 (AP-3), "Procedure Preparation, Review and Approval,"

- revised AP-4, "Procedure Use and Adherence," to further clarify management's expectations,
- implemented procedural upgrades in selected departments (operations, instruments and controls, maintenance, performance, and radiological and environmental services) required for IP3 restart and safe operation,
- developed of a site-wide procedure writer's manual, and
- developed of a procedure upgrade project team to oversee long-term procedure improvement.

These and other activities would be used to maintain the upgrade effort on a site-wide basis following IP3's return to operation.

2.3.1 Administrative Procedures

In order to assess the effectiveness of NYPA's initiatives to develop and implement quality procedures, the inspector reviewed a number of administrative and technical procedures. Selected observations are noted below. A complete list of procedures reviewed may be found in Attachment 1.

AP-3: This procedure provided the guidelines and established the minimum requirements for procedure preparation, review, approval and changes. In general, the inspector noted it contained clear, basic instructions that would provide the framework for adequate procedures. It contained that a writer's guide, which could be used to introduce site-wide uniformity to procedure presentation. However, the inspector noted that AP-3 allowed any group already having a writer's guide to use it instead of AP-3's, which could reduce the benefits intended by the uniformity of procedure presentation. When questioned about this apparent discrepancy, NYPA responded that, in fact, new procedures were being developed or revised using AP-3 and that after procedure writers were trained in the new site-wide writer's manual, that would be the only guide permitted. (The training was to consist of 40 hours of instruction in procedure writing in general, and 8 hours specifically on the new procedure writer's manual, IP3-PWM.) Use of IP3-PWM would be mandatory after June 1995. The inspector concluded that because of the generally high quality of the upgraded procedures, minor format and style deviations from AP-3 were reasonable and acceptable.

AP-4: This procedure provided management's expectations on the use of and adherence to procedures. The inspector determined that the procedure provided clear and detailed guidance on the use of procedures, problem resolution, verifications, as well as the requirement that procedures would be adhered to by all personnel.

AP-21: This procedure provided the operations department's general policies and philosophies. The inspector determined that the expectations enumerated here mirrored AP-3 and AP-4 with regard to the development, use of, and adherence to procedures.

IP3-PWM: This is the new site-wide procedure writer's manual (PWM) whose usage will be mandatory by all groups at IP3 after June 1995. The inspector assessed that it provided adequate guidance on procedure development to attain the desired objectives of procedure consistency and uniformity. The PWM incorporated many of the conventions now in use throughout the nuclear industry.

2.3.2 Operations Department Procedures

In June 1993, NYPA initiated an upgrade of over 200 operations procedures, which included the use of a standardized format, incorporation of outstanding procedure change requests and minor technical enhancements. Slightly more than 50 operations procedures were determined to be required for restart and received further upgrading starting in November 1994. The inspector assessed that, in general, these procedures were very good, formatted per the new site-wide writer's guide, contained clear and concise direction with an appropriate level of detail and, where appropriate, were validated by walkdown and simulator exercise. The inspectors observed one shift crew training on the upgraded procedures in the simulator. The operators showed enthusiasm for the usability of the procedures and displayed a good questioning attitude during procedure performance, which resulted in several suggestions for improvement.

The inspectors also reviewed procedures, which had received either the first upgrade or had not been upgraded, and concluded that they, while inferior in quality and consistency to the twice-upgraded ones, were adequate. NYPA indicated that a technical accuracy review would be performed prior to using a surveillance test procedure. However, the inspector noted that the review process was not fully effective, as evidenced by the difficulties encountered during the recent performance of 3PT-R003A (see section 2.2 of this report for a discussion of this issue). A dedicated procedure writer was available to process quickly any identified changes that might be needed.

The inspector reviewed a mixture of old and upgraded off-normal operating procedures (ONOP). NYPA was in the process of performing technical and format updates to selected procedures to be completed prior to restart. The inspector noted that these represented enhancements to already adequate procedures. The upgraded ONOPs appeared very user-friendly and provided good detail. One procedure, SEC-1, was particularly noteworthy. It's format was similar to the one used for some emergency operating procedures, listing the expected response, then giving the operator alternative actions if the expected response did not occur. The inspector assessed that this approach provided excellent guidance to operators when implementing the procedure.

Also reviewed were a sampling of the control room alarm response procedures (ARP). The inspector noted that two formats were used. The older format (reactor and safeguards annunciators) contained the appropriate information and guidance, but were sometimes cumbersome to use and the details not well presented. The newer format (turbine, feedwater and condensate annunciators) incorporated a number of human factor enhancements and were superior to the older format in presentation, readability and logic of organization. NYPA informed the inspector that the control room annunciator response procedures

would be reviewed for technical content and change to the new format prior to restart.

2.3.3 Maintenance and Instrument & Control Procedures

The upgraded maintenance procedures reviewed were generally excellent, with an in-depth level of detail, sharp and clear diagrams, and computer-generated illustrations, as appropriate. Supplementary guidance to reduce confusion for variances among components (such as bolt torquing sequences for different types of heat exchanger designs) enhanced the quality of these procedures. Instrument and control procedures were comparable to the maintenance procedures in overall quality, level of detail and clarity of presentation. The inspector assessed that these procedures were acceptable to support unit restart.

2.3.4 Long Term Actions

The inspector noted that NYPA's efforts to date primarily encompassed procedure activities related to unit restart and early operation. Long-term actions to address a plant-wide procedure upgrade program had not yet been implemented at the time of this inspection. However, NYPA management indicated that several milestones had been established to create the framework for the upgrade program.

3/95	Creation of a map of functional area requirements compared against existing IP3 documentation.
4/95	Completion of the pilot draft of a program policy manual.
6/95	Completion of the site-wide program procedures implementation pilot.
	Departmental schedules identifying procedures to be upgraded and completion dates.
	Mandatory use of site-wide procedure writer's manual.

As this part of the program was not yet in place, the inspector made no assessments in this area. This area will be reviewed during a future inspection.

2.4 (Closed) NRC RAP Item 2.IV.5, Operability Determinations

NRC inspection reports 50-286/92-28 and 93-30, identified significant concerns regarding the operations department ability to determine the operability of safety related equipment. Specific concerns were: (1) no guidance existed to aide the shift supervisors in making operability determinations; (2) engineers in the corporate office did not have procedures or guidance on informing the plant of component operability concerns; (3) operators were not aware of NRC Generic Letter 91-18, (Resolution of Degraded and Nonconforming Conditions and on Operability); and, (4) inspectors noted several instances of operability

determinations made by operations personnel that did not provide adequate technical justification.

NYPA evaluated the NRC concerns and developed corrective actions as part of the PIP (Performance Improvement Plan). The PIP plan, which was originally completed in March 1993, was reevaluated by the current plant management team and submitted to close this restart issue. The PIP project consisted of efforts to create programmatic requirements and procedures to govern the conduct of operability determinations and to ensure training of personnel is accomplished.

After the completion of the PIP project NYPA evaluated their procedures and made further refinements. The original procedures created as a result of the PIP were cancelled and the requirements were folded into an existing procedure, AP-8, Deviation & Event Reporting and Operability Determination Manual.

The procedures in AP-8 follow the guidance given in Generic Letter 91-18 and utilize the Deviation and Event Reporting (DER) system to trigger the performance of operability determinations. The procedure clearly defines the roles and responsibilities of personnel relating to the performance of operability determinations. Through observations of plant meetings and discussions with the operations staff, the inspector concluded that the personnel involved with making operability determinations were familiar with the procedure and properly implemented it.

The inspector reviewed a number of operability determinations performed using AP-8. The inspector found the operability determinations were conducted promptly, reached technically adequate conclusions, and provided sufficient documentation to support the conclusions.

The inspector concluded that the programmatic improvements and the observed performance indicated that NYPA has adequately resolved this issue. NRC RAP item 2.IV.5, Operability Determinations, and violation 92-28-04 are closed.

3.0 MAINTENANCE (61726, 62703, 92902)

3.1 Routine Maintenance Review

The inspectors reviewed selected maintenance activities to assure that: the activity did not violate Technical Specification Limiting Conditions for Operation and that redundant components were operable; required approvals and releases had been obtained prior to commencing work; procedures used for the task were adequate and work was within the skills of the trade; activities were accomplished by qualified personnel; radiological and fire prevention controls were adequate and implemented; QC hold points were established where required and observed; and equipment was properly tested and returned to service.

The maintenance work requests (MWRs) listed below were observed and reviewed. Unless otherwise indicated, the activities observed and reviewed were properly conducted.

- MWR 93-05839-06, 32 Boric Acid Pump replacement
- MWR 93-06498-27, BD-PCV-1217A Air Operator Replacement
- MWR 94-04171-03, Control Room Air Conditioning Damper "B" Repair
- MWR 95-00294, Power Operated Relief Valve Nitrogen Alarm Switch Repair

3.1.1 Improper Termination of Control Room Air Conditioning Damper "B" Relay

On January 6, 1995, contractor electricians were working on the control room air conditioning (CCR A/C) damper "B" modification per maintenance work request (MWR) 94-04171-04. This modification installed new relays and electronics to allow damper "B" to fail open on loss of electrical power. Work was completed by the electricians and the CCR A/C system was returned to operations for service on January 6, 1995. On January 9, 1995, operations reported that the CCR A/C system was not operating correctly. Troubleshooting by Design Engineering determined that wire 119 at relay RSI was terminated incorrectly. Step 16.1 of MWR 94-04171-04 required that wire 119 be terminated at the relay RSI normally open (NO) contact. Instead, wire 119 was found to be terminated at the relay RSI normally closed (NC) contact. In accordance with the work package, this wire termination had been independently verified by the work supervisor and a quality control (QC) inspector. Deviation/event report (DER) 95-036 was written to document the failure to terminate wire 119 in accordance with the work request.

On January 13, 1995, this event was presented by the responsible department to the performance enhancement review committee (PERC). NYPA evaluation concluded that wire 119 was incorrectly terminated due to unclear markings on the relay. Due to small amounts of debris on the relay, the NC marking on the relay looked like an NO. NYPA also attributed the failure of the supervisor and QC independent verifications to the unclear markings. Other causes of this event were attributed to the unique configuration of the contacts and markings on the RSI relay. Further, the PERC concluded that the personnel were narrowly focused on the terminations being worked, and checking the other contacts on the relay could have identified the mis-wiring. Corrective actions taken by NYPA included briefing contractor electricians on the lessons learned. The PERC identified that the lessons learned and unique configuration of this type of relay needed to be shared with the entire plant staff.

The NRC reviewed this event, attended the January 13 PERC meeting, and concluded that actions taken by NYPA were satisfactory to address this particular event. However, the NRC remains concerned over the long term trend in human performance errors associated with incorrect wire terminations and jumper installations. NRC review of DERs since the beginning of 1994 indicated that there have been eight instances where poor work practices or worker error contributed to the failure to wire plant equipment properly. The operations review group (ORG) has also identified a similar trend in their fourth quarter 1994 self assessment report. Several of these examples such as the CCR A/C damper "B", power operated relief valve (PORV) 456 limit switch, 33 emergency diesel generator (EDG) fuel oil transfer pump, and motor operated

valve (MOV)-850A and 990A test jumpers have resulted in equipment malfunction when returned to service. While corrective actions have been taken for each of these individual events, NYPA has not been fully effective in addressing improper electrical wire terminations and cable and jumper installations. NYPA initiated an adverse trend DER on this issue. Further examples of weak DER evaluation are documented in section 6.1.2 of this report.

3.1.2 Instrumentation and Control Department Minor Maintenance

On January 7, 1995, the inspector observed an instrumentation and control (I&C) technician performing minor electrical maintenance in an electrical cabinet. The inspector noted a severely degraded filter over the cabinet inlet louvers, and loose parts and other debris in the cabinet.

As the technician was preparing to close the cabinet, the inspector questioned him about the actions he was planning to take regarding the physical condition of the cabinet. The technician indicated that he had not thought of taking additional actions.

The inspector discussed his observations with the I&C department manager. The inspector's main concern was that the technician was not observant of the degraded conditions in the cabinet and did not seek corrective actions without NRC prompting. The I&C manager conducted a walkdown of the cabinet and of several other cabinets and found similar conditions. Due to the extent of the problem, the I&C manager considered the problem to be department wide and issued a DER to document the issue.

As an immediate corrective action the I&C manager conducted a tailgate meeting to discuss the findings with his department. During the tailgate the I&C manager stressed his expectations that technicians should be observant of the conditions in cabinets that they work on and take actions to correct minor deficiencies if possible and document other problems.

Long term corrective actions will include incorporating this event into the quarterly industry events training for technicians, adding specific requirements to the I&C work procedures, forwarding this issue to other NYPA organizations that perform work in electrical cabinets, and assessing the effectiveness of the corrective actions through the management observations program.

The inspector concluded that the management expectations were in place; however, the application of these expectations was not being fully implemented in the field. The increased emphasis and proposed corrective actions should address this issue and allow management to monitor the effectiveness.

3.2 (Closed) NRC RAP Item 2.III.8, Preventive Maintenance Program

This restart item involved weaknesses in the preventive maintenance (PM) program, in that, vendor recommendations were seldom reviewed or incorporated into the PM program or associated maintenance procedures. Instances of specific PM deficiencies were identified in NRC inspection report 50-286/93-08, and resulted in several escalated enforcement items (EEIs), including EEI

93-08-05. These specific PM deficiencies included not following vendor-recommended preventive maintenance activities for the emergency diesel generators, condensate storage tank diaphragm, and containment fan cooler units.

The IP3 evaluation of this issue identified that the root cause for the failure to have an effective preventive maintenance program was attributable to management direction to perform corrective maintenance on equipment when needed, rather than focus on the establishment and subsequent execution of an effective PM program. This type of an approach towards preventive maintenance resulted in an inadequate review of vendor information and recommendations, in addition to other identified deficiencies.

To address concerns identified by the NRC, IP3 developed five specific actions to be taken. Each of the following five specific actions was reviewed by the inspector and were determined to have been adequately addressed by IP3.

The first step taken by IP3 was to develop an administrative procedure (AP-55) that defined the PM program. AP-55, Revision 0, dated November 11, 1993 was reviewed by the inspector and found to be well written in that it established the purpose of the PM program and also established the position of a site PM coordinator. AP-55 also provided guidance for evaluating vendor recommendations and including them within the PM program, if deemed appropriate.

The second step involved a review and subsequent incorporation of vendor recommendations for PMs for the emergency diesel generators. IP3 developed a matrix, which listed recommended PMs along with specified frequencies. Review of these actions were performed and documented in NRC Inspection Report No. 50-286/94-13. During this inspection, the inspector reviewed AP-22.3, Revision 0, dated September 30, 1993, which included the matrix that listed the diesel manufacturer's recommended PMs and specified frequencies.

The third step taken by IP3 was a complete review of the failure history for selected safety-related equipment with poor performance. The results of this history review were then utilized to compare the current PM practices with vendor recommended PMs. Vendor recommendations were subsequently included in the PM program if deemed necessary due to inadequate current PM practices. From this review, it was determined that 186 vendor recommendations warranted incorporation into the PM program. Of these 186 recommendations, 87 were recommended to be performed prior to the next scheduled startup. The failure history matrix was reviewed by the inspector and found to be detailed and thorough. Also, the inspector selectively reviewed several completed work packages for the 87 PMs that were identified as needing to be completed prior to startup. To date, all but nine of these PMs have been completed. The nine identified PMs requiring completion prior to restart have been assigned maintenance work request numbers and are scheduled for completion prior to restart.

The fourth step of corrective action dealt with the development of a departmental procedure that would be used to identify systems and components for inclusion into the PM program. The inspector reviewed newly developed

procedure 3-MD-41, "Reliability Centered Maintenance Instruction," Revision 0, dated November 8, 1993, and determined that it adequately provided the necessary guidance needed to assess plant systems and components for inclusion into the PM program, along with identified PM tasks. System evaluations have just recently been completed for the ten most important safety-related systems based upon IP3's Individual Plant Evaluation. Subsequent system evaluations are forthcoming and will continue on until completion of all plant systems.

The fifth step was to include a review of completed maintenance work packages to ensure that vendor recommended maintenance was being accomplished under the new preventive maintenance initiative. IP3 quality assurance conducted a review of 37 PM work packages and found that PM tasks and frequencies in the PM program were adequate. Identified problems of completed work packages reviewed were primarily of an administrative nature and were readily resolved.

Based upon the above actions taken by IP3 personnel and the review performed by the NRC of these actions, the inspector concluded that IP3 has instituted appropriate controls in order to ensure that vendor recommendations have been incorporated into the existing PM program. Also, the inspector determined that all vendor recommended PM items required to be completed prior to restart have been accomplished or are scheduled for completion prior to restart. RAP item 2.III.8 and EEI 93-08-05 are closed.

3.3 Service Water Relief Valve Testing

NRC inspection 50-286/93-81 identified that service water system (SWS) relief valves were degraded due to extensive corrosion problems. As a result of the identified relief valve problems, NYPA agreed to test and inspect the SWS relief valves; and also to setpoint test at least one relief valve in the component cooling, emergency diesel generator, and control room air conditioning heat exchanger systems. NYPA also agreed to the setpoint testing of all containment fan cooler unit service water relief valves.

IP3 personnel had attributed the relief valve testing problems to inadequate preventive maintenance, in that, they had not performed any preventive maintenance or setpoint testing on the various service water system heat exchanger relief valves. To correct the identified problems, IP3 first completed testing and inspection of all SWS heat exchanger relief valves. SWS instrument air system cooling heat exchanger relief valves were removed, inspected and subsequently replaced as were the central control room air conditioning service water relief valves. These valves were also subsequently added to the inservice testing program. All but one containment fan cooler unit (FCU) service water relief valves were removed, inspected, repaired or replaced and setpoint tested. The remaining containment FCU SWS relief valve is to be replaced prior to startup and is being worked under work request #94-00272-03. The FCU SWS relief valves also were to be placed under the inservice testing program. All remaining relief valves were to be placed under the plant preventive maintenance program by February 3, 1995. This action was being tracked by the action commitment tracking system (ACTS), item #0007. This ACTS item tracks the development and implementation of the IP3 relief valve preventive maintenance testing program.

During review of the above actions taken by IP3 personnel in order to correct identified problems with the relief valve preventive maintenance program, the inspector reviewed various documentation, which substantiated those actions taken thus far by IP3. This review included various work packages dealing with either the repair or replacement of various relief valves, design change packages, engineering evaluations, ACTS items, and inservice testing program listing for relief valves. The inspector found all actions to date adequately complete along with the appropriate documentation to support the particular work activity. The inspector concluded that NYPA corrective actions had resolved the concerns of SWS relief valves and that plans were in place for the remaining valve. Based on these actions and plans the inspector concluded that this issue was closed.

3.4 Routine Surveillance Review

The inspectors witnessed/reviewed selected surveillance tests to determine whether properly approved procedures were in use, details were adequate, test instrumentation was properly calibrated and used, technical specifications were satisfied, testing was performed by qualified personnel, and test results satisfied acceptance criteria or were properly dispositioned. The performance tests (PTs), and modification acceptance test (MAT) listed below were observed and reviewed. Unless otherwise indicated, the activities observed and reviewed were properly conducted without any notable deficiencies.

- 3PT-R32B Fan Cooler Unit Filtration System Functional Test
- 3PT-R82B Carbon Dioxide Fire Suppression System Functional Test
- 3PT-R35A Fan Cooler Unit Service Water Piping Boundary Valve Leak Test
- 3PT-SA11 Overpressure Protection System Analog Test
- 3PT-R003F Auxiliary Boiler Feed Pump Autostart Functional Test

3.4.1 ENG-259J, Service Water Pump Performance Reference Test

On January 10, 1995, the inspector observed the operations test group performing a test procedure to obtain new base line performance data for the 33 service water pump. The procedure, ENG-259J, Service Water Pump Performance Reference Test, operated the pump through its full range of flow and obtained performance data at various increments. The inspector questioned the test group members and found that they were familiar with the test and understood the reason for the test. However, the inspector made the following observations relating to the quality of the test performance:

- Four of the procedure prerequisites were not signed off in the test procedure. When questioned the test conductor stated the requirements were met but he had not signed yet. The problem of not documenting procedure performance was a recent issue involving the use of maintenance procedures.

- Test crew personnel were not attentive to details regarding the installation of test gear. The inspector noted a steady three drop per minute leak coming from a fitting just below the normal system flow indicator. When questioned, the test conductor acknowledged that he was aware of the leak and tightened the fitting. A previous procedure step required the test instrumentation to be installed, placed in service and leak checked. A second problem regarding inattention to installing test gear involved a high accuracy test gauge that was balanced on a three foot vertical run of small bore tubing. Improper support of the gauge could have resulted in damage to the instrument tubing.

The inspector discussed these observations with operations management, who stated that the observed performance did not meet their expectations. Although management stated that a DER should have been written, a DER was not initiated to document this event or the corrective actions. The issue concerning the DER initiation is discussed further in section 6.1.1. As a corrective action, the test crew personnel were briefed on management's expectations regarding procedure use and the conduct of testing. The inspector noted improvements in formality and attention to detail in subsequent testing.

3.4.2 3PT-SA11, Overpressurization System Analog Test

The operability of the overpressurization system (OPS) is demonstrated by performance of surveillance procedure 3PT-SA11, OPS Analog Test. During low temperature conditions, the OPS functions to protect the reactor coolant system (RCS) by opening the pressurizer power operated relief valves (PORVs) when RCS pressure exceeds the OPS setpoint. The OPS setpoint at which the PORVs open is variable, and changes as a function of RCS temperature. The minimum required OPS setpoints are controlled by technical specification (TS) 3.1.A.8.a and curve III of TS figure 3.1.A-3. TS figure 3.1.A-3, curve III was recently revised by IP3 license amendment No. 154, dated October 7, 1994. Surveillance procedure 3PT-SA11 was last completed during September 1994. The NRC reviewed the last performed copy of 3PT-SA11 and confirmed that the procedure calibrated the OPS setpoints below the revised TS curve. The inspector concluded that 3PT-SA11 was appropriately reviewed by NYPA to assess the effect of the TS amendment.

3.4.3 3PT-R82B, CO_2 Fire Protection System

On December 28, 1994, the inspector observed the performance of surveillance procedure 3PT-R82, System Functional Test of CO_2 System. The test was performed and directed by the operations test group following modifications made to the CO_2 fire protection system. The inspector reviewed the procedure and determined that it was well written and had incorporated deficiencies from the previous test performance. Operations test group displayed good control of the test and the inspector verified that personnel performed the test in accordance with procedure. Good NYPA management oversight was demonstrated during test performance and test failures were noted by deviation/event reports. The NRC concluded that the CO_2 system functional test was well conducted by NYPA.

3.5 (Closed) NRC RAP Item 2.III.3, Surveillance Test Program

3.5.1 Surveillance Test Program Deficiencies

This restart issue concerned surveillance test program deficiencies that were documented in NRC inspection reports over the last two years. Licensee actions to resolve specific deficiencies, as well as to address the root causes of problems with the surveillance test program, occurred primarily through development and implementation of a performance improvement plan.

The plan's overall approach to improve performance was to implement several programmatic changes. Organizational changes were made within the Performance and Reliability Department, with the most significant change being establishment of department surveillance coordinators. Measures to improve test scheduling were implemented, including limitation of scheduled, non-outage testing to Monday through Thursday, and establishing a 12-week rolling test schedule. Additional requirements were established to ensure timely review of completed tests, and included: a peer review of completed surveillance tests, to be initiated on the same shift that the test was completed; an operability review by an SRO/Shift Supervisor on the shift that the peer review was completed; and, a goal of completing final review by the Performance and Reliability Department within one working day of test performance. Requirements for increased management involvement in test performance were established. The department surveillance coordinators were charged with ensuring management participation, and line supervisors were to conduct peer reviews of completed tests. Procedures for improved test change verification were established, to include field walkdowns by department surveillance coordinators.

Major products that resulted from this action plan included revisions to administrative procedure AP-19, "Surveillance Test Program," that implemented many of the program improvements; revision of PFM-3 (changed to TSP-042), "Surveillance and Engineering Acceptance Test Preparation and Review"; development of station directive ADM-SD-06, "Self Verification"; and revision of the TS/Surveillance Test Cross Reference Matrix. Changes were relayed to plant personnel through training and management expectation meetings.

The inspector reviewed the licensee's action plan to resolve the surveillance test program deficiencies. The inspector considered that the programmatic aspects of the resultant surveillance test program were sound. The plan was comprehensive and established procedures and controls to address the generic causes of previous issues. Through review of technical issues, as discussed in section 3.5.3 of this report, and based on the resident inspectors' periodic reviews of surveillances, the inspector noted that the surveillance test program changes have resulted in improvements in performance. Performance tests generally demonstrated the functional capability of equipment and satisfied applicable technical specification requirements. Test scheduling and the timeliness of test reviews had improved, with no recent significant deficiencies noted during the residents' periodic observations.

The inspector observed that the licensee has continued to enhance the surveillance test program after completion of the performance improvement

plan. Additional programmatic improvements have been observed that have enhanced the implementation and performance of surveillance testing, including the development of guidelines in Administrative Procedures 3 and 4, and continuing efforts in the area of procedure upgrade. The inspector also noted that the Quality Assurance organization performed audits in the area of surveillance testing that were insightful and of high quality. In particular, the inspector considered that Quality Assurance Assessment Report 4-44, "Surveillance Test Program," dated September 16, 1994, provided valuable insight into this area.

Some deficiencies continue to be noted in the area of performance testing. For example, the technical basis of a RAMS building ventilation system surveillance test (discussed in section 3.5.3) was found to be weak. Test performance weaknesses were noted during the conduct of a service water pump surveillance and station blackout testing (discussed in sections 3.4.1 and 2.2, respectively). Additionally, the inspector observed that no documented response or corrective action was evident for a significant finding in Quality Assurance Assessment Report 4-44. Specifically, weakness was noted in the implementation of requirements for increased management oversight and involvement. The assessment reported that there was no objective evidence that managers and system engineers periodically witness surveillance tests. The inspector was concerned about this weakness, in that management involvement in test performance was one of the major changes to have been implemented by the performance improvement plan. The inspector discussed his concern with station management. They acknowledged the concern and agreed to review the problem.

3.5.2 Conclusions

The inspector considered that the licensee had made a substantial effort to improve the surveillance test program. The performance improvement plan was comprehensive and established the administrative and operational framework for an effective program. Some performance improvements have been noted in the technical quality of tests, timeliness of test review, test scheduling, and performance. Although some deficiencies were identified, the inspector noted that efforts to enhance surveillance program effectiveness were continuing. Actions taken to address problems since completion of the improvement plan included continuing Quality Assurance assessments, management programs for procedure upgrade, and new standards for procedural quality and restart. NRC RAP Item 2.III.3 is closed.

3.5.3 Previously Identified Issues

Numerous open items, which provided part of the basis for the surveillance test program assessment, were reviewed. Corrective actions for these deficiencies, as well as for other issues related to the surveillance test program, were developed in the course of implementing the improvement plan. The inspector reviewed and assessed the licensee's responses to previously identified issues, as summarized in the following discussions.

(Closed) VIO 92-28-10, Missed Radiation Monitor Surveillance Tests Required by Technical Specifications

This violation consisted of three separate occurrences of missed surveillances. The individual events, causes, and the licensee's specific corrective actions, are discussed below:

1. A quarterly surveillance test was not performed by the required date on the liquid radwaste effluent flow rate measurement device, FT-1064. The cause of the missed surveillance was that procedures for quarterly and refueling surveillance testing requirement that were incurred under technical specification (TS) amendment 51 (radiological environmental requirements) were not written and entered into the surveillance system when the TS amendment was implemented.

In response to this event, the licensee issued LER 93-001, "Missed Surveillances on Radioactive Liquid Effluent Flow Rate Monitor." Administrative procedure AP-18.7, "Control of Technical Specifications," was issued to formalize the implementation of TS amendments. Surveillance test procedures were prepared and entered into the surveillance system. A review of all TS surveillance requirements for radiation monitors was performed and no other violations were identified.

The quality assurance department conducted a review (93-04) of the implementation of TS amendment 51. This audit confirmed that the surveillance procedures satisfied TS amendment 51 testing and scheduling requirements; however, review of QA audits of TS Appendix B requirements for the period 1984-1992 revealed a total of 62 identified weaknesses, ten of which were classified as TS violations. Of these ten violations, three (one of which was the subject violation) had been reported to the NRC by LERs; the remainder had been evaluated by the licensee as not being reportable.

2. On two consecutive occasions, a refueling surveillance test was not performed by the required date on the radioactive machine shop building exhaust ventilation flow rate monitor, R-59. The cause of the first missed surveillance was miscommunication between the responsible departments, such that neither ensured that the surveillance was completed. The cause of the second missed surveillance was that, following approval of a new surveillance procedure, the surveillance was not entered into the test scheduling system.

In response to this event, the licensee issued LER 93-003, "Missed Surveillances on Gaseous Effluent Flow Rate Monitor." A weekly report of surveillance tests not performed by an early completion date was instituted through a revision to AP-19, "Surveillance Test Program," to escalate missed surveillances to management's attention.

3. A quarterly surveillance test was not performed by the required date on the waste gas effluent radiation monitor, R-20. The cause of the missed surveillance was that a new surveillance test procedure had not been developed following completion of a system modification that replaced the radiation monitor. The cause of this event was miscommunication between the responsible

departments, such that neither ensured a procedure was written and entered into the surveillance program.

In this case, compensatory measures were taken within the time specified in TS, and thus no violation of TS occurred. As such, corrective action for this event was not specifically addressed by the licensee; however, corrective actions taken in response to the two events discussed above should preclude recurrence of this event.

The inspector considered that the licensee had appropriately addressed the specific and generic causes of the violation and that the corrective actions were appropriate to prevent recurrence. **VIO 92-28-10** is closed.

(Closed) URI 92-28-12, Quality Assurance Audit of Surveillance Test Program

In response to an NRC-identified deficiency in a control room filtration system functional test, the licensee QA department conducted an audit (93-08) of approximately 500 completed surveillance tests. At the close of the 50-286/92-28 inspection period, this audit was in progress and had identified two additional surveillance testing deficiencies. Pending completion of the audit and subsequent NRC review, this item was considered unresolved.

The subject QA audit identified numerous deficiencies in completed surveillance test procedures. The majority of deficiencies could be categorized into two broad problem areas: problems related to operability and overall test acceptance criteria; and inadequate review of completed procedures. Two corrective action requests (CARs 768 and 773) were generated to initiate and track corrective actions.

CAR 768 addressed problems involving operability and overall test acceptance criteria. Problems were categorized in the following areas:

1. Test results that did not satisfy the acceptance criteria were not addressed. Two of these were tests required by TS: 3PT-SA33, "Refueling Water Storage Tank Lo-Lo Level Calibration," and 3PT-R92, "Emergency Plant Vent Sampling System Integrity."

2. Test results did not satisfy the acceptance criteria but were accepted with some written justification.

3. Test results that were unsatisfactory but that were not addressed because they were not part of the operability or overall acceptance criteria.

4. Tests with requirements that were incorrect or nuclear.

5. Tests in which the acceptance criteria were changed without proper concurrence.

6. Tests that initially failed and had inadequate retests following corrective action.

7. Tests with miscellaneous discrepancies.

To develop corrective actions for the specific deficiencies, CAR 768 was subdivided (CARs 768A-E) to assign action to the responsible departments. Corrective actions for the programmatic issues identified by CAR 768 were addressed by the performance improvement plan.

The inspector reviewed the specific corrective actions as presented in completed CARs 768A-E. One of the two failed TS-required surveillances was determined by the licensee not to have been a TS violation; specifically, the out-of-specification value in 3PT-R92 was subsequently evaluated as being based on ALARA (rather than operability) considerations. However, investigation of the 3PT-SA33 failure revealed that a violation of TS requirements had occurred. Specifically, the minimum number of refueling water storage tank (RWST) low level alarms required to be operable, as specified in 3PT-SA33, was less than the TS requirement. Additionally, the alarm setpoints were determined to have been incorrectly calculated, in that the combined inaccuracies of the transmitter and bistables had not been taken into account. Review of historic data against the corrected low level alarm setpoint revealed four occurrences where the actual setpoint did not satisfy the operability criteria.

In response to this event, the licensee issued LER 93-009, "Incorrect Operability Criteria for the RWST Due to Not Combining Loop Inaccuracies." The LER was initially reviewed in inspection report 50-286/93-04. In that review, the inspector noted that the RWST low level alarm is used in conjunction with the containment sump level indicator to initiate cold leg recirculation in accordance with emergency operating procedure (EOP) ES-1.3, "Transfer to Cold Leg Recirculation." However, the inspector noted that the licensee had not reviewed the containment level calibration surveillance procedure to verify that the instrument was not similarly affected by combined loop inaccuracies. An unresolved item, 94-04-04, was generated as a result of this concern. The licensee initiated CAR 766 to examine the potential generic implications of combined loop inaccuracies on surveillance procedures. In inspection report 50-286/93-27, the inspector noted that the issue regarding the containment level calibration surveillance procedure had been resolved, but maintained the item open pending completion of the licensee's review of generic implications; this item was subsequently closed in inspection report 50-286/94-27. At the time of this inspection, all technical issues associated with CAR 766 had been resolved. The inspector had no additional concerns on this matter.

CAR 773 addressed inadequate review of completed procedures. Specific deficiencies identified by the subject QA audit were categorized in the following areas:

1. Tests that had missing review signatures.

2. Tests that had procedural steps not filled in, signed, or checked.

3. Tests that had "N/A" entered for steps with no justification.

4. Tests that had data transcription errors.

5. Tests that had problems related to equipment calibration.

6. Tests where changes were made to the procedure without an approved temporary procedure change.

Corrective actions for the programmatic issues identified by CAR 773 were addressed by the performance improvement plan. Deficient areas were addressed by the General Manager of Operations in a memorandum to all surveillance performers and reviewers, addressing the resultant changes to the surveillance test program and administrative procedure AP-19. This memorandum stressed the need to maintain a questioning attitude, to immediately elevate problems to the appropriate level of management, and the importance of attention to detail. This message was reenforced in site-wide training on the topic of management expectations on performance of surveillance testing.

The inspector considered that the licensee had appropriately addressed the specific and generic causes of the deficiencies noted in QA audit 93-08 and that the corrective actions were appropriate to prevent recurrence. **URI 92-28-12** is closed.

(Closed) VIO 91-26-03, Failure to Adequately Evaluate Test Results

In November 1991, the monthly surveillance test results for emergency diesel generator 31 were not adequately evaluated; specifically, the differential pressure between the essential service water header and service water inlet pressure to the heat exchanger was outside of the acceptable range specified in the test procedure. The cause of the inadequate evaluation was personnel error.

In response to this violation, the licensee evaluated the value of service water differential pressure that was obtained during the November 1991 test and assessed that the operability of emergency diesel generator 31 had not been affected. As part of the performance improvement plan, administrative procedure AP-19 was revised to increase management oversight, improve the process for review of completed tests, and increase emphasis on operability verification in the course of these reviews. The inspector considered that the licensee had adequately addressed this violation and that the corrective actions were appropriate to prevent recurrence. **VIO 91-26-03** is closed.

(Closed) URI 93-16-01, Matrix to Cross Reference Technical Specification Surveillance Requirements With Surveillance Procedures

In inspection report 50-286/93-16, the inspector had noted that the licensee was developing a matrix to cross reference TS surveillance requirements with the surveillance procedures that satisfy these requirements. This issue was considered an unresolved item, pending completion of the licensee's developed matrix.

Prior to this item, the licensee had a TS/Surveillance Test Cross Reference Matrix; however, it was not considered to be reliable. At the time that this item was opened, a contractor (EBASCO) was in the process of revising the matrix; this process is now complete. In revising the matrix, the contractor

evaluated procedures for proper operability criteria and proper test frequency. The matrix was examined by the licensee's QA organization and has undergone validation and approval by the Performance and Reliability department. Although some discrepancies were identified in these processes, the matrix is intended to be a dynamic document. Accordingly, procedure PFM-43, "Technical Specification Versus Surveillance Tests Update Procedure," is also being revised to control changes to the matrix. **URI 93-16-01** is closed.

(Closed) VIO 93-29-02, Failure to Adequately Test Alternate Cooling to the Charging Pumps Required by Technical Specifications

During review of a proposed TS change request, the inspector determined that the surveillance test procedure that was used to verify operability of valves in the city water connection to the charging pumps did not actually test all of the applicable valves, as required by TS. The cause of the inadequate surveillance test was personnel error that occurred when the procedure was originally written.

In response to this violation, the licensee issued LER 93-049, "Violation of Technical Specifications Due to a Failure to Adequately Test the Valves Connecting the Emergency City Water Supply to the Charging Water Pumps' Coolers." The subject valves were exercised and determined to be operable. Surveillance test 3PT-R39, "Emergency City Water to Charging and Boric Acid Transfer Pumps," was revised to include exercising all valves required to establish city water flow to the charging pump oil coolers. The Inservice Testing Program was revised to implement testing at the required periodicity.

The inspector reviewed LER 93-049 and found it satisfactory. The inspector considered that the licensee had adequately addressed the violation and that the corrective actions were appropriate to prevent recurrence. The inspector also considered that implementation of the TS/Surveillance Test Cross Reference Matrix will reduce the possibility of similar events occurring. **LER 93-049** and **VIO 93-29-02** are closed.

(Update) URI 92-28-11, Adequacy of Flow Measurement for Radioactive Machine Shop Building Vent Calibration Check

In inspection report 50-286/92-28, the inspector questioned the adequacy of test procedure 3PC-R53, "Radioactive Machine Shop (RAMS) Building Vent Calibration Check." Specifically, the inspector noted that flow readings fluctuated significantly for measurements obtained using both the installed and test instrumentation. This item was considered unresolved pending licensee evaluation of the test methodology.

The inspector reviewed the licensee's proposed resolution of this item. As corrective action, 3PC-R53 was revised to reduce the maximum allowable difference between the installed and test instrumentation from 50 percent to 10 percent. The surveillance was performed using the revised procedure and a more accurate digital flow meter as the test instrument. The licensee noted that flow oscillations were significantly lower than had been previously observed.

The inspector reviewed the completed RAMS Building Vent Calibration Check that had generated the URI, as well as the completed test using the resultant revised procedure. Although improvement was noted in the substantially revised 3PC-R53 procedure, the inspector considered that several issues remained unresolved. Specifically:

1. The acceptance specification was changed from, "at least 50 percent of the range (high to low) of readings obtained from the individual installed probes was overlapped by the range of readings obtained from the test probe held at the corresponding location," to, "less than or equal to 10 percent of the difference between the high-to-low average flows, as indicated by the installed instrumentation (operating in the averaged mode), and the test instrument (from readings obtained at each of the eight installed probe locations). While the new specification is clearly more restrictive, the licensee provided no technical basis for why or how this new value was determined.

2. As stated by the licensee in their proposed resolution of this item, the magnitude of flow oscillations, as seen by the test instrument, had been lower when the test was reperformed (using the revised procedure) than it had been during the test that had generated the open item. The inspector considered that the proposed resolution inferred that the lower magnitude oscillations were due to use of the higher accuracy digital flow meter, in that no other variable was mentioned. However, upon review of the completed revised test procedure (included as supporting documentation for the proposed resolution), the inspector noted the magnitude of flow oscillations, as seen by the installed instrument, was also lower than it had been during the initial test. The inspector reviewed the completed initial test procedure (not a part of the supporting documentation) and determined that a different combination of ventilation fans had been in operation during this test than had been in operation during the repeat test. Specifically, of six fans available, four had been in operation during the first test (with a combined rated flow of 27,750 cfm), as opposed to two fans in operation during the repeat test (with a combined rated flow of 20,400 cfm). The inspector considered that reduced air flow due to the different fan combination was the most likely cause of the lower magnitude flow oscillations encountered during the repeat test. The inspector considered that the issue of flow stability as it relates to accuracy of the flow meter calibration remains unresolved.

3. The revised test procedure specifies that test instrument flow measurement be made at each of the eight installed instrument flow probe locations. These individual readings are then converted, by the technician, into an average flow for comparison with the average flow as determined by the installed instrument. However, the inspector noted that the procedure does not employ a similar process to determine average flow as measured by the installed instrument; rather than measuring the outputs of the individual installed instrument flow probes, only the average flow value as processed by the instrument is recorded. Since the instrument processes eight inputs in generating the value of average flow, a defective flow probe could be masked by evaluating only the average.

4. The revised test procedure contains no quantitative acceptance specification for the zero flow check of the installed detector flow probes. The procedure specifies that, with all fans secured, each probe should read, "approximately zero." The inspector noted that, during the most recent test, the actual zero flow readings ranged from 30 to 193 SCFM/FT^2. Given that, during the flow measurement portion of the test (two fans running), the average flow as indicated by the installed instrument was 267 SCFM/FT^2, a zero flow indication of 193 SCFM/FT^2 would appear to be unacceptable. This condition was noted by the technician in the remarks section of the procedure, and was attributed to a backdraft that occurred when all fans were secured. The comment notes that supervision was informed, but no subsequent action or evaluation is recorded.

The inspector discussed these issues with the licensee, who agreed to investigate. Pending licensee resolution of these issues and subsequent NRC review, **URI 92-28-11** remains open.

(Closed) EEI 93-09-08, Inoperable Boric Acid Transfer Pumps

On February 25, 1993, while performing the final review of a February 19, 1993 functional test of the boric acid transfer pumps (3PT-Q38), the Performance and Reliability supervisor noted that the differential pressure of both pumps was below the acceptance criteria. As a result, the pumps were declared inoperable and a plant shutdown was commenced. Four prior reviewers had indicated no problems with the operability criteria. Due to this review process, five days had elapsed from the time that the test was performed until the inoperable condition of the pumps was recognized. Technical Specifications requires two boric acid transfer pumps to be operable, and allows one pump to be inoperable for up to 48 hours before requiring that the plant be shut down; having both boric acid transfer pumps inoperable for five days constituted a violation of this TS requirement. The cause of this violation was personnel error. A contributing factor was an inaccuracy contained in a newly-added procedure step. The step, which had been included to aid operators in immediately identifying problems with operability, incorrectly identified the "required action" range for pump discharge pressure as the "acceptable range."

In response to this violation, the licensee revised 3PT-Q38 to clarify pump operability requirements. Administrative procedure AP-19 was revised to: 1) clarify and provide specific instructions for test reviews; 2) require peer reviews by management personnel at the completion of the test; and, 3) establish requirements for timely completion of Operations department reviews. Administrative procedure AP-3, "Procedure Preparation, Review, and Approval," was revised to improve the review and approval process for procedure revisions. The inspector considered that the licensee had adequately addressed this violation and that the corrective actions, along with the programmatic improvements established by the performance improvement plan, were appropriate to prevent recurrence. **EEI 93-09-08** is closed.

Failure to Document Significant Occurrences (EEI 92-28-03)

In inspection report 50-286/92-28, the inspector noted two instances where surveillance test failures were not documented in significant event reports (SORs), contrary to the requirements of administrative procedure AP-8, "Reportability Manual." These violations were the subject of escalated enforcement item (EEI) 92-28-03. The licensee's subsequent corrective actions were evaluated to have been satisfactory, and this item was closed in inspection report 50-286/94-18.

Inadequate Oversight of the Surveillance Test Program (EEI 92-28-06)

In inspection report 50-286/92-28, the inspector determined that, on July 23, 1992, the plant had been taken from cold shutdown to hot standby with an inoperable control room ventilation/filtration system. Additionally, the licensee did not complete the control room filtration system functional test within the required time period. These violations of Technical Specification requirements were the subject of EEI 92-28-06. The licensee's subsequent corrective actions were evaluated to have been satisfactory, and this item was closed in inspection report 50-286/94-18.

Failure to Increase Surveillance Frequency (URI 92-09-01)

In inspection report 50-286/92-09, the inspector noted that the test frequency for a containment building pressure relief valve was not increased as required by ASME Code Section XI, when its close stroke time increased by 123 percent. Although the licensee took immediate corrective action, this item was considered unresolved pending implementation of long-term corrective action. These actions were subsequently evaluated to have been satisfactory, and this item was closed in inspection report 50-286/94-09.

Resolution of Safeguards Initiation System Logic Questions (URI 93-08-06)

In inspection report 50-286/93-08, the inspector determined that a temporary procedure change (TPC) for surveillance procedure 3PT-M14A, "Safety Injection System Logic Functional, Train A," had entered the subject change such that it was incorrectly sequenced into the procedure. The inspector determined that this error had not resulted in a violation of TS requirements; however, pending licensee review of the technical justification of the TPC, the item remained unresolved. Results of the licensee's review were subsequently evaluated to have been satisfactory, and this item was closed in inspection report 50-286/94-18. The inspector reviewed the documentation provided by the licensee and had no additional concerns.

(Closed) URI 93-16-07, Resolution and Review of RHR Pump Discharge Relief Valve Setpoint and Suction Valve Interlock Setpoint

In inspection report 50-286/93-16, the inspector noted that an earlier licensee review of residual heat removal (RHR) system surveillance test procedures had identified that the RHR suction valve auto-close setpoints were not consistent with the RHR Design Basis Document. Specifically, valves MOV-

730 and MOV-731 were designed to automatically shut when RCS pressure exceeds 550 psig; however, NYPA determined that surveillance test procedures 3PC-R51B, "Saturation Margin Monitoring System Transmitters' Check and Calibration," and 3PC-R51C, "Saturation Margin Monitoring System Analog Components' Check and Calibration," actually set the valve closure circuitry bistable setpoints at 600 psig. The inspector was concerned that this condition reduced the margin of overpressure protection for the RHR system. Pending completion of the licensee's investigation and subsequent NRC review, this item was considered unresolved.

In response to this issue, the licensee evaluated the automatic closure setpoints for valves MOV-730 and MOV-731 and determined that the correct value was 550 psig. The associated valve closure circuitry bistable setpoints were adjusted accordingly, and surveillance test procedures 3PC-R51B and 3PC-R51C were revised to incorporate the new automatic valve closure setpoint. Since RHR relief valve AC-1836 also provides overpressure protection for the RHR system, the relief valve setpoint was also evaluated. As a result, the licensee determined that the lift pressure of AC-1836 should be lowered from 490-510 psig to 460-480 psig. This adjustment was performed and the setpoint verification surveillance test 3PT-R105, "Residual Heat Removal Supply Safety Relief Valve AC-1836," was revised accordingly. An evaluation was performed, which demonstrated that the RHR system had been adequately protected from overpressurization while the higher isolation valve automatic closure and relief valve setpoints were in effect.

In addition to specific actions to address the MOV-730/731 automatic closure setpoints, a program was established by procedure MCM-8, "Setpoint Control," to control, revise, analyze, and document setpoint changes. A program was initiated to walk down and verify safety-related setpoints, and to establish this information as a reference document in the Plant Equipment Data Base.

The inspector reviewed the documentation provided by the licensee to resolve this issue. The inspector considered that the licensee had adequately addressed the violation and that the corrective actions were appropriate to prevent recurrence. URI 93-16-07 is closed.

(Closed) URI 93-09-10, Resolution of Overpressure Protection System Recurring Deficiencies and Surveillance Testing Deficiencies

On April 18, 1992, while conducting a normal plant cooldown, an overpressure protection system (OPS) actuation occurred. The OPS had operated normally; the cause of the actuation was operator error. The operator had become distracted by concurrent actions in the cooldown evolution and had not adequately reduced reactor coolant system (RCS) pressure to be consistent with the lowering RCS temperature. This event was discussed in inspection report 50-286/92-11.

A second inadvertent OPS actuation occurred on September 17, 1992. Shift turnover had just been completed and operators were in the process of collapsing the pressurizer bubble. The cold calibrated pressurizer level instrument indicated 88 percent; however, when corrected for actual pressurizer temperature, this reading was approximately 100 percent. In

addition, operators were filling two steam generators, which resulted in a reduction in RCS temperature (and consequently, a reduction in the OPS actuation setpoint). This combination of factors resulted in a brief loss of pressure control as the RCS transitioned to the solid water condition. The OPS actuated for approximately two seconds before operators were successful in stabilizing plant pressure. This event was discussed in inspection report 50-286/92-26.

In August 1993, the inspector observed the performance of 3PT-SA11, "OPS Analog Test," and noted that administrative controls were poorly applied. Specifically, pen-and-ink changes were made to correct acceptance criteria, rather than performing a temporary procedure change (TPC) in accordance with administrative procedure AP-19. Additionally, the inspector noted that these errors had gone through several procedure revisions without being corrected. These observations were discussed in inspection report 50-286/93-16, and tracked, along with other instances of deficient utilization of TPCs, under URI 93-09-10.

In response to the April 1992 OPS actuation event, the licensee revised procedure POP-3.3, "Plant Cooldown - Hot to Cold Shutdown," to clarify action steps and to add a caution to temporarily reduce the rate of cooldown prior to placing the OPS in service. Additional action taken as a result of the September 1992 OPS actuation event included:

1. The minimum pressure for reactor coolant pump (RCP) operation was reevaluated and subsequently lowered from 400 psig to 325 psig. This resulted in a broader operating band between the OPS setpoint limit curve and the RCP operating curve, allowing operators to maintain greater margin between RCS pressure and the OPS setpoint.

2. POP-3.3 was revised: 1) to restrict watch turnovers while collapsing the bubble in the pressurizer; 2) to provide guidance on applying the temperature compensation to pressurizer level; 3) to require plotting RCS temperature versus pressure against the plant cooldown curve; and, 4) to provide expanded guidance for collapsing the pressurizer bubble.

3. Refresher training was conducted with operations personnel, concerning plant operations in which an inadvertent OPS actuation is most likely.

In response to the administrative deficiencies noted in August 1993, the licensee revised 3PT-SA11 to correct the transposition errors. The programmatic issue of TPC administration was addressed, as noted above, through extensive revision of administrative procedure AP-19, "Surveillance Test Program." Specifically, a TPC is required even in cases where no intent change will result from the proposed change, and a peer review checksheet has been added to further ensure that changes have been documented by a TPC. Additionally, TPCs are required to be incorporated prior to the next use of the affected procedure.

The inspector reviewed the documentation provided by the licensee concerning this item. The inspector considered that the licensee had adequately

addressed the specific issues and that the programmatic corrective actions were appropriate. URI 93-09-10 is closed.

Resolve Inoperability of the Toxic Gas Monitor and Surveillance Test Deficiencies

During the past several years, the inspector noted numerous deficiencies related to the control room toxic gas monitoring system. Problems included: surveillance test errors, such as incomplete testing and inadequate administration of procedure changes; and degraded system reliability, as indicated by surveillance test failures and frequently required corrective maintenance. The licensee generated LER 93-023, "Inadequate Surveillance Test, Due to Personnel Error, Caused the Inoperability of the Control Room Toxic Gas Monitor," after technicians identified that the monthly surveillance test did not functionally test the chlorine and ammonia channels. Modification of a surveillance procedure without performing a TPC was tracked under URI 93-09-10. Although these items are closed, system reliability remained a concern.

In response to this concern, the licensee has upgraded the control room toxic gas monitoring system by replacing the older-style equipment (the oxygen detectors and the chlorine/ammonia readout modules). The necessary setpoint and procedural changes have been developed and incorporated into the monthly surveillance test, 3PT-M55. To establish accountability and ensure that problems are addressed, a system engineer position has been established.

The inspector reviewed the documentation provided by the licensee concerning this item. The inspector considered that the licensee had adequately addressed long-term reliability of the toxic gas monitoring system, and had no additional concerns.

Resolve Power Operated Valve Stroke Time Methodology (URI 94-09-05)

In inspection report 50-286/94-09, the inspector identified an inconsistency in the methodology used for stroke time testing of remotely operated valves. The test, 3PT-Q17, "Stroke Sample System Valves," utilized the remote valve position indicating lights for stroke timing. The sequence of indications, as presumed in the procedure, was as follows: In timing an opening valve stroke, initially only the green "closed" light is on. When the control switch is operated, timing is commenced, and the red "open" light turns on; the green "closed" light remains on, giving a dual indication as the valve strokes. When the valve is fully open, the green "closed" light extinguishes, and is the indication that is used to stop timing. The inspector noted, however, that some valves did not exhibit dual indication during their stroke; instead, the green "closed" light would extinguish before the red "open" light would turn on. In such cases, the inspector considered that using the extinguishing of the green "closed" light as indication that the valve was open may not provide an accurate stroke time. Pending licensee evaluation and subsequent NRC review, this item was considered unresolved.

In response to this concern, the licensee conducted a review of all stroke time test procedures to verify that the test method was correct for the valve

being tested. The licensee concluded that the methods being used are appropriate. Stroke time testing was again conducted in accordance with 3PT-Q17 and a number of hardware deficiencies associated with valve position indication was identified. These problems were documented in deviation/event report (DER) 94-569. Based on the number of material problems discovered during 3PT-Q17, the licensee committed to verifying, by local indications, all IST valve position indications prior to startup. The inspector concluded that no regulatory requirements had been violated and, based on corrective action in progress, closed URI 94-09-05 in inspection report 50-286/94-18.

The inspector reviewed the documentation provided by the licensee concerning this item. The inspector noted that all of the hardware deficiencies reported in DER 94-569 have been corrected with the exception of work request 94-02149-04 (SP-AOV-956B, "No dual indication was received during valve stroke"). This work is scheduled to be completed prior to startup, and is being tracked by ACTS 3485. Local verification of IST valve position indications is scheduled to be completed prior to startup and is being tracked by ACTS 3102. Additionally, existing stroke time test procedures will be revised to provide instructions for local observation of valve stroking. These revisions are scheduled to be completed prior to the next scheduled test performance following startup, and are being tracked by ACTS 4711. The inspector had no additional concerns on this matter.

4.0 ENGINEERING (37551, 92903)

4.1 (Open) RAP item 2.III.13, Post Modification Testing Deficiencies

In NRC inspection report 50-286/94-26, two instances of inadequate post modification testing were identified. Specifically, an improperly tested modification to the carbon dioxide fire system power supply resulted in system inoperability. Additionally, the NRC identified that the acceptance tests for modifications to the isolation valve seal water system failed to test the system functionality. As a result of these concerns, NYPA hired an engineering contractor to perform a sample audit of post modification retests.

The contractor conducted a 10% audit of the 400 modifications performed during the current outage. The auditors characterized deficiencies as either technical or procedural. Technical deficiencies were of such significance that the modification would have been inadequately or incompletely tested. Due to the current plant conditions, none of the deficiencies resulted in the inoperability of a required system. Procedural deficiencies were programmatic errors that may or may not negate the test results. The contractor audit results are summarized in the following table.

Modification Acceptance Tests Sampled	40	
Total Tests Containing Deficiencies	9	22.5%
Technical Deficiencies	5	12.5%
Procedural Deficiencies	4	10.0%

Based on the audit results, NYPA established a team to perform a 100% audit of modification acceptance tests performed this outage. The audit team prepared a set of review criteria based on their review of the applicable station procedures: MCM-11, Preparation, Review, and Approval of Modification Test Requirements; SED-AD-8, Modification Acceptance Test Writers Guide; and PFM-5, Guidance for Post Maintenance Testing.

The inspector reviewed the audit criteria and considered it concise and comprehensive. The inspector also reviewed the source procedures and concluded that adequate instructions existed to identify the requirements and expectations of modification acceptance testing.

The process for post modification testing involves three stages. The design engineer specifies the required test criteria during the design phase as part of the modification. Second, a test engineer uses the test criteria to develop the required test procedure. In some cases the test engineer may specify existing surveillance or operating procedures if they meet the requirements. The third phase is the proper execution of the test in the field and an adequate review of the results. The audit team is reviewing each of these three phases and documenting the results.

The audit team has completed approximately 41% of their review and has documented discrepancies in approximately 33% of those procedures. Of these discrepancies, NYPA has not identified any situations where improper tests have affected the operability of equipment required for cold shutdown.

NYPA hired a contractor to perform a detailed root cause analysis of this event. Immediate corrective actions have consisted of performing the review of all new MATs prior to performance. NYPA has committed to fully resolve this issue and perform retests as required. Additionally, the NRC NYPA Assessment Panel (NAP) has made this issue a formal restart item.

NYPA's prompt response to the issues identified in NRC inspection report 94-26 demonstrate excellent problem identification and self assessment. The decision to expand the audit based on the sampling results further demonstrates a commitment to quality. The NRC review of this issue will continue as NYPA completes their audit. This item will remain open and will be tracked as NYPA assessment panel (NAP) restart action plan (RAP) item 2.III.13. Unresolved item URI 94-26-02 is closed.

4.2 (Update) RAP item 2.II.11, Debris Plugging of ECCS Strainers

The NRC issued Bulletin 93-02, "Debris Plugging of Emergency Core Cooling System (ECCS) Suction Strainers", requiring licensees's to identify fibrous air filters or other temporary sources of fibrous material in containment, which could plug ECCS system suction strainers. NYPA responded to the NRC by letter dated June 8, 1993, that fibrous air filters were not generally used in the vapor containment (VC). During a subsequent NRC resident inspection, questions were raised concerning the iodine filter fans and peeling paint/loose mortar in the three VC sumps. These issues were left unresolved (URI 93-22-05) pending further evaluation by NYPA.

NYPA's initial response to Bulletin 93-02 included a review of plant equipment data bases to identify sources of fibrous material in the VC. This search provided the basis for the NYPA reply to the bulletin. Subsequent to their bulletin reply, NYPA reevaluated the iodine filter fans and concluded that although the filters are composed of glass fibers, their construction, location in the VC, and intended service assured that the filters would not disintegrate and clog the ECCS strainers during a loss of coolant accident (LOCA). In addition, NYPA re-reviewed their plant equipment data bases to ensure that all sources of fibrous filter material had been identified. Therefore, NYPA concluded that a revision to their Bulletin 93-02 response was not required. The NRC reviewed the actions taken by NYPA to address the iodine filter fans and had no further concerns.

NYPA revised procedure SOP-CB-2, "Containment Entry and Egress" to ensure that prior to operation above cold shutdown, all fibrous material is removed from the VC and that the recirculation and containment sumps/ECCS strainers are clean. The recirculation pump and containment sump pump functional tests also require an inspection of the sumps, grating, and ECCS strainers prior to operating the pumps. In response to supplement 1 to Bulletin 93-02, NYPA calculated maximum allowed sump gating and strainer opening sizes, and performed VC walkdowns to identify insulation deficiencies, which could result in strainer clogging. These efforts by NYPA were proactive and notable since the bulletin supplement was issued to PWR licensees for information only, with no action required.

During the current outage, NYPA had cleaned, inspected, repaired, and painted all three VC sumps. All loose paint was removed, cracks and holes in the sumps repaired, and the sumps repainted. Some loose paint remains in the VC, particularly on the containment dome. Based on industry research, NYPA concluded that the remaining loose paint in the VC will not adversely impact the operation of safety related systems during design basis accidents. However, NYPA has not performed a safety evaluation to determine whether this industry data was applicable to the containment coating used in the VC.

NYPA cleans and inspects the VC sumps on a refueling outage basis. Historically, sufficient debris has not been found in the sumps, which could have affected the operation of ECCS systems. NYPA is currently investigating improved methods to keep foreign material from entering the VC sumps during outage activities. The inspectors walked down the VC to assess the material condition of containment and the sumps. The three VC sumps, gratings, and strainers were clean and contained minimal debris. The inspectors noted minor instances of peeling paint and insulation deficiencies in the VC. URI 93-22-05 and RAP item 2.II.11 will remain open pending NYPA evaluation of the peeling paint in the VC dome area.

4.3 (Closed) NRC RAP Item 2.II.15, Resolution of the Main Turbine Potential Overspeed Modification

In response to a potential turbine overspeed event, Westinghouse issued a Customer Advisory Letter 92-02, which identified several actions that pressurized water reactor (PWR) licensees could implement. The Customer Advisory Letter was later superseded by Availability Improvement Bulletin

(AIB) 9301 dated March 15, 1993. An NRC inspection 50-285/93-16 was conducted to assess the NYPA response to this bulletin. This inspection resulted in the unresolved item 93-16-08, pending completion of NYPA's implementation of applicable AIB 9301 recommendations.

NYPA had identified 15 items from AIB 9301, which were applicable. A portion of these items had already been incorporated into the turbine control system and was documented in NRC inspection report 50-286/93-16. NYPA identified several tasks that addressed the recommendations from AIB 9301. These tasks included: (1) maintaining electrical load trip capabilities during the main turbine testing; (2) testing of turbine trip solenoid relay logic; (3) testing the main turbine mechanical trip mechanism; (4) verifying two independent overspeed trip mechanisms; (5) visual inspection of protective trip devices and solenoid valves; (6) testing and maintenance of the extraction steam non-return valves and monitoring characteristics to determine the long term stability of the auto-stop lube oil; and, (7) determining the need for reverse power relays.

The inspector reviewed numerous procedures, a minor modification (MMP), maintenance work packages and a modification acceptance testing package. MMP 93-03-282 and maintenance work request (MWR) 93-6949-01 were developed and performed to relocate the 20-ASB turbine trip solenoid. This prevented both solenoids 20-AST and 20-ASB from being disabled during testing of the mechanical overspeed test mechanisms. In addition, the inspectors reviewed photographs of the physical work performed, and verified that drawings had been revised to reflect the field configuration. Modification acceptance test (MAT) 93-3-282-01 was developed to verify the functionality of the modification. Although the MAT had not yet been completed at the time of the inspection, the inspector reviewed the adequacy of the package and verified that the MAT was scheduled and tracked by the action and commitment system (ACTS).

The procedures reviewed included procedure 3PT-R145, which tested the logic for the turbine trip solenoids 20-AST and 20-ASB relays. Procedure 3PC-R20, "Turbine Electrical Overspeed and Functional Test," was revised to include functionally testing the independent electrical overspeed protection system. Procedure TUR-001-GEN required a visual inspection of the protective trip devices and the solenoid valves. The inspector verified that the procedure was scheduled in the licensees preventive maintenance program with a frequency that ensured the inspection will be performed at each major outage. The inspector concluded that the procedure changes, modification and associated testing were acceptable.

The licensee assessed the adequacy of the testing and maintenance of the extraction steam non-return valves, and monitoring characteristics to determine the long term stability of the auto-stop lube oil. The inspector reviewed and verified that ISEM 94-073 addressed these issues and that existing preventive maintenance and testing requirements existed.

Several other actions were still in progress during this inspection. NYPA planned revisions to procedures 3PT-V06, "Turbine Generator Mechanical Trip Test," to implement the quarterly testing of the mechanical trip mechanisms,

and 3PT-V21, "Turbine Generator Overspeed Trip Test", to implement recommended testing of other turbine trip mechanisms. Regarding the need for a reverse power relay, NYPA has concluded that the current protection logic and the low pressure steam dump system were designed to prevent the turbine from exceeding its design overspeed limit. NYPA, however, stated that the an engineering evaluation will be performed after plant startup to determine the added benefit of and the need for reverse power relays. The inspector assessed the licensee's approach to incorporate recommendations, including NYPA's assessment of the reverse power relays and the periodicity of test performance, as reasonable. These items were appropriately tracked in ACTS.

The inspector considered that the licensee's plan and completed actions in response to a potential turbine overspeed event were appropriate. Further NRC inspection is not required prior to restart. **URI 93-16-08** and **RAP Item 2.II.15** are closed.

4.4 (Closed) NRC RAP Item 2.II.17, Containment Fan Cooler Unit Dampers

Fan cooler unit (FCU) dampers were not included in a preventive maintenance program and therefore, were not maintained as prescribed. As a result, several dampers were determined to be inoperable for an indeterminate period of time between July 23, 1992 and March 7, 1993. The dampers failed because of the accumulation of dirt and rust on the operating surfaces and a lack of lubrication. Operation of the reactor with one or more inoperable FCUs may require implementation of the limiting conditions of operation as specified in Technical Specifications Section 3.3.B. This issue was described in NRC inspection report 50-286/93-08 and resulted in a violation, EEI 93-08-04. As a result of operating in a condition prohibited by Technical Specifications, this issue was also reported in licensee event reports (LERs) 93-13 and 93-13-01, "Personnel Error, Inattention to Detail, Resulted in Possible Failure of Fan Cooler Unit Dampers to Operate."

The containment cooling and iodine removal functions are provided by two independent systems: (a) fan cooler units plus charcoal filters and (b) containment spray with sodium hydroxide addition. During normal power operation, the FCUs are used to remove heat lost from equipment and piping within containment. In the event of a design basis accident, the FCUs function, in conjunction with containment spray, is to provide sufficient cooling to reduce containment pressure and to reduce airborne and iodine activity. The FCU dampers reposition to route containment air through the charcoal filters during an accident.

As detailed in the LERs and response to the notice of violation, several corrective actions were developed. A new maintenance procedure, FAN-007-VSS, "Inspection/Maintenance of Fan Cooler Unit Dampers," was developed for the annual inspection, cleaning and repair of FCU dampers based on vendor recommendations and the FCU dampers were added to the preventive maintenance program. Work requests were completed to perform vendor recommended preventive maintenance. This work included, in part, an inspection and cleaning of the damper blades, inspection of the damper linkages, replacement of the damper bearings, inspection and repair of the damper limit switches, replacement of the actuator cylinders and testing for damper operability and

proper control room indication of damper position. Testing for the five FCUs was completed in January 1995 with satisfactory results.

A performance improvement plan was developed as a long term action to systematically review and evaluate plant systems and components for their potential inclusion in the preventive maintenance program and to review applicable vendor manuals and recommend changes to existing preventive maintenance procedures or develop new procedures as required.

The NRC reviewed LERs 93-13 and 93-13-01 and the response to the notice of violation and verified that the actions associated with the FCUs, were completed. The NRC visually examined the FCU dampers and, based on this visual observation, determined that the dampers appeared to be well maintained. The NRC verified that work orders associated with the dampers were completed, including post maintenance testing to verify operability.

In summary, vendor recommended preventive maintenance was performed on all fan cooler unit dampers in accordance with maintenance procedure, FAN-007-VSS. FCU preventive maintenance was incorporated into the preventive maintenance program. Based on a visual observation of the FCU dampers, and the resolution of the deficiencies related to the FCUs identified in LERs 93-13 and 93-13-01, and EEI 93-08-04, RAP item 2.II.17 is considered resolved. This documentation also serves as the completed NRC review for LERs 93-13, 93-13-01 and EEI 93-08-04.

4.5 (Closed) NRC RAP Item 2.II.22, Boric Acid Heat Trace

This Restart Issue was a combination of three separate issues. The first issue involved the boric acid heat trace (BAHT) deficiencies. Deficiencies included inoperable temperature recorder, inadequate monitoring and responses from operations personnel for heat trace system alarms and deficiencies, and improper installation of some heat trace system components. Specific examples of these deficiencies were documented in inspection report 50-286/92-10 (EEI 92-10-01), licensee event report (LER) 92-004 and was also the subject, in part, of the escalated enforcement action issued on May 22, 1992 (EA 92-034).

The second issue involved a deficiency in the pressure instrumentation lines of the boric acid transfer (BAT) pumps. The deficiency was a blockage of the pressure instrumentation lines due to an improperly designed heat trace circuit. This deficiency was documented in inspection report 50-286/93-09 (URI 93-09-07), LER 93-10 and was also the subject, in part, of the escalated enforcement action issued on April 14, 1993 (EEI 93-09-08).

The third issue involved the BAT pump failures. The pumps were consistently failing their acceptance criteria for developed head. This deficiency was documented in inspection report 50-286/93-09, LER 93-10 and was also the subject, in part, of the escalated enforcement action issued on April 14, 1993 (EEI 93-09-08).

To address these issues, NYPA implemented the following corrective actions:

- The BAHT system was upgraded and additional temperature monitoring circuits were added.

- Monitoring and testing of the BAHT system was incorporated into the Preventive Maintenance Program and the Surveillance Test Program to periodically test the system performance.

- The heat trace log sheet was revised to change the requirement to log heat trace system temperatures from 24 hours to every 4 hours, with a thirty minute monitoring requirement for any circuit(s) in an alarming condition.

- BAT pump procedures were modified to add a new test acceptance criteria.

- The heat trace circuits for the pressure sensing lines were upgraded and will be constantly energized to protect the pressure indicators and associated piping against loss of function due to boric acid precipitation.

The inspector reviewed the operation's surveillance log procedure, BAHT heat trace system upgrade and relocation of the pressure indicator modification packages, and the pump acceptance test criterion. In addition, a system walkdown was performed to evaluate general condition of the BAHT system and a field verification was performed to evaluate the modifications. **URI 93-09-07, EEI 92-10-01, EEI 93-09-08** and **RAP Item 2.II.22** are closed.

4.6 (Closed) NRC RAP Item 2.II.23, Service Water Heat Trace

Several service water heat trace circuits were either disabled or in disrepair, thus rendering the service water de-icing system inoperable and incapable of providing adequate freeze protection for the associated piping. Specifically, portions of the service water heat trace system inside the intake structure building had been disabled or removed and no safety evaluation had been performed. In addition, the thermostat, which actuates the outside portions of the heat trace circuits, was located inside the intake structure. Specific examples of deficiencies were documented in inspection report 50-286/92-28 (URI 92-27-01) and this issue was also the subject of and escalated enforcement action issued February 18, 1993 (EEI 92-28-13).

To address the concerns, NYPA implemented the following corrective actions:

- The service water heat trace system was upgraded to ensure full compliance with system design requirements.

- Modifications were completed to relocate the thermostats, which actuate the heat trace circuits for the outside portions of the service water system to a location that enables the outside temperature to be sensed.

The inspector reviewed the heat trace system upgrade modification packages, thermostat relocation modification package and concluded they appropriately supported the service water system design basis. The inspector also performed a system walkdown to verify the condition and location of the service water

heat trace system and thermostat hardware modification. **URI 92-27-01, EEI 92-28-13 and RAP Item 2.II.23 are closed.**

4.7 (Closed) NRC RAP Item 2.II.26, Control Rod System Issues

As a result of a rod control system failure experienced in May 1993 at Salem Unit 2, the NRC issued Information Notice (IN) 93-46 on June 10, 1993, to alert other similar plants of a noted single failure vulnerability within the Westinghouse solid state rod control system. Investigation and research into the failure was undertaken by the Westinghouse Owners Group (WOG). The NRC subsequently issued Generic Letter (GL) 93-04 "Rod Control System Failures and Withdrawal of Rod Control Cluster Assemblies," on June 21, 1994, which required applicable licensee's to submit information addressing; (1) the potential occurrence of asymmetric rod withdrawal at their facilities, (2) whether the licensing basis for each facility was satisfied with regards to the control rod system's response to a single failure (General Design Criteria 25), and (3) long term corrective actions. NYPA responded to GL 93-04 by letters dated June 21 and September 21, 1994.

The NRC staff has completed its evaluation of the issue on a generic basis and found acceptable, as long term corrective actions for all applicable licensees, which includes Indian Point 3, the guidance provided in the following WOG documents: (1) WCAP-13864, Rev 1, "Rod Control System Evaluation Program;" (2) W-Technical Bulletin NSD-TB-94-05-R0, "Rod Control CRDM Timing Change;" (3) "WOG Recommended Rod Control System Surveillance test;" (4) Response to NRC Questions on A-Factor Methodology Validation in WCAP-13803, Rev. 1; and (5) "Rod Control System Logic Cabinet/CRDM Timing Change" (includes the WOG's 50.59 evaluation of the current timing order). The current order timing modification does not affect normal rod motion, but prevents asymmetric rod withdrawal should a Salem-type failure occur. This modification was successfully tested at the Ginna Station on April 15, 1994. The new current order surveillance test (to be done each refueling outage) verifies that no failures exist in the Rod Control System current order circuits.

By letter dated October 17, 1994, NYPA committed to implementing the modifications and testing described in the above referenced documents prior to restart of Indian Point 3. In addition, NYPA committed to perform testing to identify failure in the rod control system during startup from the current outage and every refueling outage thereafter. The NRC staff reviewed the corrective actions, which NYPA committed to and by letter dated November 23, 1994, concluded that these corrective actions were acceptable for long-term resolution of this issue.

In December 1994, Westinghouse Nuclear Service Division (NSD) assisted NYPA in the installation of Indian Point 3 Modification No. 94-03-346 RCC, "Rod Control Cluster (RCC) Improvements [GL-93-94]." The scope of this modification included revising RCC internal logic timing by repositioning diodes on the slave cycler decoder cards, installing surge suppression diodes on the step counter terminal strips, and replacing existing firing cards with new style firing cards. The modification was installed using the following Westinghouse NSD field service procedures; (1) NSD-EIS-94-016, "Indian Point 3

Step Counter Surge Suppression Diode Installation," (2) NSD-EIS-94-017, "Full Length Rod Control System Maintenance," and (3) NSD-EIS-94-018, "CRDM Timing Modification and Verification Testing." Following installation of the modification, extensive testing was conducted and the results were all satisfactory. The only remaining post-modification testing is the verification of control rod drive mechanism current profiles using actual control rod motion and this must be performed when plant conditions are such that control rod motion is allowed for testing (i.e. above minimum temperature for criticality). The inspector reviewed the completed modification package and the testing, which had been conducted to date and concluded that the modification had been satisfactorily installed and tested.

Altogether, NYPA made 26 commitments in response to GL 93-04 and as a result of the installation of Modification No. 94-03-346-RCC. Each commitment was assigned a RIND/ACTS tracking number. The inspector verified from the commitment tracking data base that all but 2 of these commitments had been completed. These remaining 2 are all associated with the post-installation testing discussed above. Of note is the number of procedures that were revised or had to be developed as a result of NYPA's response to GL 93-04. Specifically, 11 procedures were revised and 3 new procedures were developed. The inspector reviewed these procedures and concluded that the changes were appropriate.

Based on the above, the inspector concluded that NYPA was proactive with respect to the resolution of this generic issue. The installed modification, the post-modification testing conducted to date, and the other commitments already implemented indicate NYPA management's aggressive and thorough approach to issue resolution. **RAP Item 2.II.26** is closed.

5.0 PLANT SUPPORT (71750)

5.1 Radiological Controls

Posting and control of radiation and high radiation areas were inspected. Radiation work permit compliance and use of personnel monitoring devices were checked. Conditions of step-off pads, disposal of protective clothing, radiation control job coverage, area monitor operability and calibration (portable and permanent), and personnel frisking was observed on a sampling basis. Licensee personnel were observed to be properly implementing the radiological protection program.

5.2 Security

Implementation of the physical security plan was observed in various plant areas with regard to the following: protected area and vital area barriers were well maintained and not compromised; isolation zones were clear; personnel and vehicles entering and packages being delivered to the protected area were properly searched and access control was in accordance with approved licensee procedures; persons granted access to the site were badged to indicate whether they have unescorted access or escorted authorization; security access controls to vital areas were maintained and persons in vital areas were authorized; security posts were adequately staffed and equipped;

security personnel were alert and knowledgeable regarding position requirements; written procedures were available; and adequate illumination was maintained. Licensee personnel were observed to be properly implementing and following the Physical Security Plan.

5.3 Review of Emergency Plan (the Plan) and Emergency Plan Implementing Procedures (EPIPs)

A regional in-office review of revisions to the Plan and EPIPs (and associated attachments and forms) was completed. A list of the documents and revisions that were reviewed are listed in Attachment 2. The inspector concluded that changes made were acceptable and did not decrease the effectiveness of the emergency preparedness program.

5.4 Housekeeping

The inspectors assessed the control of plant housekeeping in safety-related areas. General plant housekeeping in normally accessible safety-related areas during the period was adequate. NYPA generally kept these areas free of dirt and debris. Transient equipment was properly secured.

6.0 SAFETY ASSESSMENT/QUALITY VERIFICATION (40500, 92901)

6.1 (Closed) NRC RAP Item 2.III.1, Corrective Action

NRC RAP Item 2.III.1 concerned the effectiveness and adequacy of the Indian Point 3 corrective action process. Specifically, NRC inspection reports identified several process deficiencies including root cause evaluation effectiveness, corrective action timeliness, problem identification and tracking.

NYPA completed a root cause evaluation to identify the causes for the weaknesses in the corrective action process on December 20, 1993. NYPA identified that the major reason for the problems within the corrective action process was the lack ownership of plant problems by the NYPA staff. The Operations Review Group (ORG) performed all investigations and made most recommendations instead of the departments associated with the event or deficiency. Resources applied to this area were minimal resulting, in part, in a large backlog of corrective actions awaiting implementation. Contributing causes were the lack of familiarity with the corrective action program, and management's lack of receptiveness to problems as evidenced by departments dealing adversely with investigations.

In response to this problem, the licensee implemented several corrective actions. The corrective action process was revised to shift responsibility to the department associated with the event or deficiency. The significant occurrence report (SOR) was replaced by the deviation and event report (DER) process. Administrative procedures AP-8, Deviation Event Reporting, AP 8.2, Deviation Event Analysis Procedure, and AP 37.4, Action and Commitment Tracking System, were developed or revised to formally incorporate the shift in responsibility, and enhance root cause evaluation. The corrective action backlog was validated and prioritized to identify startup concerns. Startup

items were formally scheduled and entered into appropriate tracking mechanisms to ensure completion. A human performance enhancement program was developed in accordance with station procedures ADM-SD-11, "Human Performance Enhancement Program," and ADM-SD-06, "Self Verification." The Restart and Continuous Improvement Plan R-3.1.1.4, Corrective Action, provided for the review and upgrade of key processes to correct identified deficiencies.

The inspector reviewed the programmatic changes and applicable procedures impleted by NYPA, and concluded that the procedures provided a fundamental framework for an effective corrective action process. During the inspection, it was apparent that NYPA was continuing to improve and refine the process. As of the end of this inspection period, a new revision of the corrective action procedure was being developed, as well as, additional guidance on DER initiation.

The inspector assessed the effectiveness of the implementation of the corrective action process through review of selected records and interviews of personnel. The assessment focused on current plant performance within the last three months.

6.1.1 Problem Identification

The inspector noted significant improvement in the identification of deficiencies and the use of the corrective action process at Indian Point 3. The number of DERs, which were initiated by NYPA personnel, increased from about 900 in 1993 to nearly 1,400 in 1994. As of February 11, approximately 290 DERs have been already initiated in 1995. Examples of recent successes in this area included the identification of a cracked turbine control valve block through good use of industry information and inadequate safety injection component cooling water pump flow. Additionally, the inspector considered the threshold, at which some DERs were initiated, was low.

The inspectors observed several initiatives and practices at the plant, which may, in part attribute to the improved identification of problems and use of the corrective action process. Management emphasized to NYPA personnel the importance of this area, through normal meetings and activities. During Plant Leadership Team Meetings, management encouraged the NYPA staff to identify deficiencies by positive recognition of persons discovering problems. Periodically, NYPA management reinforced the area of problem identification during outage meetings, shift turnovers, tailgate meetings and the performance enhancement review committee meetings. On some occasions, when an individual criticized an initiation of a DER, management and peers challenged the individual on the inappropriate criticism.

Although improvements in this area were significant, the inspector noted several instances, during which the corrective action process was not used and where NYPA personnel did not fully understand management expectations.

- DER 94-1153 concerned the discovery of a modular plug with incorrectly reversed pins during post installation testing. The inspector observed that a QC inspector initiated a DER approximately ten days after its identification by the responsible department personnel. Based on

interviews, the responsible department personnel, who was also the critique investigator, did not initially believe that a DER was warranted. Additionally, an issue concerning the engineering change notice process was raised, but not well captured by the DER. The critique investigator stated that there was a lack of departmental guidance on the threshold for DER initiation.

- DER 94-1223 concerned an instrument and controls (I&C) technician, who installed an incorrect size lug on a wire. The technician was checking terminal blocks to determine proper location and tightness in response to a previous DER. After identifying a loose lug, the technician removed the lug and installed the same size lug; however, a QC inspector noted that the lug was the incorrect size. The DER was closed based on the previous DER and that the new issue was within the scope of the previous DER. Further, the DER documented that since these activities were in response to a previous DER, no further DERs should be initiated, and that the QC inspector agreed with this approach. However, the inspector considered that the scope of the originally identified problem did not include the new issue of installing incorrect lugs. The message that additional DERs were not required was inappropriate, because the assurance that new issues outside the original scope would be properly addressed would be reduced.

- The inspectors observed that a blank flange was stored at the suction piping of the residual heat removal located in a containment sump. The flange was swung away from the opening of the suction piping, but bolted to the suction flange with two bolts. Additionally, the bolts were loosely installed in the suction piping flange. The question of the acceptability of this condition was raised to the system engineer, however, a DER was not initiated until over two weeks later. In the interim, the engineer investigated the configuration controls over this flange, including discussions with personnel from the Operations, Maintenance and Radiological Controls Departments. After determining that no controls existed, which would have ensured the proper stowage of the flange, the engineer contacted the engineering contractor to determine if the condition was analyzed. The engineer, her supervisor and department head stated that this time frame was necessary to validate that a deficiency existed before initiating a DER. It was viewed as necessary to preventing entering non-deficiencies into the process, thereby diluting the attention given to actual deficiencies and reducing the assurance that significant deficiencies are properly addressed. However, in interviews with the Operations General Manager and ORG personnel, the expectation was that the potential problem should be entered into the DER process earlier, particularly when a significant amount of resources and time was required to determine the validity of the problem. The inspector concluded that the common understanding of or the documented guidance on the expected timeliness of DER initiation did not exist.

- During an NRC inspection conducted on the motor operated valve program, the NRC identified that numerous minor calculational errors were identified and corrected by the program manager. The number of errors,

which were not identified by the technical reviewers, was high, however, no DER to identify this problem was initiated.

- During a regional inspection, an inspector identified numerous deficiencies in the reactor coolant pump oil collection system. In following these deficiencies, the system engineer believed that these minor deficiencies were not required to be identified in a corrective action or work control process. Based on discussions with management, this belief was contrary to management expectations.

Other recent examples of weak problem identification were noted. In section 3.4.1 of this report, an instance of inappropriate procedural use was identified, but no DER was initiated. In section 3.1.2, deficiencies in an electrical cabinet were not identified in either the corrective action process or work control process.

Overall, the inspector concluded that problem identification had improved significantly; however, multiple examples, although minor in safety significance, indicated that weaknesses still exist in the identification of deficiencies. The inspector considered that the licensee's ongoing efforts to improve the area of problem identification were positive. NYPA had independently identified that the DER initiation threshold required more uniformity among departments. NYPA was refining the guidance for initiating DERs.

6.1.2 DER Evaluations

The inspector considered that NYPA's evaluation and resolution of deficiencies, which had senior management participation, were generally thorough and well developed. NYPA management approached the resolution of deficiencies broadly by investigating the extent of condition of a problem. The inspectors observed numerous examples where the approach had been implemented. Recently, the most notable example was modification acceptance testing, which is discussed in section 4.1 of this report. An exception was the service water duct bank issue, discussed in inspection report 50-286/94-26, where the extent of condition was initially not fully considered.

The Performance Enhancement Review Committee (PERC) was recently implemented, in which senior management was involved in reviewing human performance issues. The inspectors observed several PERC meetings, and considered the review of the events and deficiencies to be probing and appeared to effectively identify all pertinent issues. The inspector also considered the PERC meeting to be an excellent forum for senior management to communicate expectations and to demonstrate the standards in evaluating deficiencies.

In contrast, the inspector concluded that the DER evaluations performed by the associated departments to be weak, as evidenced by a high reject rate of DERs. Although the responsibility for DERs was shifted to the department associated with the event, the final closure of the DER required the review and acceptance of either the Quality Assurance Department (QA) or Operations Review Group (ORG). In discussions with QA and ORG personnel, the rejection rates of DER evaluations from the plant were 48% and 22%, respectively. ORG

personnel stated that the goal for DER rejection was 5%. The large number of rejections was, in part, due to administrative issues and the lack of detail provided in the DER, but a significant portion was also a result of the quality of the evaluation.

The inspector reviewed nine DERs to assess the quality and completeness of the evaluations. The DERs were identified, assessed and closed by the licensee, including the final QA and ORG acceptance, within the last three months and under the latest guideline and revision of Administrative Procedure 8, Deviation Event Reporting and Operability Determination Manual. Approximately equal amounts were closed out by the Quality Assurance Department and the Operations Review Group.

The inspector concluded that the DERs varied in scope and quality. The following DERs were reviewed: 94-1185, 94-1153, 94-1158, 94-1223, 94-1228, 94-1257, 94-1262, 94-1348 and 95-0068. Observations made of DERs were as follows:

- DER 94-1153 concerned an incorrectly configured modular plug, which was installed in the condensate storage tank level indication. The evaluation did not identify how an incorrectly configured modular plug bypassed several quality barriers and was installed, or which corrective actions to address the quality process should be taken to prevent recurrence. In discussions with NYPA personnel, the inspector observed conflicting beliefs on the cause.

- DER 94-1158 concerned an improper wire termination in Switchgear 31 Bus 5A undervoltage logic timer. The evaluation concluded that the event was caused by insufficient attention to detail, and the corrective actions were to reterminate the wire and discuss the event at tailgate meetings. The inspector considered the evaluation to be narrowly focused because the evaluation considered the improper termination isolated, yet improper terminations had occurred previously. Additionally, the inspector noted that three persons, and possibly a fourth, verified the termination incorrectly, indicating potential weakness in independent verification or an unusual human factor issues; however, neither was addressed.

- DER 94-1223 concerned an instrument and controls (I&C) technician who reinstalled the wrong size lug to a wire while he was performing a exact in kind replacement. The evaluation was closed without addressing the cause of the improper installation and actions to prevent this, despite, the block was checked that "The above attributed apparent causes and corresponding corrective actions submitted on completed ACTS form should prevent recurrence of this specific event."

- DER 94-1228 concerned the failure of multiple relief valves in the service water system. The evaluation referred to an ACTs item to revise and implement the preventive maintenance program for the relief valves. However, the evaluation did not address the current condition of other safety related relief valves other than those associated with the service water system. The inspector inferred from the evaluation that

cause was the failure to include these valves in either a preventive maintenance (PM) or inservice test (IST) program. In discussions with the engineer, he stated that another relief valve, the suction relief valve on auxiliary feedwater pump 22, also was not captured by either the PM or IST program.

The inspector also noted that the common mode failure determination was weak in that it did not result in requiring further analysis or action. The guidance provided no specific guidance, except to follow a form consisting of several questions. At the end of this inspection, the maintenance engineer was reviewing category 1 relief valves to determine if any relief valves were not in either a PM or IST program. This is unresolved pending NYPA's determination if such relief valves exist and additional corrective actions **(URI 94-31-01)**.

Other indications of weak DER evaluations have been noted. During the previous NRC resident inspection report, 50-286/94-27, two DER evaluations did not reflect back to ensure that corrective actions for similar events were effective. During this inspection period, the inspector interviewed the NYPA staff on how a DER is determined to be isolated. Response varied from computer database searched through individual memory.

The inspector noted, however, that the quality of the DER evaluations was improving through a continuing NYPA effort. The ORG and QA Departments were actively working with associated departments on the quality of evaluations. The General Manager of Maintenance indicated that completed quality DERs were routed within his departments to provide examples of acceptable standards. The Resident Manager stated that although much attention had been given to the initial screening of DERs, more management review of the closed DERs was planned. The Quality Assurance Manager stated that new training on root cause was being developed to better prepare personnel to perform DER evaluations.

Overall, the inspector concluded that the more significant DER evaluations with senior management involvement were generally good, however, DER evaluations performed within a department varied in quality. The inspector noted that NYPA had improvements, in progress or planned, which were designed to improve this area.

6.1.3 Assessments

The inspector reviewed several assessment activities conducted by NYPA in the area of corrective actions. These assessment activities included a Senior Assessment Engineering Report 94-09, Startup Evaluation for Readiness Team (SERT) assessment, Operational Readiness Review, Indian Point 3 Restart Status Assessment, an independent consultant assessment of the DER process, and several Quality Assurance surveillance and RCIP observations.

Overall, the assessments provided good insights and findings in the corrective action process. Some examples included: (1) the identification of the root cause was not always clearly defined, because reference was made to other documents and was not always available; (2) the action and commitment tracking system indicated that DERs were closed but the original issues remain open and

unresolved; (3) a high rejection rate by the ORG; (4) a lack of feedback to the initiator of a DER; (4) a need to improve staff understanding of the threshold for initiating DERs; and, (5) a need to improve staff effectiveness in recognizing plant equipment deficiencies.

In response to these findings, NYPA initiated several improvements that were either completed or in progress. These initiatives included the development of better defined guidelines for initiation of DERs, increased management review of completed DERs, and additional training in DER evaluations.

6.1.4 Documentation

The inspector noted several documentation deficiencies during the review of closed DER files. Although many were administrative, a few deficiencies reflected weaknesses in the usability and understanding of the DER forms. The inspector concluded that the deficiencies in documentation had minimal safety significance, but reflected weakness in the quality of the evaluations.

Administrative deficiencies were missing signatures (including one for the final closure of the DER), incomplete sections in the DER form, failure to check off certain blocks, and the lack of a list of attached documents as specified by the form. Other deficiencies included a DER that lacked complete information to document the full closure. Also, the inspector noted that the block, indicating that actions would correct and prevent occurrence, was regularly checked, even though the corrective actions taken would not have prevented recurrence. The reason for NYPA personnel to check this block appeared to be the lack of choices available in this section.

6.1.5 (Closed) URI 94-02-04, Timely Reportability Determination of DERs

This issue concerned deficiencies in the Deviation and Event Report (DER) process following the determination by the NRC that three DERs written by the White Plains Office had not been presented for reportability/operability review by the Shift Supervisor in a timely manner. In addition, NRC inspectors questioned the adequacy of the closure of DER 94-328, which involved the effect of a potential failure of a fire protection relay in the central control room air conditioning unit exhaust ducting, and the timeliness of the subsequent reportability determination.

NYPA determined that procedural weaknesses had allowed some departments, especially those departments located off-site, to set their own means for ensuring that DERs were submitted to the Shift Supervisor for evaluation. In some cases, site engineering and technical services departments were not forwarding the DERs until they had been evaluated and any required explanations were available. As a result, some DERs were not submitted to the Shift Supervisor for reportability/operability review in a timely manner.

The inspectors reviewed NYPA's corrective actions and discussed the issue with Operation Review Group (ORG) and licensing staff. Administrative Procedure (AP) 8.2, "Deviation Event Analysis Procedure," and AP-8, "Deviation and Event Reporting and Operability Determination Manual," were revised to clarify the process and responsibilities for transmitting DERs to the Shift Supervisor for

prompt review. In addition, procedural guidance was provided to address discovery that DER closure may have been inadequate. Inspectors assessed that DER procedural guidance was adequate to address the identified process deficiencies and was adequate for restart. **Unresolved Item 94-02-04** is closed.

A related issue concerned the completion of corrective actions to event responses. This issue involved NRC and NYPA Quality Assurance (QA) staff concerns that corrective actions generated from event responses during the period from April through October 1993 were not completed in a timely manner and were not adequately tracked to ensure completion. In addition, NYPA identified that the quality of the event responses did not always provide a good description of the event and the logic for resolving the issue.

NYPA evaluated the issue and concluded that the root cause was poor management of the change from the Significant Occurrence Report (SOR) program to the current Deviation and Event Report (DER) system. Part of the change involved shifting responsibility for event response evaluation and corrective action tracking from the Operation Review Group (ORG) to the line departments. Some problems occurred because no formal tracking process was in place until November 1993. As corrective action, NYPA conducted a review of corrective actions generated between April and November 1993 to ensure that those actions were either complete or were being tracked in the current DER process. QA performed a quality review of DER responses for the period, and sub-standard responses were returned to the responsible departments for revision. The quality of DER responses was also being routinely checked by ORG and QA surveillance. NYPA was addressing the larger issue of change management as part of the RCIP. The inspectors reviewed NYPA's corrective actions and current procedures, discussed the issue with ORG staff, and assessed that the concerns had been adequately addressed for restart.

A third issue concerned the lack of problem identification (PID) tags on some deficient equipment. The lack if PIDs may result in a plant operator being unaware of the deficiency and misinterpreting the system or component status. The licensee attributed the cause to be the procedure, which was in effect at the time, that did not require the hanging of tags of known deficiencies. The licensee concluded that management failed to recognize the importance of ensuring that plant operators can readily identify deficient components.

In response to this issue, the licensee revised the applicable procedures, and conducted walkdowns of several systems to ensure that the PID tags were hung. During recent maintenance activities, the inspectors noted that maintenance personnel replaced PID tags, when missing tags were identified (as indicated by a string without an associated tag), or when tags were damaged and unreadable.

6.1.6 Conclusion

NYPA has made significant improvements in the area of corrective actions and provided the framework for an adequate corrective action process. The resolution of more significant problems, which have senior management involvement, has been thorough and effective. The use of extent of condition

and PERC, the screening of newly initiated DERs by the Plant Leadership Team, and the significant increase in the identification of DERs were reflective of the positive change and attitude in this area.

Several weaknesses, however, were identified in the implementation of the program for less significant DERs, with less management involvement. The rejection rate of the DERs by the ORG and QA was high. NRC review of a sample of DERs indicated that the quality of some evaluations was weak. The documentation of some DERs was incomplete, and the evaluations did not always address key issues. Additionally, the inspector identified several examples where deficiencies were not properly identified by the NYPA staff or where there was inconsistency in the understanding of the threshold or guidelines for DER initiation.

The licensee's self assessments, particularly those by Quality Assurance, provided a critical look at the corrective action process and implementation. Proper management focus and attention in this area was evident through continuing initiatives. These initiatives included developing new threshold guidelines, increased management review of completed DERs, and additional training in DER evaluations.

Based on this review, the inspector concluded that this area is acceptable for restart. Although some weaknesses still were evident in problem identification and DER evaluation, NYPA made significant progress in this area, and proper management focus and attention provide assurance that improvement should continue. **Restart issue 2.III.1 is closed.**

6.2 (Update) 94-05-02, Records Management and Drawing Update Programs

URI 94-05-02 documented NRC concerns regarding the status of the NYPA drawing update program and questioned whether superseded and voided drawings were being stored on site as records in accordance with ANSI N45.2.9-1974. This URI was subsequently updated, and addressed the NRC concern that, in general, the IP3 records management program was not in accordance with ANSI N45.2.9-1974. The IP3 drawing update program was again addressed in NRC Inspection Report 50-286/94-12, which expressed concern that only 8,000 drawings were being updated out of a population of over 40,000 plant drawings.

In May 1994, a consultant was hired by NYPA to start a review of the IP3 records management program and procedures for compliance with regulatory requirements, including ANSI N45.2.9-1974. As a result of these efforts, NYPA developed and approved the IP3 Record Retention Schedule (IRRS) on December 1, 1994. Administrative Procedure (AP) 18, "Records Management Program", was revised by NYPA on December 14, 1994, to ensure compliance with ANSI N45.2.9-1974 and consolidated records management requirements previously contained in several different procedures. The implementation of this new records management program, including training, is scheduled to be completed by January 1996.

The IRRS requires superseded and voided drawings to be treated as records, which are to be maintained in accordance with ANSI N45.2.9-1974. NYPA has established the necessary processes in station procedures to facilitate the

retrieval and reconstruction of missing records. NYPA has demonstrated the ability to reconstruct records as evidenced by the retrieval of missing drawing records, and the recently completed weld record review program documented in restart action plan (RAP) 2.II.38.

Poor records management practices at IP3 have resulted in inefficient record keeping and difficulty in retrieving records. However, programs undertaken by NYPA such as the Design Basis Document (DBD) program, Seismic Qualification (SQUG) program, and Individual Plant Evaluation (IPE) indicate that adequate plant configuration documentation retrieval capability exists, such that plant safety has not been compromised. Although records were fragmented, these reviews show that records configuration control does exist. The NRC concluded that the NYPA records management program at IP3 is adequate for plant restart.

As stated in inspection report 50-286/94-12, the IP3 vital system drawings are updated within the prescribed time, and were properly controlled. However, this inspection report was in error when it stated that only 8,000 plant drawings were being updated by the NYPA drawing update program. Instead of 8,000 drawings being updated, there was a backlog of 8,000 changes to drawings, which needed to be completed. To date, approximately 25,000 IP3 plant drawings have been updated. To facilitate future drawing updates, NYPA is working to establish a hierarchy of drawings based on safety significance. NYPA continues to field verify previous modifications and update non-critical drawings for modifications performed this outage. NYPA has recently identified approximately 350 modifications, which may not have been completely reviewed by the drawing update program. URI 94-05-02 will remain open pending NYPA review of the newly identified modifications to determine those drawings that are required to be updated.

7.0 ADMINISTRATIVE

7.1 Management Site Visits

T. Martin, Regional Administrator, Region I, visited the site on January 4 and 5, 1995. During the visit, senior NRC management met with NYPA management and staff, and the NRC resident staff, and toured the site.

C. Cowgill, Chief, Projects Branch 1, Region I, visited the site on several occasions. During these visits, he met with NYPA management, toured the site, and provided oversight of resident inspector activities.

7.2 NRC Inspection Exit Meeting

At periodic intervals during the inspection, meetings were held with senior facility management to discuss the inspection scope and findings. The issues in this inspection were discussed with site management throughout this inspection and an exit meeting was held on February 23, 1995, to discuss the findings and conclusions of this report period. During the discussion, the licensee did not identify any 10 CFR 2.790 material and did not take exception to any of the findings of this inspection.

7.3 NRC Staff Activities

During the inspection period, the following NRC inspections were conducted or in progress:

Dates	Subject	Report No.	Inspector
11/30/94-2/24/94	Restart Issues	94-29	S. Chaudhary
1/9-1/20	Motor Operated Valves	95-01	P. Drysdale
1/30-3/10	Restart Issues	95-03	L. Prividy
1/30-3/24	Fire Protection	95-81	R. Skokowski

7.4 Resident Inspector Backshift Inspection

Inspections were conducted on both normal and backshift hours: 121 hours of direct inspection were conducted on backshift; 55 hours were conducted on deep backshift.

Attachment 1

Administrative

AP-3, Rev. 26	Indian Point 3 Procedure Preparation, Review and Approval
AP-3.2, Rev. 2	Indian Point 3 Plant Procedure Status Tracking
AP-4, Rev. 13	Procedure Use and Adherence
AP-8, Rev. 32	Deviation and Event Reporting and Operability Determination Manual
AP-21, Rev. 29	Conduct of Operations
AP-22, Rev. 15	Conduct of Maintenance
AP-23, Rev. 10	Conduct of Instrument and Controls
AP-24, Rev. 10	Conduct of Radiation and Environmental Services
AP-25, Rev. 10	Conduct of Technical Services
IP3-PWM, Rev. 0	IP3 Procedure Writer's Manual

Operations Procedures

Off Normal Operating Procedures (ONOP):

CB-1, Rev. 4	Loss of Containment Integrity
EL-1, Rev. 7	Failure of a Heat Tracing Circuit
EL-4, Rev. 6	Loss of Off-site Power
FP-1A, Rev. 8	Safe Shutdown From Outside the Control Room
IA-1, Rev. 8	Loss of Instrument Air
RCS-5, Rev. 7	Reactor Coolant Pump Seal Malfunction
RHR-2, Rev. 6	Loss of Residual Heat Removal With the Reactor Coolant System Drained or at Midloop
RPC-1, Rev. 10	Instrument Failures
SEC-1, Rev. 2	Response to Security Compromise

Alarm Response Procedures (ARP):

ARP-1, Rev. 9	Panel FAF, Turbine First Out Annunciators
ARP-2, Rev. 7	Panel FDF, Reactor First Out Annunciators
ARP-4, Rev. 16	Panel SBF-1, Safeguards First Out Annunciators
ARP-6, Rev. 26	Panel SCF, Condensate and Feedwater First Out Annunciators

Plant Operating Procedures (POP):

POP-1.1, Rev. 28	Plant Heatup From Cold Shutdown Condition
POP-1.2, Rev. 27	Reactor Startup
POP-3.3, Rev. 25	Plant Cooldown - Hot to Cold Shutdown
POP-4.1, Rev. 9	Operation at Cold Shutdown

System Operating Procedures (SOP):

SOP-FW-4, Rev. 13	Auxiliary Feedwater System Operation
SOP-MS-1, Rev. 13	Main and Reheat Steam System
SOP-RCS-1, Rev. 14	Reactor Coolant Pump Operation
SOP-RCS-4, Rev. 14	Reactor Coolant Leakage Surveillance
SOP-RHR-1, Rev. 13	Residual Heat Removal System

Maintenance Procedures

BKR-001-FLC, Rev. 2	Reactor Trip Breaker, Model No. DB-50
BKR-002-ECC, Rev. 3	Siemens-Allis 6900 Volt Breaker Inspection and Testing
GNR-012-GEN, Rev. 1	Preventive Maintenance and Inspection of the MET Tower Generator
HTX-001-GEN, Rev. 6	Inspection and Cleaning of Heat Exchangers
MOV-011-ELC, Rev. 8	Testing of Motor Operated Valves Using the MOVATS Series 3000/3500 System
MTR-002-SWS, Rev. 2	Backup Service Water Pump Motor Inspection and Overhaul

Instrument and Control Procedures

IC-PC-I-F-1135S, Rev. 0	Auxiliary Boiler Feedpump No. 31 Recirculation Flow Control
IC-PC-1-L-170, Rev. 5	CVCS Holdup Tank No. 33 Level
IC-PC-1-P-1004, Rev. 3	Reactor Coolant Drain Tank Pressure
IC-PC-1-T-1237/14, Rev. 0	Service Water Temperature Indicators
IC-PC-1-V-ARDG, Rev. 3	Appendix R Diesel Generator Control Instruments
IC-PC-N-P-404, Rev. 4	Condenser Steam Dump Pressure Mode Control
IC-PC-N-P-1160, Rev. 3	Turbine Governor Control Pressure

Attachment 2

Review of Revisions to the Plan and EPIPs
(and associated attachments and forms)

Document		Document Title	Revision(s)/Date(s)
Emergency Plan		Appendices "A" - "G"	6/94
IP-1001		Determining the Magnitude of Release	14
IP-1011		Offsite Monitoring/Site Perimeter Surveys	
IP-1015		Post-Accident Environmental Sampling and Counting	5
IP-1017		Protective Actions Recommendations for the Offsite Population	10,11
	ATT 5.1	Flowchart for General Emergency Offsite Protective Action Recommendations	5/94,9/94
IP-1019		Emergency Use of Potassium Iodine (KI)	6
IP-1021		Radiological Medical Emergency	22
IP-1025		Repair and Corrective Action Teams	9,10
IP-1027		Emergency Personnel Exposure	10
IP-1028		Core Damage Assessment	6
	ATT 6.4B	Instructions for Use of Computer Program for Calculations	5/94
IP-1038		Use of Emergency Communications Systems	15,16,17
IP-1039		Emergency Response Data System (ERDS) Activation and Testing	0
IP-1040		Habitability and Personnel Monitoring of the Emergency Response Facilities	13,14
IP-1050	ATT 7.2	Accountability	12/93,3/94,9/94
IP-1053		Evacuation of Site	8,9
IP-1055		Fire Emergency Response	10
IP-1057		Natural Phenomena Emergency	5,6
IP-1059		Air Raid Alert	4
IP-1060		Personnel Radiological Check and Decontamination	9
IP-1070		Periodic Check of Emergency Preparedness Equipment	26,27
IP-1076		Roster Notification Methods	16
	ATT 5.1	Beeper/CAN Test Response Instructions	12/94
IP-1080		Conduct of emergency exercises and Drills	13, Deletion
IP-2000		Emergency Activation of the Control Room	1
IP-2205		OSC HP Team Leaders	1
IP-2209		OSC Health Physics Technician	1
IP-2301		Emergency Director Position	1
IP-2306		EOF Security Officer	1
IP-2311		EOF Offsite Radiological Communicator	1
IP-2500		Security Emergency Activation Responsibilities	0, 1