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Chief Nuclear Officer

June 12, 1995  
IPN-95-065

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

SUBJECT: Indian Point 3 Nuclear Power Plant  
Docket No. 50-286  
**Readiness to Restart Indian Point 3**

- REFERENCES:
1. NYPA letter IPN-93-015, R. E. Beedle to NRC, "Action Plans Regarding the Performance Improvement Outage," dated March 26, 1993.
  2. NRC Letter, Thomas T. Martin to R. E. Beedle, "Confirmatory Action Letter 1-93-009, Restart Commitments," dated June 17, 1993.

Dear Sir:

The New York Power Authority voluntarily shut down the Indian Point 3 Nuclear Power Plant in February 1993 in response to indications of programmatic weaknesses (Reference 1). The NRC issued a confirmatory action letter (Reference 2) which outlined the major milestones to be reached prior to returning Indian Point 3 to service. The confirmatory action letter reflects the Power Authority's commitment in reference 1 to obtain the agreement of the NRC Region I Regional Administrator prior to restart.

The Power Authority has implemented corrective actions and conducted a comprehensive self-assessment program to verify the effectiveness of those corrective actions. Criteria used by the Power Authority for determining the readiness of Indian Point 3 for restart are discussed in Attachment I.

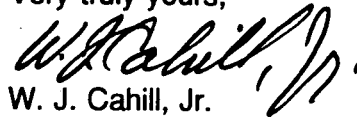
During April and May 1995 the Power Authority performed plant heatup using reactor coolant pump energy, to conduct system testing. Plant cooldown was initiated on May 28 for maintenance activities in preparation for reactor restart. The present schedule will allow reactor restart to begin approximately June 21, 1995 contingent upon the agreement of the NRC Region I Regional Administrator.

The startup process for Indian Point 3 includes hold points to assess plant and staff performance. The Power Authority will provide assessment results to the NRC at approximately 30% to 40% power and after reaching full power. The Power Authority will also meet with the NRC after reaching full power to discuss plant and staff performance during the power ascension evolution.

I have reviewed the readiness of Indian Point 3 with the Authority's senior management, including President and Chief Executive Officer S. David Freeman and Chief Operating Officer Robert Schoenberger. We conclude that the actions needed to support the safe restart and continued safe operation of the plant are complete, as further described in Attachment I. The Power Authority anticipates that the maintenance activities identified during hot functional testing will be complete and Indian Point 3 will be ready in all respects for restart.

We request the agreement of the NRC to restart the reactor. Attachment II contains the commitments made by the Power Authority in this submittal. If you have any questions, please contact me.

Very truly yours,



W. J. Cahill, Jr.  
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Attachments

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**ATTACHMENT I TO IPN-95-065**  
**READINESS TO RESTART INDIAN POINT 3 NUCLEAR POWER PLANT**

**I. INTRODUCTION:**

The New York Power Authority voluntarily shut down the Indian Point 3 Nuclear Power Plant in February 1993 in response to indications of programmatic weaknesses (Reference 1). The NRC issued a confirmatory action letter (Reference 2) which outlined the major milestones to be reached prior to returning Indian Point 3 to service following the outage. Included in the confirmatory action letter is the condition that the Power Authority obtain the agreement of the NRC Region I Regional Administrator prior to restart.

The Power Authority developed the Restart and Continuous Improvement Plan (RCIP, Reference 3) which describes the objectives, strategies and action plans designed to address the root and contributing causes of the performance decline at Indian Point 3. The RCIP also defined criteria, in three categories, to be used by the Power Authority for determining readiness to restart. The following sections discuss how these criteria for restart have been satisfied.

**II. MANAGEMENT ISSUES:**

The Restart Action Plans detailed in the RCIP identified specific actions needed to correct and resolve management issues which contributed to the decline in performance at Indian Point 3. Implementation of the Restart Action Plans, during the second half of 1994, was followed by a self-assessment program (Start Up Readiness Evaluation) to verify the implementation and the effectiveness of the corrective actions. The Power Authority notified the NRC of the completion of the Start Up Readiness Evaluation (Reference 4) and invited the NRC to conduct a Readiness Assessment Team Inspection. The Power Authority provided a detailed discussion of the results and conclusions of the Start Up Readiness Evaluation at the public entrance meeting for that inspection on April 3, 1995.

Implementation of the Restart Action Plans and the performance of the self-assessment provide assurance that proper management controls are in place. The RCIP also contains action plans which describe specific steps to be taken after restart to ensure continuous improvement at Indian Point 3.

The Power Authority has developed a procedure which governs the overall startup evolution from the beginning of heatup to the completion of testing at 100% power. The Startup and Power Ascension Procedure (Reference 5) includes provisions for senior management involvement and establishes the methodology for ensuring the safe, controlled and deliberate return to service of Indian Point 3. The startup staffing plan includes a Senior Manager on Shift to provide management representation and oversight during plant startup.

An important aspect of the Authority's performance improvement effort is the continuation of self-assessment activities. The Startup and Power Ascension Procedure includes self-assessment hold points where the effectiveness of management controls and the performance of plant staff and systems are evaluated. At each hold point, a decision is required by the Resident Manager and the Plant Leadership Team (PLT) to continue plant start up. Information to support decision making can include input from Department Managers, the Plant Operations Review Committee (PORC) and Quality Assurance.

### III. MATERIAL CONDITION AND EQUIPMENT READINESS:

During the outage, the Power Authority completed thousands of work activities and hundreds of modifications to improve the material condition of the plant. As of June 9, there are approximately 250 work requests to be completed prior to reactor restart. Work requests include corrective and preventive maintenance, modification work requests and acceptance tests, and operations surveillance tests. The prerequisite checklist from the Startup and Power Ascension Procedure includes a requirement to verify that applicable work requests are completed prior to criticality.

The Authority's Restart and Continuous Improvement Plan included a System Certification Program to provide a structured process for evaluating systems prior to returning them to service for plant operations. The Authority provided additional information (Reference 6) to the NRC regarding this program in response to a meeting with the NRC on February 1, 1995. There are 74 plant systems/subsystems that are covered by the System Certification Program. Certification of 72 systems is complete and the remaining 2 will be complete prior to reactor restart.

Plant heatup, using reactor coolant pump energy, commenced on April 17, 1995 to perform the equipment and system testing which required plant conditions above cold shutdown. Normal operating temperature and pressure were achieved on May 9, 1995. Plant cooldown was commenced on May 28, 1995 to perform maintenance activities, including replacement of reactor vessel head O-rings. Maintenance work is presently scheduled to be complete to support reactor restart approximately June 21.

### IV. REGULATORY ISSUES:

The NRC Restart Action Plan (RAP, Reference 7) identifies 60 technical, programmatic and management oversight issues which must be addressed by the Authority prior to the restart of Indian Point 3. These issues are in addition to the actions specified in the confirmatory action letter. The Authority has provided information to the NRC to resolve these issues.

During the Readiness Assessment Team Inspection (RATI), the NRC identified (Reference 8) six additional issues which required resolution prior to restart. The Authority has completed or will complete prior to reactor restart the following actions:

1. *Plant Alarm Response Procedures*

The Power Authority reviewed alarm response procedures and identified 21 which required revision. The 21 procedures have been revised, approved by the Plant Operating Review Committee (PORC) and issued for use.

2. *Auxiliary Feedwater Pump Building Ventilation*

Additional system testing was performed which verified proper operation of the fans and temperature controllers as stated in Reference 8.

3. *Breaker Panel Load Schedules*

The Power Authority has completed the scheduled walkdowns of breaker panels in the power plant and is in the process of updating controlled drawings for use by plant operators. During the walkdowns, undocumented modifications were identified. A review of past operability is being performed and the affected circuits are being disconnected, deenergized, or authorized as temporary modifications or design changes. Actions to update the breaker panel controlled documents and address the undocumented modifications will be completed prior to reactor restart.

4. *Setpoint Change Control*

Corrective actions taken are as stated in Reference 8. Setpoint change request packages were reviewed to identify plant documents needing revision. Documents identified by the review were updated and additional guidance was issued to supplement the setpoint change control procedure.

5. *Control Room Drawings*

Information from 122 Document Change Requests has been incorporated into the control room vital drawings.

6. *Turnover of Design Changes to the Operations Department*

Corrective actions taken are as stated in Reference 8. A representative sample of design changes was reviewed to ensure that plant procedures had been appropriately updated.

The Power Authority uses the Action and Commitment Tracking System (ACTS) to record and track management, technical and administrative issues, including those identified as regulatory commitments. As of June 9 there are 11 ACTS items remaining to be completed prior to reactor restart.

A roving fire watch is in place for penetration seals until evaluation of information used in the fire seal analysis is complete, as committed during the NRC special inspection to review fire protection and 10 CFR 50 Appendix R restart items (Reference 9). Restart ACTS items related to fire protection and 10 CFR 50 Appendix R are complete and fire protection related restart work requests will be complete prior to restart.

V. CONCLUSION:

The Authority concludes that corrective actions needed to support the safe restart and continued safe operation of the plant are complete. This conclusion is based on:

Successful implementation of the Authority's Restart and Continuous Improvement Plan (RCIP) Restart Action Plans.

- Completion of the Start Up Readiness Evaluation self-assessment program.
- Resolution of regulatory issues identified as requirements for criticality.
- Successful plant heatup from cold shutdown to normal operating temperature and pressure for system testing and implementation of assessment hold points.
- The use of established administrative tools to track the completion of work activities and other prerequisites required prior to commencing reactor restart.

The Power Authority anticipates that Indian Point 3 will be ready in all respects for restart approximately June 21, 1995 pending completion of work activities summarized in Sections III and IV.

#### VI. REFERENCES:

1. NYPA letter IPN-93-015, R. E. Beedle to NRC, "Action Plans Regarding the Performance Improvement Outage," dated March 26, 1993.
2. NRC letter, Thomas T. Martin to R. E. Beedle, "Confirmatory Action Letter 1-93-009, Restart Commitments," dated June 17, 1993.
3. NYPA Restart and Continuous Improvement Plan for Indian Point 3, Revision 1, dated November 4, 1994.
4. NYPA letter IPN-95-036, W. J. Cahill, Jr., to NRC, "Start Up Readiness Evaluation," dated March 16, 1995.
5. Indian Point 3 Procedure SUP-95-01, "Startup and Power Ascension Procedure."
6. NYPA letter IPN-95-019, L. M. Hill to NRC, "System Certification Program," dated February 23, 1995.
7. NRC letter, R. W. Cooper to William Cahill, Jr., "Revision and Status Update No. 4 of the Indian Point 3 Restart Action Plan," dated March 8, 1995.
8. NRC letter, R. W. Cooper to L. Hill, Jr., "NRC Readiness Assessment Team Inspection (RATI) Report No. 50-286/95-80," dated May 25, 1995.
9. NRC letter, J. T. Wiggins to L. M. Hill, "Special Inspection to Review Fire Protection and Appendix R Restart Items, Inspection Report No. 50-286/95-81," dated May 11, 1995.

**ATTACHMENT II TO IPN-95-065**  
**COMMITMENT LIST**

Commitment Number	Commitment Description	Due Date
IPN-95-065-01	Provide restart self-assessment results to NRC at approximately 30% to 40% power.	Prior to continuing power ascension
IPN-95-065-02	Provide restart self-assessment results to NRC after reaching full power and meet with NRC to discuss plant and staff performance during the power ascension evolution.	Following operation at 100% power

ENCLOSURE 2

INDIAN POINT 3 RESTART READINESS

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## 1.0 BACKGROUND

The Indian Point 3 Nuclear Power Plant, owned and operated by the New York Power Authority (NYPA), is a Westinghouse four-loop, 965 megawatt (electric) pressurized-water reactor located 24 miles north of New York City.

The NRC's Indian Point 3 SALP report for the period ending August 1992 indicated an overall decline in performance. Although the licensee continued to display superior performance in the radiological controls functional area, the SALP noted weaknesses in the operations, maintenance/surveillance, emergency preparedness, engineering/technical support, and safety assessment/quality verification functional areas. The most significant weaknesses were in the engineering/technical support functional area. In general, the overall weak performance resulted from inadequate management oversight. Specifically, NYPA was not effective in implementing corrective actions for both long-standing and newly emerging issues. The weak performance was also evidenced by the escalated enforcement record of Indian Point 3. Between May 1992 and July 1993, Indian Point 3 received eight Severity Level III violations, with civil penalties totaling \$762,500. In January 1993, NYPA submitted a Performance Improvement Plan (PIP) for Indian Point 3 to the NRC. The plan addressed NYPA's self-assessment efforts and the performance issues noted in the SALP report.

On February 27, 1993, NYPA shut down Indian Point 3 to correct deficiencies associated with the anticipated transient without scram mitigation system actuation circuitry (AMSAC) system and with programmatic weaknesses in the surveillance testing program. However, the growing number of performance deficiencies identified by NRC and licensee personnel prompted NYPA to keep the plant shutdown while effecting plant-wide programmatic improvements. By letter dated March 26, 1993, NYPA committed to make necessary programmatic improvements before resuming power operations. In addition, NYPA officials committed not to restart the plant until it was satisfied with restart readiness and until the NRC agreed with this conclusion.

In May 1993, the NRC conducted a Special Inspection Team at Indian Point 3 and again confirmed that significant fundamental weaknesses in licensee programs and staff performance existed at the plant. As stated in the inspection report, "The team determined that the root causes for the declining performance of Indian Point Unit 3 were weak managerial processes, controls and skills." The team also identified two contributing causes. First, NYPA failed to identify and resolve underlying root causes for problems identified by the Quality Assurance (QA) organization. Second, NYPA's self-assessment process was ineffective because the function was fragmented and selectively applied and the onsite and offsite oversight committees were narrowly focused.

At the Senior Management Meeting on June 15 and 16, 1993, the plant was added to the list of facilities which, while still authorized to operate by the NRC, warranted increased NRC headquarters and regional oversight because of declining performance (i.e., the NRC's "watchlist"). On June 17, 1993, the NRC issued Confirmatory Action Letter (CAL) 1-93-009 which documented the restart commitments made by NYPA.

Over the succeeding months, several PIP action plans were completed by NYPA. However, NYPA concluded that the existing programs and efforts to improve the performance of Indian Point 3 were not sufficiently effective to justify returning the plant to service, nor were they effective in creating a foundation for long-term, sustained improvement. Significant performance problems continued to occur even though programs and process improvements designed to correct those deficiencies had been implemented. On December 17, 1993, the NRC met with NYPA to discuss the progress and status of the PIP. In a letter to NYPA dated December 22, 1993, the NRC documented its concern regarding the effectiveness of the PIP as an integrated plan for overall performance improvement at the station, in light of recurring plant events and procedural violations.

In January 1994, NYPA senior management selected a team of plant and corporate personnel to perform a root cause analysis for the decline in performance at both Indian Point 3 and the NYPA corporate office, and to develop a comprehensive and integrated Restart and Continuous Improvement Plan (RCIP). The RCIP project was completed in May 1994 and by letter dated May 27, 1994, was formally submitted to the NRC for review.

In August 1994, the NRC's NYPA Assessment Panel (NAP) completed its initial review of the RCIP and concluded that if properly implemented, the RCIP should correct the fundamental issues responsible for the performance decline at Indian Point 3. This conclusion was documented in an NRC letter dated August 8, 1994. It appeared that the PIP's shortcomings had been assessed by NYPA and had been corrected in the RCIP.

## **2.0 NYPA ASSESSMENT PANEL FORMATION**

A significant NRC effort was required to follow licensee actions to correct the growing number of deficiencies in late 1992. Therefore, in January 1993, the NRC expanded the already existing FitzPatrick Assessment Panel into the NAP. This action would allow the NRC to continue to monitor FitzPatrick as well as closely follow NYPA's implementation of the Indian Point 3 improvement program and to assist in the coordination of NRC resources for overall performance monitoring and assessment. The NAP is comprised of personnel from both Region I and NRC headquarters. The NAP subsequently assumed the additional role as a restart panel. The responsibilities of the NAP relative to Indian Point 3 are to:

- monitor and assess the licensee's performance
- coordinate the inspection program for the facility
- recommend and coordinate enforcement activities
- assess the adequacy of the Performance Improvement Program (and subsequently the RCIP) and monitor its implementation
- review the licensee's response to inspection findings and assess the adequacy of associated corrective actions
- identify, evaluate, and track restart issues
- provide a plant restart recommendation and basis after NYPA completes its restart program

In July 1993, the NAP developed the Indian Point 3 Restart Action Plan (RAP). The RAP, which was developed from NRC Inspection Manual Chapter 0350, "Staff Guidelines for Restart Approval," established guidance for the NRC to follow and listed specific items that the NRC must complete before concluding that Indian Point 3 was ready to restart. The RAP consisted of three parts. Section 1, "Restart Process Checklist," listed the steps of the NRC overall review process for Indian Point 3 restart. Section 2, "Restart Issues Checklist," listed plant-specific restart issues and the criteria used to develop these issues. Section 3, "Restart Readiness Assessment Checklist," contained "Areas for Assessment" covering items associated with the performance decline at Indian Point 3, its ultimate shutdown and other matters that should be evaluated before restart because of the length of the shutdown. Each assessment area contained a list of "Applicable Items," which was used in part as guidance for developing the inspection plan for the Readiness Assessment Team Inspection (RATI). Enough items were selected in each area to allow a sound assessment of readiness for restart.

### **3.0 NRC ASSESSMENT OF RESTART READINESS**

#### **3.1 INTRODUCTION**

As previously stated, the NAP developed a comprehensive restart readiness evaluation process to ensure that required restart issues were thoroughly reviewed and assessed by the NRC before plant restart. The Indian Point 3 RAP was the guiding document used to assess restart readiness. In addition, the NRC conducted a RATI whose principal objective was to perform an in-depth evaluation of the degree of readiness of NYPA administrative controls, programs, plant equipment, and personnel to support safe restart and operation of Indian Point 3. The RATI assessed performance in the areas of Management Programs/Independent Oversight/Self-Assessment, Operations, Maintenance and Surveillance, and Engineering and Technical Support. The RATI also closed six Indian Point 3 RAP restart issues. The preliminary results of the RATI were discussed at an exit meeting, open for public observation, on April 27, 1995. During the public participation portion of this meeting, no new issues were raised that impacted the NRC's restart readiness assessment. The RATI inspection report was issued on May 25, 1995.

The following sections address the areas that were assessed by the NRC to determine if Indian Point 3 was ready for restart. The areas assessed are consistent with the Indian Point 3 RAP and NRC Inspection Manual Chapter 0350.

#### **3.2 NRC RESTART ISSUE CLOSURE**

Section 2 of the Indian Point 3 RAP contained 60 technical, programmatic, and management oversight issues which required resolution prior to restart. Fifty-four of these issues were inspected, closed, and documented in various NRC inspection reports. Six issues were specifically assigned to and closed by the RATI. These latter issues included operations effectiveness, maintenance effectiveness, management expectations, QA effectiveness, backlog reviews, and NYPA staff attitude with respect to performance improvement. The Indian Point 3 RAP lists each issue, the inspection report(s) where resolution of the issues are discussed, and the NAP meeting number and date when closure

of each issue was confirmed. The inspection effort required for restart issue closure was above and beyond the normal NRC site inspection program that continued during the shutdown.

Final resolution of each restart issue was confirmed by the NAP during regularly scheduled meetings. Therefore, the NRC concludes that all restart issues are closed.

### 3.3 READINESS ASSESSMENT TEAM INSPECTION RESULTS

The RATI reviewed Indian Point 3's performance in the areas of Management Programs/Independent Oversight/Self-Assessment, Operations, Maintenance and Surveillance, and Engineering and Technical Support. The RATI consisted of 10 inspectors plus a team leader and included representatives from all four NRC regional offices and headquarters. The majority of the onsite inspection activities took place between April 3 and 21, 1995, with certain activities occurring prior to these dates. Inspection activities were conducted during day shifts, off shifts, and weekends, and over 1000 hours of direct inspection of plant activities was accumulated. During the conduct of the inspection, the team identified six new issues that were considered appropriate for resolution by NYPA prior to restart of the facility:

#### (1) Plant Alarm Response Procedures

The team identified that several alarm response procedures did not reference the alarm actuating devices or alarm setpoints. A problem was also noted regarding the failure to revise an alarm response procedure following a modification.

#### (2) Auxiliary Feedwater Building Ventilation Fans

The team identified that the Auxiliary Feedwater Pump Building temperature controllers were not set in accordance with the system drawings and the temperature controllers and fans were not routinely functionally tested.

#### (3) Breaker Panel Load Schedules

The team noted that the load schedules located inside electrical distribution panels were not controlled documents and did not match the system drawings. The load schedules posted inside the panels did not reflect plant modifications that had added or removed loads.

#### (4) Setpoint Changes

The closeout process for setpoint changes was not clearly proceduralized. The setpoint change control procedure and process did not ensure that all procedures and documents affected by a setpoint change were revised.

(5) Drawing Changes

The team noted that 122 Requests for Document Change (RDC) were backlogged against the "Type A" (control room vital) drawings. The team concluded that the information provided in the RDCs should be available to the operators.

(6) Design Change Closeouts

The team found that a design change turnover had been completed by the responsible engineer without the adequate review or concurrence by the Operations Department as required by plant administrative procedures. The team concluded that a review of similar design change closeout packages should be conducted to ensure that plant procedures had been appropriately updated.

As discussed in NYPA's letter dated June 12, 1995, each of these issues has been or will be completed prior to restart. The NRC has confirmed that each of these issues has been or will be adequately addressed. Thus, there are no outstanding RATI issues affecting restart of the facility.

RATI Overall Conclusion

The team determined that a common understanding of management expectations and a favorable atmosphere for problem identification existed at Indian Point 3. Management expectations regarding safety had been clearly communicated to the plant staff. The Quality Assurance organization had taken appropriate measures to implement an effective Quality Assurance program. The offsite and onsite review committees were providing quality oversight of important processes and programs. The problem identification process and the corrective action program were sufficiently implemented to identify and resolve plant deficiencies in a timely manner. Self-assessment programs have improved over the past year.

During the period that the team was on the site, the operators maintained the plant in a safe condition. Command and control of operational activities was generally good. Operators were cognizant of plant conditions and control room annunciators. In general, operations procedures were technically adequate, administrative requirements were clearly delineated and proceduralized, and adequate processes were in place to control plant configuration.

The maintenance staff demonstrated a conservative approach to the performance and completion of maintenance activities. Plant and system material condition was good. Identified plant deficiencies were properly prioritized and scheduled to support resolution in a timely manner. Implementation of the preventive maintenance and the surveillance testing programs was also good.

The RATI determined that the plant material condition of safety systems and components was good. Further, the RATI concluded that planning and maintenance programs and processes were adequate to support a safe plant restart. Based on observations of the engineering organization, the RATI concluded that it was capable of providing timely support for emergent

technical issues; additionally, the engineering and technical support staff, procedures, programs, and processes were in place to support a safe restart and continued plant operation.

The major engineering organizations were available to the plant and their support to the station was effective. Both the Design Engineering and Technical Services organizations are taking appropriate steps to control their backlogs of work and the backlogs have been adequately screened for plant restart issues. The permanent and temporary modification processes were adequate to ensure that plant safety margins were not reduced. Safety evaluations contained adequate technical detail that supported reasonable conclusions.

Based on the above, the NRC concludes that staffing, plant equipment, programs and processes are adequate to support safe restart and continued operation of Indian Point 3.

### **3.4 RESTART READINESS ASSESSMENT CHECKLIST**

As previously discussed, Section 3 of the Indian Point 3 RAP contained six "Areas for Assessment," involving issues broader than specific restart issues, that the NRC staff needed to assess before concluding that the plant was ready to restart. The six areas for assessment are discussed below. The information used by the NRC staff to develop its conclusion was obtained, as applicable, from (1) resident and specialist inspections (2) inspections assessing restart issues (3) the RATI (4) NAP activities and (5) NRC management visits.

#### **3.4.1 ROOT CAUSE IDENTIFICATION AND CORRECTION**

In mid-1992 NYPA recognized that the performance of Indian Point 3 was declining. An assessment was conducted to identify the causes of performance problems and to develop an improvement program. As previously discussed, the PIP was developed and subsequently submitted to the NRC on January 14, 1993. However, subsequent NRC inspections and continued weak performance in some areas questioned the usefulness of the PIP as an integrated plan for overall performance improvement of the station. NYPA performed a second review and finalized its list of root and contributing causes in the RCIP.

NYPA found six primary root causes:

- Management did not demonstrate the leadership, interpersonal skills, or the credibility to provide a work environment that encouraged open communication, teamwork, innovation, and trust.
- Senior management did not establish the vision or provide the direction to drive the organization's agenda.
- Issue identification, assessment, and problem resolution processes were not well managed and did not result in lasting correction of issues and problems.
- Management did not establish clear performance expectations, provide effective coaching and feedback, or hold people accountable for meaningful performance results.

- Management of change was ineffective.
- Roles and responsibilities were not sufficiently defined to support effective organizational performance.

NYPA found six contributing causes:

- NYPA management did not employ industry experience to establish and implement effective performance standards.
- Information and direction were unclear and often not communicated effectively.
- Policies and procedures were inadequate to support acceptable station performance. They were overly complex, contained technical inaccuracies, and were ineffectively enforced.
- The quality and rate of completion of work by the maintenance function did not support plant needs.
- Information management systems did not support management needs.
- Engineering procedures and products did not effectively support plant operations and maintenance.

Based on the above findings, NYPA developed a comprehensive, long-term RCIP in May 1994. The plan was designed to improve overall performance at the plant and corporate office by correcting the twelve root and contributing causes. NYPA also established a Restart Management Team (RMT) to oversee the RCIP. The RMT, which consisted of the senior managers from NYPA's Nuclear Generation Department, was chartered with directing actions necessary to restart Indian Point 3. The RCIP was revised in November 1994; however, this revision did not change the 12 root and contributing causes as delineated in the original RCIP.

Corrective actions (i.e., action plans) to address the 12 root and contributing causes are addressed in the RCIP. The NRC's NAP conducted a thorough review of the RCIP. In a letter to NYPA dated August 8, 1994, the NRC concluded that the RCIP was a comprehensive plan that addressed the root causes for the previous decline in plant performance, provided appropriate corrective actions, and provided a reasonable process for assessing the effectiveness of those corrective actions.

In a management meeting open for public observation held at the Indian Point 3 site on November 17, 1994, NYPA presented the status of its improvement program, the RCIP, and the results achieved to date. NYPA concluded that progress was being made, but further efforts were warranted. Between December 5 and 16, 1994, NYPA performed a Startup Evaluation for Readiness Team (SERT) inspection. The purpose of this self-assessment was to determine, through evaluation of objective evidence, the effectiveness of corrective actions and improvements relative to restart readiness of Indian Point 3. The SERT concluded that additional work was needed to prepare Indian Point 3 for restart, but that NYPA management had made significant improvements in both plant and corporate activities during the shutdown. These significant improvements included improved programs and processes, increased employee involvement in decision making, improved corporate support, improved employee morale and confidence in management, and improved independent oversight. However, additional effort would be required to make a number of areas fully

effective and capable of supporting restart. The NAP concluded that the SERT took a critical look at NYPA's programs and made appropriate recommendations for improvement.

Over the next several months, NYPA's Start Up Readiness Evaluation (SURE), which is described in the RCIP, continued an organized framework of assessments and reviews necessary to demonstrate that Indian Point 3 was ready for restart. NYPA's letter dated March 16, 1995, informed the NRC that the SURE for Indian Point 3 had been completed; the letter also delineated some items that needed to be addressed prior to restart and requested the NRC to perform the Readiness Assessment Team Inspection.

The NRC staff reviewed the licensee's Startup Plan and the SURE program, including the associated elements of the System Certification, Operational Readiness Review, Startup Evaluation for Readiness Team (SERT), and Quality Assurance Department Oversight. This review was conducted to ensure that NYPA had adequately assessed and resolved outstanding issues and had developed a detailed plan for conducting a plant restart. The NRC staff concluded that the startup plan was detailed and thorough and provided appropriate oversight for plant restart; the SURE program provided plant management an appropriate tool for identifying restart issues, and plant management had provided sound oversight in the resolution of these issues.

The NRC staff reviewed the Deviation Event Report (DER) process to determine the effectiveness of the program in identifying, prioritizing, tracking, and resolving the root causes of problems. The NRC staff interviewed cognizant plant staff and conducted a review of open and closed DERs. The NRC staff concluded that the DER process was being adequately implemented to identify and resolve plant deficiencies in an effective and timely manner.

The NRC staff assessed the effectiveness of the QA organization to give plant management feedback on overall plant performance. The NRC staff conducted interviews, reviewed audit reports and findings, observed several QA meetings, and assessed the open QA findings to ensure that items important to support plant restart had been scheduled for completion prior to restart. The NRC staff concluded that the QA organization had taken the appropriate measures to establish an effective QA program at Indian Point Unit 3, and station management's commitment to establish the QA Department as an integral oversight organization has enhanced its effectiveness.

The NRC staff reviewed recently conducted self-assessment activities in the areas of operations, maintenance, and training. The self-assessment programs have improved over the past year. The currently implemented program provides the basic performance data necessary to identify significant performance issues, and management is using this information appropriately to identify and resolve problems. The NRC concluded that these programs have been sufficiently implemented to support safe startup.

Overall, by implementing the RCIP, NYPA has made significant changes to promote both short- and long-term improvements in performance. Corporate management has provided substantial resources and oversight. The NRC staff will continue to monitor the implementation of this improvement program via



the NRC inspection program and through periodic meetings with the licensee. The NAP will continue to be the focus for NRC oversight of the Indian Point 3 facility until NYPA demonstrates sustained performance improvement.

### 3.4.2 LICENSEE MANAGEMENT

NYPA has demonstrated a serious commitment to improvement and has provided the management attention and resources necessary to implement its RCIP effectively. NYPA has also made major corporate and site organizational and personnel changes designed to improve performance at the facility.

Since the shutdown in early 1993, the following changes occurred within the NYPA corporate organization: new Chairman of the Board; new President and Chief Executive Officer; new Chief Nuclear Officer; new Vice President of Appraisal, Compliance and Regulatory Affairs (Quality Assurance); new Vice President Engineering; and establishment of a Chief Operating Officer position.

Establishment of the Regulatory Affairs and Special Projects corporate department occurred in October 1994 when the NYPA licensing organization was restructured. The new licensing organization has one corporate director, and each site (Indian Point 3 and FitzPatrick) has one licensing manager reporting to the Vice President Regulatory Affairs and Special Projects. These positions were filled with persons from outside as well as within the NYPA organization to provide site and corporate management with a broader industry perspective in operating and managing Indian Point 3. Observations to date indicate that this organization has been effective in supporting the licensee's improvement efforts.

The following major management changes occurred at the site: new Resident Manager; new General Manager of Support Services; new General Manager of Operations; new General Manager of Maintenance; establishment of a Site Engineering Director; and elevation of the Training Manager position to a General Manager of Training.

The NRC has seen significant improvement in management oversight, direction and support. Management has provided resources for extensive plant modifications, and has increased staffing in operations, engineering, and licensing. Site and corporate management involvement in plant activities and operational concerns has clearly improved, and so has the communication of management expectations and standards of performance to the plant and corporate staff. Improvements in planning and scheduling of activities have been evident. Managers fostering improved accountability, responsibility, and attention to detail have been observed. NYPA management has encouraged improved horizontal and vertical communications and teamwork at the site and between the site and the corporate office. NYPA management has also established a work environment conducive to problem identification and has established improved programs to identify, prioritize, and resolve significant issues. Programs for root cause analysis and the evaluation and utilization of operating experience have been upgraded.

Through developing and effectively implementing the RCIP, NYPA has demonstrated its ability to successfully evaluate performance and to factor the results of those evaluations into improved program and personnel performance. The QA program at the site has been substantially improved and is being used as an effective management tool. Satisfactory performance of the onsite Plant Operations Review Committee (PORC) and the offsite Safety Review Committee (SRC) has been demonstrated.

As previously stated, NYPA developed a startup plan to describe the process and management review necessary to support a safe organized return to service of the plant. The plan describes the physical and administrative requirements for startup. The plan also describes approaches for self-assessments of the startup process. As part of the plan, recommendations will be made to the Resident Manager for the continuation of plant startup when milestones are completed and activities leading up to these milestones are assessed. The plan also requires a senior manager to be assigned to each shift to provide continuous management presence and to supplement the shift supervisor during the startup. The NRC found that the plan was comprehensive and contained sufficient checks and balances for decision making, feedback of information, and sound judgements for a safe plant startup.

Overall, the NRC staff concludes that NYPA management has clearly communicated its expectations to the staff, is providing appropriate direction and oversight of plant activities, and is ready to support restart of the unit.

### 3.4.3 PLANT AND CORPORATE STAFF

The NRC staff conducted numerous interviews of plant staff and observed meetings to ensure that plant safety issues were being communicated to the proper levels of management. The NRC assessed the licensee's effectiveness in communicating management expectations to the plant staff in the areas of problem identification, procedure adherence, and work safety practices. Based on the common understanding of management expectations and the favorable atmosphere for problem identification, the staff determined that the management team adequately provided direction to the NYPA plant staff.

In addition to routine inspection observations, the NRC observed operations activities during plant heatup. The NRC observed all shifts, including weekend and backshift activities. The NRC assessed operator performance regarding administrative procedures and management expectations. The staff found that operators maintained the plant in a safe condition.

The NRC staff reviewed and assessed the quality of plant operations procedures to ensure the procedures were adequate to conduct a safe plant restart. A sample of operations procedures were found to be technically adequate.

The NRC staff assessed operator control board awareness and annunciator response on all shifts. The NRC also assessed the quality of the Shift Manager and Control Room Supervisor command and control, and operations management involvement in day-to-day plant operation. The NRC found the quality of command and control to be generally good. The NRC observed that teamwork in the control room was good, as evidenced by various shift members

identifying and correcting problems. Operators were cognizant of plant conditions and control room annunciators. Operations management was actively involved in operational activities.

The NRC staff verified that operator training and qualifications were current and that key plant changes made during the performance improvement outage were addressed in operator training. The staff concluded that operator requalification training was up to date. Operator training had been conducted on plant modifications implemented during plant shutdown and the operators were knowledgeable of important plant changes. The NRC staff concluded that specialized operator training to support restart activities was adequate. The staff considered the plant fire brigade to be adequately trained and prepared to effectively respond to plant fires.

As a result of the NYPA engineering reorganization, Design Engineering was created and design engineering personnel and the design authority were relocated to the site from the White Plains Office. The reorganization is ongoing. Observations to date indicate that the engineering reorganization and transition are being appropriately managed.

Overall, the support provided to the plant by the major engineering organizations was effective. Design Engineering response to emergent issues was technically sound and timely. System Engineering response was adequate and was improving as the system engineers gained plant experience. The availability of engineering personnel to the rest of the station was good. Both the Design Engineering and Technical Services organizations were taking appropriate steps to control their backlogs. The transition during the engineering reorganization appeared to be appropriately controlled.

The NRC staff noted that both System Engineering and Design Engineering staff and management were involved in the plant outage meetings and the Outage Work Scope meeting, providing support to other plant organizations. Both System Engineering and Design Engineering staff were supplying around-the-clock coverage for critical activities.

Overall, the NRC staff concludes that NYPA operations staff and support staff are ready for Indian Point 3 restart.

#### 3.4.4 PHYSICAL READINESS OF THE PLANT

During this outage, NYPA has implemented many significant hardware upgrades and programmatic improvements. Examples of systems impacted by these improvements included the AMSAC system, the emergency diesel generators, the control room air conditioning system, the instrument air system, the safety-related motor-operated valves, the power-operated relief valves, and the service water electrical cable duct bank. In addition, thousands of corrective maintenance work items were completed during the shutdown period. Extensive inspection and tours by NRC indicate that overall plant material condition has substantially improved. The overall plant material condition is satisfactory to support restart and continued operation of the facility.

The NRC staff reviewed licensee mechanisms in place to ensure that the status of plant safety-related equipment was being adequately controlled. The NRC staff concluded that Operations has processes in place to control plant configuration for safe plant operation. Operators were cognizant of system status that required entry into technical specifications limiting conditions for operations. Operations control room deficiency and operator work-around programs were good initiatives that were successfully tracking and prioritizing these issues. The protective tagging program effectively tracked the status of plant equipment. In addition, the staff found that protective tags were installed on the correct equipment and that information on the tags was correct. The NRC independently verified that selected systems were appropriately aligned for the current plant condition. The inspectors further verified that the licensee had completed a comprehensive system alignment verification.

The NRC staff reviewed the planning area by conducting interviews, reviewing planned maintenance work requests, and observing work. The staff reviewed the backlogs of corrective and preventive maintenance and observed various meetings to verify that unresolved maintenance issues were assigned appropriate priorities and to ensure that items requiring resolution prior to plant restart were properly scheduled. A work planning process has been developed and is being implemented by the licensee. Although the process is adequate, NYPA is enhancing it to make it more effective.

The NRC staff observed ongoing maintenance activities to verify that these activities were being properly controlled through the use of established procedures, approved technical manuals, drawings, and job-specific instructions. The staff considered the conduct of maintenance activities to be adequate to support plant startup.

The NRC staff conducted several plant tours and system walkdowns to determine if hardware problems had been identified. The staff also reviewed the overall condition of several safety significant systems. Plant material condition was acceptable to support startup.

The NRC staff reviewed the adequacy of preventive maintenance procedures, observed the performance of preventive maintenance (PM) in the field, and assessed coverage of the program with regard to incorporating vendor recommendations, scheduling and deferral, and review and trending of results. The staff determined that NYPA's implementation of a preventive maintenance program was adequate. A strength noted was that only a few PMs were deferred beyond their planned performance date and those that were deferred were adequately evaluated and justified.

The NRC staff reviewed surveillance scheduling and procedures, observed the performance of tests, and reviewed test results to verify that the surveillance program was being conducted in accordance with requirements. The staff determined that the surveillance program was being conducted in an acceptable manner.

The NRC staff reviewed the licensee's modification program and reviewed a sample of permanent modifications. The review compared the design change to the design bases, considering the potential impact of the design on other equipment and its compliance with appropriate procedures. The NRC also reviewed a sample of modification acceptance tests (MATs) to determine if they satisfactorily proved the proper operation of the associated modification. The NRC staff concluded that engineering processes were adequate to ensure that plant safety margins were not reduced. The technical bases and associated documentation for the modifications were adequate. The development and performance of MATs were adequate and demonstrated the proper operation of the associated modification.

The NRC also reviewed the temporary modification (TM) process, including administrative procedures and a sample of TMs. At the end of April 1995, there were 22 installed TMs, seven of these were installed on safety-related systems; two are planned for removal prior to startup, one will be removed after completion of full power testing, and three are scheduled for replacement before July 1995. The NRC concluded that administrative procedures were in place to acceptably control the development, review and approval, installation, and removal of TMs. Overall the NRC concluded that the temporary modifications were acceptable for restart.

All pre-1990 safety-related modifications have been reassessed by NYPA to identify differences between the as-built plant conditions and the plant drawings. Additional controls were added to the modification process in 1990 to prevent undocumented deviations from the modification drawings. The licensee redlined all vital control room drawings with changes in preparation for restart. The NRC staff concluded that the plant's configuration control was acceptable.

The NRC reviewed backlogs in the Technical Services and Design Engineering organizations. This review included those items in the backlog that would not be completed prior to restart and the licensee's method for determining that the item need not be completed prior to restart. The NRC also evaluated the licensee's prioritization of these items. The NRC staff determined that the backlogs had been appropriately screened and prioritized. Both the Technical Services and Design Engineering organizations were taking appropriate steps to control their backlogs.

The NRC staff reviewed the industry operating experience program to ensure that lessons learned were being appropriately incorporated in plant programs and staff training and to verify that appropriate items had been resolved prior to plant restart. The staff concluded that the review process for industry experience was adequate. The staff also noted that the backlog of reviews was manageable. The staff determined that the backlog had been adequately screened by the licensee for plant restart issues.

#### **3.4.5 COMPLIANCE WITH REGULATORY REQUIREMENTS**

The NRC staff has issued and granted all applicable license amendments, exemptions, and reliefs. The actions specified in Confirmatory Action Letter 1-93-009 have been satisfied. All significant enforcement issues to date have

been resolved. The NAP also reviewed all open allegations and concluded that none affected restart of the facility. There are no outstanding issues in this area relative to the restart of Indian Point 3.

#### **3.4.6 COORDINATION WITH INTERESTED AGENCIES/PARTIES**

The Federal Emergency Management Agency (FEMA) was notified of the pending restart of Indian Point 3 via telephone on June 16, 1995, and FEMA was not aware of any offsite emergency preparedness issues that could potentially affect restart of the plant. The New York State Liaison Officer was notified of the pending restart of Indian Point 3 by the Region I State Liaison Officer via telephone on June 16, 1995, and various government and local public officials were notified in a meeting on June 16, 1995. Individuals from these various agencies identified no issues that would preclude restart of the plant.

The NRC has provided several opportunities, after NRC meetings with the utility, for the public to comment on the possible restart of Indian Point 3. Subsequent to each of these meetings, the staff has reviewed issues of concern, as well as the bases for their position; the staff has concluded that substantive issues that could delay restart do not exist.

#### **4.0 RESTART COORDINATION**

In a letter to the NRC dated May 27, 1994, NYPA committed to perform a detailed SURE before restart. The NRC recommended that NYPA complete its SURE before the NRC performed its RATI. The SURE consisted of a SERT inspection, an Operational Readiness Review, Quality Assurance Oversight, and System Certification. By letter dated March 16, 1995, NYPA notified the NRC that the SURE had been completed successfully and that the facility was ready for the NRC RATI. At the public entrance meeting for the NRC's RATI on April 3, 1995, NYPA presented the results of its SURE.

In the licensee's letter dated June 12, 1995, NYPA informed the NRC that Indian Point 3 was ready to be restarted and delineated NYPA's power ascension oversight plan. The licensee plans to have its Restart Management Team (RMT) review activities at various plateaus during power ascension. The RMT will then make recommendations to the Resident Manager regarding readiness to continue to the next plateau. NYPA intends to have a member of the Restart Management Team available 24 hours a day during plant startup; additionally, a senior manager is also to be assigned to each shift until reactor power reaches 100 percent.

The NRC has developed an augmented inspection plan to assess the Indian Point 3 restart. In addition to the resident inspectors assigned to the site, additional inspectors will provide on-shift, around-the-clock coverage, starting 24 hours before the planned reactor startup and continuing for several days. During this time, among other NRC inspection activities, NRC inspectors will review NYPA's self-assessments, Quality Assurance assessments, and support to operations during emergent issues. Following completion of

around-the-clock coverage, the NRC will continue to provide augmented coverage of the power ascension process, including major evolutions as they occur, until the plant stabilizes at 100 percent power.

## **5.0 OTHER ISSUES**

### **5.1 LATEST SALP**

The current SALP assessment period, which was originally scheduled to end on November 17, 1993, was suspended until 6 months after plant restart. The bases for the suspension were that the NAP will continuously oversee the plant under the provisions of Manual Chapter 0350, and that plant restart will be monitored in accordance with the NRC's approved IP3 Restart Action Plan. The latest SALP report is over 2 years old and does not reflect the current status of the facility.

### **5.2 FIRE BARRIER PENETRATION SEALS**

In response to NRC inspection Unresolved Item 50-286/93-24-03, "FIRE SEAL ANALYSIS - Self Ignition Temperature of Cable Insulation as it Relates to the Design of Fire Seals," NYPA initially concluded that the self-ignition temperature of the cable insulation is not less than 785°F and that this temperature is sufficiently above the 700°F maximum allowable unexposed surface temperature criteria for penetration seal designs at Indian Point 3. This conclusion was based on generic cable flammability data published by the Electric Power Research Institute (EPRI). The cables at Indian Point 3 are "similar" to the cables referenced in the EPRI reports, but NYPA could not provide reasonable assurance that the cables specified in the EPRI report are truly representative of the cables installed at Indian Point 3. Because of the broad range in flammability data for cables of "similar" construction and the different test protocols for obtaining the flammability data, the NRC staff was concerned that the generic cable data used in NYPA's fire seal analysis might not adequately represent the cables installed at Indian Point 3. Therefore, this item remains unresolved.

NYPA is doing research, including actual testing if needed, to verify the applicability of the generic information used in its evaluation. NYPA has implemented fire watches in all plant areas where the penetration seals in question are located. These compensatory measures, coupled with other elements of NYPA's fire protection program, ensure an adequate level of fire safety; therefore, the NRC staff has concluded that this issue has low safety significance. Thus, the NRC staff has determined that NYPA's actions are acceptable for restart and subsequent operation until the penetration seal issue is fully resolved.

## **6.0 CONCLUSION**

The NRC has thoroughly assessed the physical condition of the plant, the performance of NYPA's plant and corporate staffs, NYPA's corporate and plant management oversight, and the licensing status of the plant. The NRC has found all of these areas to be adequate to support restart and operation. The NRC also found that NYPA's RCIP is a comprehensive plan that addressed the

root causes and corrective actions for the previous decline in plant performance and provided a reasonable process for assessing the effectiveness of those corrective actions. Furthermore, the NRC found that NYPA's startup plan provides the process and management oversight necessary for a safe organized return to power operation.

NYPA has completed the committed restart actions as described in CAL 1-93-009. In their letter dated June 12, 1995, NYPA committed that Indian Point 3 will not exceed 40 percent reactor power until a self-assessment is performed and the NRC is notified of the results. In addition, NYPA committed to another self-assessment after full power operation is achieved, with the results of this latter self-assessment to be presented to the NRC in a public meeting. The cover letter to this document adds to the commitments contained in CAL 1-93-009 to reflect the above statements and transmits our agreement that Indian Point 3 is ready to restart. The NRC will provide augmented inspection coverage during the startup process. The NRC also will continue to closely monitor NYPA's performance and the implementation of the RCIP.