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REGION I

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50-410/97-06

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Licensee: Niagara Mohawk Power Corporation
P. O. Box 63
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Facility: Nine Mile Point, Units 1 and 2

Location: Scriba, New York

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EXECUTIVE SUMMARY

Nine Mile Point Units 1 and 2
50-220/97-06 & 50-410/97-06
June 29 - August 9, 1997

This integrated NRC inspection report includes reviews of licensee activities in the functional areas of operations, engineering, maintenance, and plant support. The report covers a six week period of inspections and reviews by the resident staff, and regional specialists in the areas of emergency preparedness and radiological effluent monitoring.

PLANT OPERATIONS

During the inspection period, four procedural non-compliances occurred as a result of personnel errors. (VIO) The most significant event was the inadvertent spray-down of the NMP1 containment due to an operator opening the wrong valve during a surveillance. In addition, during the review of a Licensee Event Report, it was noted that the failure to properly implement a procedure resulted in NMP2 changing operational conditions without meeting the requirements of the Technical Specification. Several personnel performance errors have been identified at both units during the past year; suggesting continued NMPC management attention is warranted in this area.

The response of the NMP2 control room crew and supervision to an increasing drywell floor drain leak rate was good. The work by maintenance and engineering to identify and repair the leaking flex-hose were also good. RP support during the forced outage was considered outstanding.

MAINTENANCE

The inspectors observed instrument and calibration (I&C) technicians perform surveillances tests on safety related systems at both units. In each case, the work was performed carefully, with good communications between the I&C technicians and with the control room operators.

Since August 1996, NMP1 has made little progress in lowering the total non-outage corrective maintenance (CM) backlog; in contrast, NMP2 has made slow, but steady, progress in lowering the backlog. Both units reduced the percentage of long-standing safety-related CM backlog items, and no long-standing safety-related CM backlog items were safety significant.

The inspectors considered the repairs of the NMP2 drywell equipment drain tank leak rate monitor to be acceptable. Procedures and work orders were used at the job and all test equipment was properly calibrated.



Executive Summary (cont'd)

ENGINEERING

Both units have experienced an increase in the overall engineering backlog during the past year. However, NMPC management was able to eliminate all long-standing non-outage temporary modifications.

PLANT SUPPORT

The NMPC program for posting of related regulatory documents was adequate and in compliance with the requirements of 10 CFR 19.11.

The licensee maintained and implemented very good programs for routine radioactive liquid and gaseous effluent releases. They actively pursued program enhancements in the effluent program to maintain offsite exposure as-low-as-is-reasonably achievable.

The implementation of the emergency preparedness program is inconsistent. Some strong areas were noted in the operational readiness of the emergency response facilities and training content. The evaluation to support the move of the Emergency Operations Facility was well documented. However, some programmatic controls were weak: the qualification tracking system failed to detect that the qualification of nine members of the emergency response organization had lapsed, and a required annual offsite augmentation drill had not been performed in several years. (VIO) The licensee's annual audit of the emergency preparedness program was performance-based but failed to identify the above problems.



REPORT DETAILS

Nine Mile Point Units 1 and 2
50-220/97-06 & 50-410/97-06
June 29 - August 9, 1997

SUMMARY OF ACTIVITIES

Niagara Mohawk Power Corporation (NMPC) Activities

NMP1

Nine Mile Point Unit 1 (NMP1) started the inspection period at full power. On July 11, the unit was shutdown due to an increasing drywell floor drain leak rate. The source of the leak was subsequently determined to be a packing leak on a valve in the post-accident sampling system. The valve was repaired, and the unit was returned to service on July 13; full power was achieved on July 16. NMP1 maintained essentially full power for the remainder of the inspection period.

NMP2

Nine Mile Point Unit 2 (NMP2) started the inspection period at 95% of full power, limited due to the moisture separator reheaters being isolated. On August 4, control room operators manually scrammed the reactor from 60% power due to a high drywell floor drain leak rate. The source of the leak was subsequently determined to be a leaking flexible drain hose on the "B" recirculation flow control valve. (See Section O2.1 of this inspection report.) The inspection period ended with NMP2 in startup.

Management Changes

During the inspection period, several changes were made to the Nine Mile Point senior management team:

- Mr. Martin McCormick, previously Vice President - Nuclear Engineering, assumed a new position as Vice President - Special Projects, with a primary focus on developing the New York Nuclear Operating Company (NYNOC).
- Mr. John Conway, previously Plant Manager - NMP2, became the new Vice President - Nuclear Engineering.
- Mr. Kim Dahlberg, previously General Manager - Projects, is the interim Plant Manager - NMP2, until a permanent selection is made. Afterwards, Mr. Dahlberg will assume new duties as the Vice President - Nuclear Operations.
- Mr. Norman Rademacher, previously Plant Manager - NMP1, assumed new duties related to regulatory affairs and performance issues.
- Mr. Richard Abbott, currently Vice President and General Manager - Nuclear, is the interim Plant Manager - NMP1, until a permanent selection is made.



Nuclear Regulatory Commission (NRC) Staff Activities

Inspection Activities

The NRC conducted inspection activities during normal, backshift, and deep backshift hours. In addition to the inspection activities completed by the resident inspectors, regional specialists conducted inspections and reviews in the areas of effluent controls and emergency preparedness. The results of the specialist inspections are contained in the applicable sections of this report.

Updated Final Safety Analysis Report Reviews

A discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (UFSAR) description highlighted the need for additional verification that licensees were complying with UFSAR commitments. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters.

I. OPERATIONS

O1 Conduct of Operations (71707, 90712, 92700)¹

O1.1 General Comments

Using NRC Inspection Procedure 71707, the resident inspectors conducted frequent reviews of ongoing plant operations. Specialist inspectors in this area used other procedures during their reviews of operations activities; these inspection procedures are listed, as applicable, for the respective sections of the inspection report. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

O1.2 Inadvertent Initiation of the NMP1 Containment Spray System

a. Inspection Scope

The inspectors reviewed the inadvertent initiation of the NMP1 containment spray system. The inspectors discussed the event with an onshift licensed reactor operator and the Assistant Shift Supervisor (ASSS), and reviewed the associated Deviation/Event Report (DER). The inspectors also reviewed the associated surveillance test procedure and selected recorder traces, and attended NMPC management meetings relating to the event.

¹ Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized reactor inspection report outline. Individual reports are not expected to address all outline topics. The NRC inspection manual procedure or temporary instruction that was used as inspection guidance is listed for each applicable report section.



b. Observations and Findings

On July 1, 1997, containment spray quarterly surveillance testing was in progress at NMP1. Containment spray pump #121 was taking a suction from the torus and discharging back to the torus through flow control valve (FCV) 80-118. A licensed control room operator was conducting the surveillance test and had established the proper flow path, in accordance with the procedure. The next step in the procedure required the operator to establish a system flow rate by throttling FCV 80-118. The operator inadvertently opened containment spray blocking valve 80-40. Valve 80-40 established a direct flow path to the containment through the containment spray header. The operator immediately identified the error and shut valve 80-40. The licensee estimated the valve was partially open for approximately thirty seconds.

Later, while standing at the control panel, the operator discussed the event with the inspectors. The operator had a copy of surveillance test Procedure N1-ST-Q6B, "Containment Spray System Loop 121 Quarterly Operability Test," Revision 04. The operator stated that he had the procedure in one hand and had just throttled FCV 80-118 with the other. The operator removed his hand from the control switch for FCV 80-118 to point to the flow gage and verify flow rate. While attempting to readjust the flow rate using FCV 80-118, the operator failed to reverify that his hand was on the proper valve. The control switch for valve 80-40, physically located directly below the control switch for FCV 80-118 on the control panel, was inadvertently operated.

Following the event, process computer data indicated that containment temperatures and pressures changed very little due to the spray initiation. The drywell floor drain (DWFD) sump rate-of-change momentarily exceeded Technical Specification (TS) limits; however, the immediate isolation of the containment spray restored the rate of change to within TS requirements. The licensee estimated between 150-200 gallons of water was discharged to the drywell. The inspectors reviewed the DWFD recorder traces to independently verify the quantity of water injected, and concurred with the licensee estimations.

NMP1 engineering staff performed an operability determination, and determined that the containment spray system, the containment, and all equipment within containment, remained operable. The engineering operability determination was reviewed, and subsequently concurred upon, by the Station Operations Review Committee (SORC). The inspectors considered the operability determination to be detailed and to have received a thorough review by NMP1 management. In addition, during a subsequent plant shutdown and drywell entry, maintenance and engineering personnel examined the equipment in the drywell and confirmed that there was no damage.

NMPC's apparent root cause of the event was that the consequences of inadvertent component operation during this surveillance test had not been considered. As such, less than adequate self-checking was performed. Licensee procedures required independent or peer verification when the failure to properly perform a step could result in equipment damage, personnel injury, or a reactor trip. During the



performance of the surveillance test, direct observation of valve manipulations was not specifically required. As a result of this event, NMP1 is evaluating the need for generic procedural enhancements to ensure that evolutions having the potential to impact reactor plant safety are adequately supervised. Also, the NMP1 Operations Manager directed that all control room switch manipulations would now require a peer verification. The inspectors considered the less than thorough appreciation for the consequences of improper control panel manipulations to be a weakness.

In addition to the above, the following personnel performance errors occurred during this observation period:

- On July 23, NMP1 operators opened the wrong circuit breaker while isolating motor generator set #167 prior to maintenance. The label for the circuit breaker opened did not agree with the markup (tagout) sheet and tag. This resulted in an unplanned de-energization of various equipment, including the control room process computer.
- On July 22, during preventive maintenance on the deluge sprinkler system, a fire brigade member operated an incorrect valve, resulting in an unplanned pressurization of the water deluge sprinkler system in the NMP2 turbine building condenser area. No equipment was damaged.
- On July 18, a NMP1 radiological waste operator, clearing a markup following maintenance, positioned three valves different from the position on the restoration sheet without permission from the Station Shift Supervisor (SSS). This unexpected system configuration later resulted in overflowing a tank in the radiological waste building.

On all four occasions, personnel failed to comply with or adequately implement written procedures. These procedural non-compliances are violations of NMP1 TS, Section 6.8.1, and NMP2 TS, Section 6.8.1, regarding procedural adherence. (VIO 50-220/97-06-01 and 50-410/97-06-01)

The inspectors noted that the above errors were a result of either inattention-to-detail, a lack of a questioning attitude, or a less-than-adequate focus on potential plant impact resulting from improper actions. Many of the events resulted from personnel lacking conservative judgement and decision making. Although none of the above issues had any immediate safety consequence, the inspectors consider this indicative of a continuing problems in personnel performance at Nine Mile Point.

c. Conclusions

During the observation period, four procedural non-compliances occurred as a result of personnel errors. (VIO) The most significant event was the inadvertent spray-down of the NMP1 containment due to an operator opening the wrong valve during a surveillance test. These four errors are just the latest examples of poor personnel performance at both units during the past year, indicating the need for continued NMPC management attention in this area.



O2 Operational Status of Facilities and Equipment

O2.1 NMP2 Shutdown and Unusual Event due to High Drywell Floor Drain Leak Rate

a. Inspection Scope

The NMP2 reactor was manually scrammed, and an Unusual Event declared, due to increasing drywell floor drain (DWFD) leak rate. The inspectors were in the control room and observed the operating crew during the initial phases of the event. Subsequently, the inspectors monitored the licensee's activities associated with the identification and repair of the leak.

b. Observations and Findings

On August 4, 1997, with NMP2 at 95% power, the control room received alarms indicating increasing drywell (DW) radiation levels and pressure; during the review, the operators identified a rising DWFD leak rate. NMP2 TS, Section 3.4.3.2, limits unidentified leakage to 5.0 gallons per minute (gpm); otherwise, the unit must be shutdown. The TS define unidentified leakage as that which is not identified. Examples of identified leakage would be pump seal or valve packing leaks collected into a sump, or leakage into the containment atmosphere from a source which is specifically known and is not part of the pressure boundary.

In accordance with NMPC procedures, the initial response by the SSS was to reduce power to 60%. Subsequently, the SSS, in consultation with the Operations Manager and Plant Manager, directed the reactor to be manually scrammed from 60%. The SSS declared an Unusual Event, in accordance with the NMP2 Emergency Plan, when DW leakage exceeded 10 gpm. The inspectors were in the NMP2 control room during the initial phases of the event, and considered the response by the control room crew and supervision to be good. The emergency declaration was proper and timely. When DWFD leakage was reduced to less than 4.0 gpm, the SSS terminated the event, in accordance with the Emergency Plan. Notifications to the appropriate federal, state, and local officials were completed within the required timeframe. NMPC performed a comprehensive review of the plant response to the manual scram, per Procedure N2-REP-6, "Post-Scram Review," Revision 01.

When the plant was in a COLD SHUTDOWN condition (i.e., reactor coolant temperature less than 200°F), personnel entered the DW and found that the maintenance drain flexible-hose (flex-hose) on the "B" recirculation flow control valve (2RCS*HYV17B) was leaking. The inspectors entered the DW and observed the failed flex-hose. NMPC decided to remove the flex-hose and cap the open pipe ends, rather than replace it or attempt to repair it. The questions from the NMP2 engineering and maintenance staff revealed a good understanding of the potential complications and the need for contingencies if the repair did not proceed as expected. The inspectors monitored the licensee's planning meetings, reviewed the below documentation associated with the modification, and considered them acceptable:



- Engineering Design Document Change -- DDC Number N2-97-063,
- Licensing Document Change Request -- LDCR Number 2-97-UFS-105,
- Safety Evaluation -- SE Number 97-82,
- Applicability Review -- AR.25509, and
- Maintenance Work Order -- WO 97-12122-06

In addition to the removal of the failed flex-hose, immediate corrective actions included: (1) an inspection of all remaining accessible flex-hoses in the DW, and (2) an evaluation of equipment in the area of the water spray for detrimental affects. Actions to prevent recurrence included plans to remove as many of the flex-hoses as possible during the next refueling outage. The root cause evaluation for the failed flex-hose will not be available until a destructive analysis, by an outside contractor, is completed. An inspector follow item (IFI) is opened to review the root cause analysis and any supplementary corrective actions. (IFI 50-410/97-06-02)

The inspectors noted that the NMP2 SORC members generally conducted a thorough review of the DERs associated with this event. Several of the DERs addressed specific problems identified during the NMPC inspections of other flex-hoses in the drywell. Each discrepancy was satisfactorily addressed before the plant was restarted. However, during the SORC review of DER 2-97-2300, "Failed Flex-Hose Resulting in Plant Scram," it was not noted during the engineering disposition, nor by any of the SORC members during the review, that the accident analysis was inaccurate in that it assumed there would be only one leak path from the failed flex-hose. After the DER was approved, the inspectors questioned the unique design configuration of the flex-hose on 2RCS*HYV17B; specifically, a catastrophic failure of this hose would equate to two leakage paths. The NMP2 Plant Manager agreed that the accident analysis only accounted for half of the possible leakage. Although the overall consequences did not change, the inspectors considered this an example of a weak questioning attitude by the licensee's engineering organization.

In addition, the inspectors discussed the potential catastrophic failure of the flex-hose as it related to the NMP2 Individual Plant Examination/Probability Risk Analysis (IPE/PRA). For a small-break loss of coolant accident (SBLOCA), the IPE/PRA only models pipe breaks greater than 1 inch; thus, a break of most 3/4 inch pipes would be considered a plant transient. However, a complete failure of this 3/4 inch flex-hose results in two leak paths and would be classified as a SBLOCA, since the total break size is larger than 1 inch. Nonetheless, based on the relatively small number of flex-hoses in this configuration, NMPC concluded that the overall probability of a SBLOCA remained relatively unchanged. The inspectors considered NMPC's conclusion to be acceptable.

The radiation protection (RP) support during the investigation and repairs of the flex-hose were outstanding. Good ALARA [as-low-as-is-reasonably-achievable] practices, such as pre-job briefs, protective clothing, and the use of remote cameras in the DW, resulted in maintaining the total dose received at a minimum. The maintenance activities to repair the leak, including the RP and engineering support,



were well planned and executed. Overall, the inspectors considered the efforts of the NMP2 staff in response to the failed flex-hose to be above average.

c. Conclusion

The response of the NMP2 control room crew and supervision to an increasing DW leakage was good. The work by maintenance and engineering to identify and repair the leaking flex-hose were also good. RP support during the forced outage was considered outstanding.

05 Operator Training and Qualification

05.1 Review of INPO Re-Accreditation Report

The Institute of Nuclear Power Operations (INPO) conducted a review of Nine Mile training programs from April 28 - May 2, 1997. The INPO evaluation was based on an NMPC self-assessment and an on-site review. The purpose of the review was to determine the effectiveness of the below training programs for re-accreditation in accordance with the standards established by the INPO National Academy for . . . Nuclear Training:

- Non-Licensed Operators
- Reactor Operators
- Senior Reactor Operators
- Station Shift Supervisors
- Shift Technical Advisors
- Continuing Training for Licensed Personnel

The inspectors reviewed the INPO Re-Accreditation Evaluation Report, issued on July 21, 1997, and identified no issues that the NRC was not already aware of. No additional followup by the NRC is warranted.

08 Miscellaneous Operations Issues (90712, 92700)

08.1 (Closed) LER 50-410/97-03: Technical Specification Violation Caused by Procedural Non-Compliance Due to Personnel Error

On June 8, 1997, approximately one hour after NMP2 changed operational conditions from Mode 2 (STARTUP) to Mode 1 (RUN), a DW communication circuit (2LAR-PNLUO3-12) was found to be energized. This circuit was not provided with backup containment penetration overcurrent protection and therefore, in accordance with NMP2 TS 3.8.4.1, was required to be de-energized following final DW inspection.

Upon discovery, NMP2 licensed operators entered the appropriate TS Limiting Condition of Operation (LCO), and de-energized the circuit. The licensee determined the root cause of the event to be personnel error. Particularly, the operator failed to open the circuit breaker and observe the proper system response (i.e., no self-



checking) during the performance of the Primary Containment AC Circuit Check. Subsequently, the operator was temporarily removed from watch standing duties; remediation included counseling on the use of self-checking techniques, and the performance of Job Performance Measures emphasizing self-checking.

Notwithstanding, the licensee violated TS 3.0.4, which states that entry into an operational condition shall not be made unless the conditions for the LCO are met without reliance on provisions contained in the Action Statements. This non-repetitive, licensee-identified violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.
(NCV 50-410/97-06-03)

The inspectors reviewed the Licensee Event Report (LER) and found it to be timely and to accurately describe the event. Also, the inspectors considered the immediate corrective actions and actions taken to prevent recurrence appropriate. This LER is closed.

08.2 (Closed) LER 50-410/97-05: High Pressure Core Spray System Inoperable Due to Failed Unit Cooler

The event described in this LER was discussed in NRC IR 50-410/97-04, Section O2.2. The description and analysis of the event, as contained in the LER, is consistent with the inspectors' understanding of the event. The corrective actions in the LER state that a detailed failure analysis of the terminal board will be performed, estimated to be completed by January 1998. This LER is closed.

II. MAINTENANCE ²

M1 Conduct of Maintenance (61726, 62707)

M1.1 General Comments

Using NRC Inspection Procedures 61726 and 62707, the resident inspectors periodically observed plant maintenance activities and the performance of various surveillance tests. Specialist inspectors in this area used other procedures during their reviews of maintenance and surveillance activities; these inspection procedures are listed, as applicable, for the respective sections of the inspection report. In general, maintenance and surveillance activities were conducted professionally, with the work orders (WOs) and necessary procedures in use at the work site, and with the appropriate focus on safety. Specific activities and noteworthy observations are detailed in the inspection report. The inspectors reviewed procedures and observed all or portions of the following maintenance/surveillance activities:

² Surveillance activities are included under "Maintenance." For example, a section involving surveillance observations might be included as a separate sub-topic under M1, "Conduct of Maintenance."



- N1-ISP-036-003 High-Low Reactor Water Level Instrument Trip Channel Test/Calibration
- N2-ESP-BYS-W675 125 Volt DC Weekly Battery Surveillance
- N2-ESP-ICS-Q@002 RCIC [Reactor Core Injection Cooling] Pump and Valve Operability and System Integrity Test and ASME [American Society of Mechanical Engineers] XI Functional Test
- N2-RESP-04 LPRM [Local Power Range Monitor] Calibration
- WO 96-15884-00 Replacement of the Division II Emergency Diesel Generator Fuel Transfer Pump Mechanical Seal
- WO 97-10019-00 Drywell Equipment Drain Chart Recorder Behaving Erratic
- WO 97-10944-00 Erratic Indication on Drywell Equipment Drain Pump Flows Causes Erroneous Leakage Rate
- WO 97-11224-00 B Drywell Floor Drain Flow Rate Indication on Recorder is Erratic

M1.2 Calibration of NMP2 LPRM Neutron Monitoring System

a. Inspection Scope

The inspectors observed a portion of the calibration of the local power range monitors (LPRMs) by NMP2 instrument and controls (I&C) technicians. In addition, the inspectors reviewed the completed calibration documentation.

b. Observations and Findings

With NMP2 operating at 95% of rated power, I&C technicians performed a calibration of NMP2 LPRMs, using reactor engineering surveillance test procedure N2-RESP-4, "LPRM Calibration," Revision 02. The activities within the LPRM cabinets were performed carefully and the technicians used good three-way communications between themselves and with the control room operators. The Supervisor, Reactor Engineering, reviewed the completed surveillance test the next day and confirmed that no unsatisfactory results were obtained.

The inspectors reviewed the precautions, limitations, and potential plant impact statements, and verified that all necessary actions had been taken. Also, the inspectors verified that the digital multimeter being used by the I&C technicians was in calibration. The inspectors performed an independent review of the completed surveillance test procedure and identified no unsatisfactory results.

c. Conclusion

The inspectors determined that the calibration of the NMP2 LPRMs was performed carefully by the I&C technicians, with good communications used consistently. The supervisory review identified no unacceptable results and was completed in a timely manner.



M1.3 NMP1 Reactor Protection System Calibration

a. Inspection Scope

The inspectors monitored NMP1 I&C technicians calibrate the instrument trip units for the reactor water level high/low trip inputs to the reactor protection system (RPS).

b. Observations and Findings

Using instrument surveillance test procedure N1-ISP-0360003, "Hi-Lo Reactor Water Level Instrument Trip Channel Test/Calibration," Revision 02, NMP1 I&C technicians verified the operability of the high and low level trip inputs to the RPS. The performance of this surveillance test procedure required several personnel at various locations: the lead technician was stationed in the control room, another was at the remote shutdown panel, and a third was at the analog trip system (ATS) cabinets. In addition, since performance of the procedure generated a half-scam, it was classified as a "Category 1" activity, requiring a first-line supervisor from the respective department to be present during the entire activity.

The procedure was completed without incident. The supervisory oversight was performed without being intrusive. Three-part communications were observed to be consistently used by all personnel involved in the evolution, the I&C technicians, the supervisor, and the control room operators. The technicians were knowledgeable of the procedure and the physical operation of the system. Overall, the inspectors considered the performance of the technicians during the surveillance test to be thorough and professionally conducted.

c. Conclusion

Performance of half-scam testing of the reactor protection system was completed without incident. Good three-part communications were consistently used by the I&C technicians.

M1.4 Corrective Maintenance Backlog

a. Inspection Scope

The inspectors reviewed the corrective maintenance (CM) backlog for both units, and discussed the backlog with the respective Maintenance Managers and Outage Managers.

b. Observations and Findings

The inspectors reviewed the CM backlog trend data for the last year. The NMP1 non-outage CM backlog has remained relatively constant, approximately 400, from August 1996 to July 1997. The NMP1 Maintenance and Outage Managers stated



that they considered the current CM backlog to be unsatisfactory, and that they developed a plan to aggressively reduce it.

The NMP2 non-outage CM backlog had been reduced from 412 in August 1996 to 242 in May 1997. Overall, the inspectors considered that NMP2 has made consistent progress in lowering the backlog since August 1996.

The inspectors reviewed the CM backlog with respect to safety-related items. At both units, the inspectors identified no long-standing (i.e. greater than three months) items which could potentially impact safe plant operation. In the past year, the safety-related CM backlog had remained relatively constant at NMP1, and had been declining at NMP2. However, the percent contribution of long-standing safety-related items to the overall CM backlog had been reduced slightly at both units since August 1996.

c. Conclusions

Since August 1996, NMP1 had made little progress in lowering the total non-outage CM backlog items and NMP2 had made slow, but consistent, progress in lowering the total backlog of non-outage CM items. Both units had reduced the percentage of long-standing safety-related CM backlog items, and no long-standing safety-related CM backlog items having safety consequence were identified.

M2 Maintenance and Material Condition of Facilities and Equipment (62707)

M2.1 Repair of NMP2 Drywell Equipment Drain Tank Leak Rate Monitor

a. Inspection Scope

The NMP2 drywell equipment drain tank (DWEDT) leak rate monitor exhibited erratic indication on the pump flow rate chart recorder. The instrument was declared inoperable and a 30-day LCO was entered. The inspectors evaluated the use of an alternate means of determining leak rate. In addition, selected portions of the repair activities were monitored, and discussions were held with the maintenance supervisor.

b. Observations and Findings

On June 23, 1997, the chart recorder for monitoring the NMP2 DWEDT leak rate (2DER-FR123) exhibited erratic indication of flow rate. The SSS declared the instrument inoperable, entered a 30-day shutdown LCO in accordance with TS 3.4.3.1.b, and initiated DER 2-97-1872. Using WO 97-10019-00, I&C conducted troubleshooting of the recorder; however, no further erratic behavior was noted initially and the technicians were unable to identify the cause for the erratic behavior. Subsequently, on June 27, the recorder was returned to service.

On July 12, the chart recorder again indicated erratic pump flows and was declared inoperable. A second DER (#2-97-2049) was written, noting that this appeared to



be a repeat failure. NMPC considered that the recorder itself could potentially be the problem; corrective actions in WO 2-97-10944 included replacing the chart paper drive motor, the servo-amplifier card, and several corroded wires. The recorder was returned to service on July 18; on July 19, the indications were still erratic and the recorder was declared inoperable. A new WO (2-97-11224) was generated, consisting of signal tracing with an oscilloscope, measurement of power supply voltages, verification that no additional corrosion existed, and tightening of all terminal connections. In addition, the differential pressure transmitter instrument lines were flushed, refilled, and vented to remove any entrapped air. A final calibration was performed after completion of maintenance. No further problems have been noted.

NMPC determined the root cause to be multiple degraded components and air in the transmitter sensing lines. The immediate corrective actions appeared adequate. Actions to prevent recurrence included a review, by NMPC, of I&C procedures to ensure the maximum reliability of control room recorders.

The inspectors discussed the failed instrument with several shift operators and noted that all crews were able to use an alternate method to determine drywell equipment leak rate, as required by TS 3.4.3.1. The inspectors observed portions of the repair activities and noted that maintenance work orders and calibration procedures were in use at the job site, and that all test equipment was in calibration. The inspectors identified no discrepancies during the review of the associated DERs, WOs, & calibration records.

c. Conclusion

The inspectors considered the repairs of the NMP2 DWEDT leak rate monitor to be adequate. Procedures and work orders were used at the job and all test equipment was properly calibrated.

III. ENGINEERING

E1 Conduct of Engineering (37551)

E1.1 General Comments

Using NRC Inspection Procedure 37551, the resident inspectors frequently reviewed design and system engineering activities and the support by the engineering organizations to plant activities. Specialist inspectors in this area used other procedures during their reviews of engineering activities; these inspection procedures are listed, as applicable, for the respective sections of the inspection report.



E1.2 Engineering Backlog

a. Inspection Scope

The inspectors assessed the backlog of engineering work for both units. Specifically, the inspectors reviewed DER trend data and the temporary modification backlog. The inspectors discussed the issues with engineering staff for both units.

b. Observations and Findings

The inspectors reviewed the engineering DER backlog trend data for the last year, noting a steady increase in backlog items during the past few months at both units. For NMP1, the engineering DER backlog had risen from 207 in June 1996 to 298 in June 1997. The NMP2 engineering DER backlog had risen from 274 in June 1996 to 364 in June 1997.

The inspectors discussed, with both engineering staffs, the proposed actions to reduce the backlog. Both units have established a multi-disciplined DER team to assist in backlog reduction and to improve the quality of DER dispositions. As part of this effort, NMP2 increased resources by 13 temporary engineers, and NMP1 was evaluating similarly supplementing the engineering staff. Further refinement of backlog prioritization and reevaluation of refueling modifications was another management action item to reduce the backlog. The inspectors noted that licensee management had been addressing the engineering backlog, but that the current trend indicated these actions were ineffective during the last year.

The inspectors additionally reviewed the status of temporary modifications at both units. The inspectors noted that only one non-outage temporary modification greater than one year old existed, and that was at NMP1. The long-standing temporary modification for NMP1 was the Thermex modular waste treatment system, which became a permanent modification subsequent to the inspection period. The inspectors considered that NMPC's goal to eliminate long-standing non-outage temporary modifications was appropriate and appeared to be effective.

c. Conclusions

The engineering DER backlog for both units has risen over the last year. NMPC's efforts have had minimal impact in reducing the overall engineering DER backlog during the past year. Management's goal to eliminate long-standing non-outage temporary modifications was appropriate and appeared to be effective.



E8 Miscellaneous Engineering Issues (90712, 92700, 93903)**E8.1 (Closed) IFI 50-410/96-06-02: Clarification of Wording in the NMP2 UFSAR Regarding Full Core Offloads****a. Inspection Scope**

During a 1996 NRC inspection, it was identified that the NMP2 UFSAR did not accurately reflect the practice of performing a complete reactor core offload for a normal refueling outage. At that time, NMPC committed to clarify the wording in the NMP2 UFSAR, and an inspector follow item (IFI) was opened to track the completion of the revision. The inspectors reviewed the licensee's documentation which approved the change.

b. Observations and Findings

The inspectors reviewed the following NMPC documents related to the changes to Section 9.1.3 of the NMP2 UFSAR:

- Safety Evaluation Number SE-96-074, Revision 0, "Spent Fuel Pool Cooling, Residual Heat Removal, Alternate Decay Heat Removal, and Secondary Containment"
- Applicability Review Number AR-12996, Revision 0
- Licensing Document Change Request Number LDCR- 2-96-UFS-084, Revision 0
- SORC Minutes for Meeting 96-79-02, which approved the change

The changes clarified the fact that a full core offload was the normal practice, and that the transfer of fuel to the spent fuel pool could begin as early as 96 hours after reactor shutdown. The inspectors noted that the approved changes were incorporated into the UFSAR in May 1997.

c. Conclusion

The inspectors considered the safety evaluation and associated documents to be complete and to accurately reflect the practice currently used by NMP2 for normal reactor refueling evolutions. No unreviewed safety questions were identified during the review.

E8.2 (Closed) IFI 50-410/96-06-04: Review of Corrective Actions Associated with LER 50-410/96-03-01**a. Inspection Scope**

During a 1996 NRC inspection, it was noted by the inspectors that the corrective actions detailed in an LER appeared to appropriately address the identified root causes. In the associated NRC inspection report, an IFI was opened to track the completion of the corrective actions.



b. Observations and Findings

The inspectors reviewed the corrective actions described in LER 50-410/96-03-01, associated with the full core offload and operation of the spent fuel pool cooling system outside of design basis. The corrective actions, and review to verify completion, included:

- The training program for personnel qualified to perform safety evaluations and applicability reviews was revised to include a discussion of the need to perform a thorough review of the system design basis when writing and/or revising procedures.

The inspectors verified that the training lesson plan (QAR-SE-Q/R/S-030, Revision 1, "QARSE [Qualified Applicability Reviewer/Safety Evaluator] Qualification, QARSE Requalification, or QARSE SORC/SRAB [Station Operation Review Committee/Safety Review and Audit Board]) was appropriately revised to incorporate a description of the event and the associated LER.

- The UFSAR and associated refueling procedures were revised to address spent fuel pool cooling operations.
 - N2-FHP-13.1 Complete Core Offload, Revision 04
 - N2-FHP-13.2 Complete Core Reload, Revision 05
 - N2-FHP-13.3 Core Shuffle, Revision 00

The UFSAR revision was discussed in Section E8.1 of this report. The fuel handling procedures (listed below) were reviewed and appeared to contain the necessary changes in response to the deficiencies noted in the inspection report and the LER related to spent fuel pool cooling requirements and a partial core offload with fuel shuffle.

- Divisional bus outage procedures, operating procedures, and refueling administrative procedures were revised to include spent fuel pool cooling system design basis requirements.

The inspectors reviewed the below operating and administrative procedures/instructions and determined that the changes appeared to adequately address the system design basis requirements of the UFSAR and Technical Specifications.

- N2-OP-38 Spent Fuel Pool Cooling and Cleanup System, Revision 08
- N2-ODI-5.60 Shutdown Operations Protection Instruction, Revision 02
- NIP-OUT-01 Shutdown Safety, Revision 02

On September 29, 1996, NMPC informed the NRC that the divisional bus outage work was not scheduled for the September 1996 refueling outage; as such, the procedures would not be revised until prior to the next scheduled bus outage



during the next refueling (Spring 1998). The inspectors verified that the associated procedures (N2-PM-@12 and N2-PM-@13) had been deactivated.

- A lessons learned transmittal was issued describing the event and the need to perform an in-depth review and evaluation of design basis when writing and/or revising procedures.

The inspectors reviewed the Lessons Learned Transmittal, dated July 16, 1996, and verified that applicable personnel in affected departments were trained.

- A review was conducted of selected portions of the UFSAR to validate that necessary programs and procedures were in place which comply with the UFSAR.

NMPC reviewed the UFSAR for the following systems: control rod drive, reactor core isolation cooling, reactor building closed loop cooling, and non-safety portions of main steam. Numerous DERs were written to resolve identified discrepancies. The inspectors reviewed a sample of the DERs and considered the identification and resolutions to be adequate.

Based on the above reviews, this item is closed.

c. Conclusion

The corrective actions related to NMP2 practices contrary to the UFSAR for full core offload during refueling, and the operation of the spent fuel pool cooling system were thorough and acceptable.

E8.3 (Closed) VIO 50-410/EA-96-116-1012: Discrimination of an Employee for Raising Safety Concerns

On July 24, 1996, the NRC issued a Severity Level II Notice of Violation (Notice) and imposed a Civil Penalty of \$80,000 against NMPC for discrimination against a former employee for raising safety concerns at the Nine Mile facility. The Notice was based on the Recommended Decision and Order of a U.S. Department of Labor Administrative Law Judge. The NRC noted in the letter which transmitted the Notice that NMPC denied that any discrimination occurred against the individual, but that corrective actions were taken to ensure an environment free for raising safety concerns. These actions included:

- reemphasizing to management the rights and responsibilities of employees to raise safety issues;
- reinforcing, at all levels of management, the value of reporting issues to improve performance; and
- reemphasizing the availability of the Quality First Program.

Based on frequent observation by the resident inspectors, it appears that NMPC has promoted an open environment for raising safety concerns. In addition, the



inspectors have not seen any attitudes or actions by management to indicate that they are privately or internally dismissing this violation, thereby creating a "chilling effect" at the Nine Mile Point site. This item is closed.

E8.4 (Closed) LER 50-410/97-02-02: Potential Inoperability of Emergency Diesel Generator Service Water Cooling Water Outlet Valves During a Control Room Fire

The technical issues related to this were described in NRC IR 50-410/97-04. The LER was timely and satisfactorily described the issues. The inspectors reviewed the root cause and corrective actions provided in the LER and considered them to be appropriate. This LER is closed.

IV. PLANT SUPPORT

Using NRC Inspection Procedure 71750, the resident inspectors routinely monitored the performance of activities related to the areas of radiological controls, chemistry, emergency preparedness, security, and fire protection. Minor deficiencies were discussed with the appropriate management, significant observations are detailed below. Specialist inspectors in the same areas used other procedures during their reviews of plant support activities; these inspection procedures are listed, as applicable, for the respective sections of the inspection report.

R1 Radiological Protection and Chemistry (RP&C) Controls (71750, 84750)

R1.1 General Comments

During entry into and exit from radiologically controlled areas (RCAs), the inspectors verified that proper warning signs were posted, personnel entering were wearing proper dosimetry, personnel and materials leaving were properly monitored for radioactive contamination, and monitoring instruments were functional and in calibration. During periodic plant tours, the inspectors verified that radiation work permits (RWPs) and survey maps were current and accurately reflected plant conditions. They observed activities in the RCAs and verified that personnel were complying with the requirements of applicable RWPs, and that workers were aware of the radiological conditions in the area.

R1.2 Implementation of the Radioactive Liquid and Gaseous Effluent Control Programs

a. Inspection Scope

The inspectors toured the plant, including the control rooms, and reviewed liquid and gaseous effluent release permits, airborne tritium quantification techniques, and unplanned and unmonitored release pathways.



b. Observations and Findings

The inspectors toured the control rooms and selected radioactive liquid and gas processing facilities and equipment. Included in this review were the effluent radiation monitor systems (RMS) and air cleaning systems at both units. All equipment was operable at the time of the tour. The inspectors noted that the licensee maintained and monitored air balances for the reactor, turbine, and radioactive waste (radwaste) buildings at both units to assure conformance to UFSAR specifications. The inspectors toured the NMP2 RMS calibration laboratory. This laboratory was equipped with two operable calibration chambers (closed and open air calibrators). The open air calibrator was an excellent methodology to avoid back-scattering radiation during process/area RMS detector calibration.

During the review of selected radioactive liquid and gaseous effluent discharge permits, the inspectors determined that the discharge permits were complete and met the criteria of the TS-required Offsite Dose Calculation Manual (ODCM) for sampling and analyses at the frequencies and lower limits of detection established in the ODCM. The inspectors noted that there had been no radioactive liquid releases from NMP1 for several years while pursuing effluent ALARA and plant water conservation.

The inspectors also noted that there were no unplanned/unmonitored radioactive liquid or gas releases since the previous inspection conducted in September 1995. The inspectors noted that the licensee had reviewed the effluent control programs relative to the NRC Inspection and Enforcement (IE) Bulletin 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to Environment." Recently, the licensee re-reviewed the safety evaluation reports for the turbine building (a potential unmonitored release pathway) to determine if better monitoring devices could be used to demonstrate compliance with IE Bulletin 80-10 using more restrictive criteria. The inspectors noted that the previous safety evaluation concluded that there was no unmonitored release through the turbine building.

The inspectors requested the licensee demonstrate its capabilities in monitoring and quantifying airborne tritium. The NMP2 staff calculated the total amount of water loss from the spent fuel pool (SFP). The licensee assumed that water loss was due to evaporation from the SFP released to the environment via the plant main stack. The licensee calculated the airborne tritium released using SFP tritium measurement results. Calculated airborne tritium released through the plant main stack during February 1997 was 6,190 micro-Curie per day ($\mu\text{Ci}/\text{day}$). Measured airborne tritium release for this same period was 5,390 $\mu\text{Ci}/\text{day}$, which was an excellent comparison. The inspectors noted that the airborne tritium measurement error was about 50%, as reported in the licensee's semiannual report. The inspectors stated, through this comparison, that the licensee demonstrated its capability to measure airborne tritium releases accurately.

The NMP1 staff had some difficulty in calculating the airborne tritium released from the SFP to the main stack since condenser gases were also directed to the main



stack. Consequently, the licensee found it difficult to determine the tritium contribution from the SFP. The licensee stated that the tritium fractions (SFP and steam evacuation) will be determined using airborne tritium measurement results during plant operations and during a refueling outage, since there is no airborne tritium releases due to condenser gases during a refueling outage.

c. Conclusion

Based on the above reviews and observations, the inspectors determined that the licensee maintained and implemented effective radioactive liquid and gaseous effluent control programs. The licensee was vigorously pursuing the enhancement of the effluent control programs at both units through: (1) the elimination of all radioactive liquid releases from NMP1; (2) re-reviewing the safety evaluation to comply better with IE Bulletin 80-10 requirements; and (3) the establishment of a RMS calibration laboratory in NMP2.

R2 Status of RP&C Facilities and Equipment (71750, 84750)

R2.1 Compliance with Posting Requirements of 10 CFR Part 19 (71750)

a. Inspection Scope

The inspectors evaluated licensee compliance with the NRC requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 19, "Notices, Instructions and Reports to Workers: Inspections and Investigations," relative to posting of regulatory documents. The inspectors reviewed the NMPC implementing procedure, reviewed the location and content of postings both onsite and offsite, and discussed the issue with NMPC licensing staff.

b. Observations and Findings

The inspectors reviewed NMPC Nuclear Division Directive NDD-RPR, "Regulatory Posting Requirements," Revision 03, which established requirements for the posting of regulatory documents, including NRC Form 3 and enforcement correspondence. The inspectors determined that NDD-RPR adequately implemented the requirements of 10 CFR 19.11. The procedure also described posting locations and which documents were to be posted. The inspectors determined that the posting areas specified in NDD-RPR were maintained and were in sufficient locations to allow ready access by plant personnel. All documents required to be posted were available for review. The inspectors considered that the NMPC program was adequate and in compliance with the posting requirements of 10 CFR Part 19.11.

The inspectors discussed with the licensing staff the periodicity and documentation of posting verification by the licensee. Licensing staff stated that posting verification was conducted on a periodic basis, but was not formally documented. The inspectors noted that many of the posted documents related to enforcement correspondence were old issues and no longer required posting; however,



maintaining the posting beyond that required was conservative and did not contradict either licensee procedures or NRC regulations.

c. Conclusions

The NMPC program to meet posting of regulatory documents was adequate and was in compliance with the requirements of 10 CFR 19.11.

R2.2 Calibration of Effluent/Process Radiation Monitoring Systems

a. Inspection Scope

The inspectors reviewed the RMS availability, selected I&C calibration procedures, and the most recent calibration results for the following effluent/process RMS, as designated for each unit.

NMP1

- Liquid Radwaste Effluent Radiation Monitor
- Service Water Effluent Radiation Monitor
- Main Steam Line Radiation Monitors
- Stack Gaseous Effluent Monitors (Low and High Ranges)
- Offgas Radiation Monitors
- Emergency Condenser Vent Monitors

NMP2

- Liquid Radwaste Effluent Radiation Monitor
- Service Water Effluent Radiation Monitor
- Cooling Tower Blowdown Line Radiation Monitor
- Cooling Tower Blowdown Flow Rate
- Radwaste/Reactor Building Vent Monitors (Low and High Range)
- Main Stack Gaseous Effluent Monitors (Low and High Range)

b. Observations and Findings

NMP1

The I&C, chemistry, and radiation protection departments had the responsibility to perform electronic and radiological calibrations for the above radiation monitors. All calibration results reviewed were within the licensee's acceptance criteria, with the exception of the liquid radwaste effluent radiation monitor. The last annual and quarterly calibrations of this monitor were on September 6, 1994, and August 29, 1995, respectively. The licensee did not release any radioactive liquid since the last calibration. Calibration, and the operability of this monitor, is required by TS only prior to radioactive liquid release to the environment. The licensee's intention was that the radioactive liquid effluent radiation monitor would be calibrated and made operable prior to any anticipated radioactive liquid release.



During the review of the above RMS calibration documentation, the inspectors independently calculated and compared several calibration results, including linearity tests and conversion factors. The inspectors determined that the licensee's results were comparable to the independent calculations.

The inspectors noted that ownership of RMS varied. For example, the stack RMS availability was tracked and trended by the chemistry staff, while the radiation protection department had responsibility for the radioactive liquid effluent RMS.

NMP2

The radiation protection department had the responsibility to perform electronic and radiological calibration for all NMP2 RMSs. The inspectors noted that one individual was responsible for the program, and effectively tracked the availability for all effluent, process, and area RMSs. Calibration results were within the licensee's acceptance criteria. The responsible individual demonstrated the RMS status to the inspectors at the monitoring panel in the control room during the plant tour.

During the review of the above RMS calibration documentation, the inspectors also independently calculated and compared several calibration results, including linearity tests and conversion factors. The inspectors determined that the licensee's results were comparable to the independent calculations.

c. Conclusions

Based on the above reviews, the inspectors determined that the licensee maintained and implemented good calibration and assessment/trending programs for effluent, process, and area radiation monitoring systems.

R2.3 Surveillance Tests for Air Cleaning Systems and Plant Air Balance

a. Inspection Scope

The inspectors reviewed the licensee's most recent surveillance test results for the below systems, and the status of the air balance for the following buildings:

NMP1

- Reactor Building Emergency Ventilation System
- Control Room Air Treatment System

NMP2

- Standby Gas Treatment System
- Control Room Outdoor Air Special Filter Train System



Air Balance for both Units

- Turbine Buildings
- Reactor Buildings
- Radwaste Buildings
- Control Rooms

b. Observations and Findings

All surveillance results (visual inspection, in-place HEPA [high efficiency particulate air] and charcoal leak tests, air capacity tests, pressure drop tests, and laboratory tests for the iodine collection efficiencies) were within TS acceptance criteria. Air balance for the turbine, reactor, and radwaste buildings and the control room were maintained as described in the UFSAR.

Recently, the NRC Office of Nuclear Reactor Regulation (NRR) identified a potential conflict regarding the charcoal testing methodology for the iodine collection efficiency performed by the licensee/contractor laboratory. The licensee's TS specify Regulatory Guide (RG) 1.52, Revision 2, March 1978, Position C.6.a, as the requirement for the laboratory testing of the charcoal; and RG 1.52 references American National Standards Institute (ANSI) N509-1976, "Nuclear Power Plant Air-Cleaning Units and Components." ANSI N509-1976 specifies that testing is to be performed in accordance with paragraph 4.5.3 of RDT M-161T, "Gas Phase Adsorbents for Trapping Radioactive Iodine and Iodine Components." The essential testing criteria are: (1) 70% or 95% relative humidity (RH); (2) 5-hour pre-equilibration time, with air at 25°C and plant specific RH; (3) 2-hour challenge, with gas at 80°C and plant-specific RH; and (4) 2-hour elution time, with air at 25°C and plant-specific RH. The latest acceptable methodology for the laboratory testing of the charcoal is ASTM [American Society for Testing and Materials] D 3803-1989, which requires licensee's to maintain 30°C during all testing phases. The inspectors confirmed that the licensee also used ASTM D 3803 methodology.

c. Conclusions

Based on the above reviews, the inspectors determined that the licensee maintained the plant air cleaning systems in accordance with established design specification and TS requirements.

R3 RP&C Procedures and Documentation (84750)**R3.1 Review of Radioactive Effluents Procedures and Reports****a. Inspection Scope**

The inspectors reviewed selected chemistry procedures to determine whether the licensee could implement the radioactive liquid and gaseous effluent control programs effectively. The inspectors also reviewed the 1995 and 1996 Semiannual Effluent Reports for both units; and contents of the ODCM.



b. Observations and Findings

The inspectors noted that effluent control procedures were detailed and easy to follow, and that ODCM requirements were incorporated into the appropriate procedures. The licensee had good procedures to satisfy the ODCM requirements for routine and emergency operations.

The inspectors reviewed the 1995 and 1996 Semiannual Radioactive Effluent Release Reports for both units. These reports provided data indicating total released radioactivity for liquid and gaseous effluents. The reports also summarized the assessment of the projected maximum individual and population doses resulting from routine radioactive airborne and liquid effluents. Projected doses to the public were well below the TS limits. The inspectors determined that there were no anomalous measurements, omissions or adverse trends in the reports.

The NMP1 and NMP2 ODCMs provided descriptions of the sampling and analysis programs, which were established for quantifying radioactive liquid and gaseous effluent concentrations, and for calculating projected doses to the public. All necessary parameters, such as effluent radiation monitor setpoint calculation methodologies, site-specific dilution factors, and dose factors, were listed in the ODCM. The licensee adopted other parameters from RG 1.109 as appropriate.

c. Conclusions

Based on the above reviews, the inspectors determined that the NMPC effluent control procedures were sufficiently detailed to facilitate performance of all necessary steps for routine and emergency operations, the licensee effectively implemented the ODCM requirements for reporting effluent releases and projected doses to the public, and the licensee's ODCM contained sufficient information to acceptably implement and maintain the radioactive liquid and gaseous effluent control programs.

R6 RP&C Organization and Administration (84750)**R6.1 Staffing Levels**

The inspectors reviewed the organization and administration of the radioactive liquid and gaseous effluent control programs and discussed with the licensee changes made since the last inspection, conducted in September 1995. There were no changes since the last inspection of the programs. Staffing levels appeared to be appropriate for the conduct of routine and emergency operations.



R7 Quality Assurance (QA) in RP&C Activities (84750)**R7.1 QA Audits of Effluent Activities****a. Inspection Scope**

The inspectors reviewed the 1995 and 1996 QA audits and chemistry measurement laboratory QA/QC [quality control] data to validate the quantification methodology for the total releases.

b. Observations and Findings

The inspectors reviewed QA Audit Report Numbers 95-019 and 96-022. The inspectors noted that the audit teams included technical personnel. The 1995 and 1996 audit teams identified no findings of safety significance. The inspectors noted that the scope and technical depth of the audits were sufficient to assess the quality of the radioactive liquid and gaseous effluent control programs.

The licensee maintained a good QA policy and verified program performance throughout the chemistry department, including the analytical measurement laboratory. The inspectors reviewed the QC data for intra/inter-laboratory comparisons. When discrepancies were found, effective resolutions were determined and implemented.

c. Conclusions

Based on the above reviews, the inspectors determined that the licensee's QA audits were sufficient to effectively assess the radioactive liquid and gaseous effluent control programs. The licensee implemented a very good QA/QC program to validate measurement results for effluent samples.

P2 Status of Emergency Preparedness (EP) Facilities, Equipment and Resources (82701)**P2.1 Emergency Response Facilities****a. Inspection Scope**

The inspectors toured the offsite Emergency Operations Facility (EOF), the offsite Joint News Center (JNC), and the onsite Operations Support Center (OSC). The inspectors conducted an audit of the instrumentation, supplies, and equipment contained in the EOF and OSC, and reviewed completed quarterly inventories for the past four calendar quarters for completeness, accuracy, and compliance.

b. Observations and Findings

The licensee had recently (December 1996) relocated to a new EOF, sharing the facility used and maintained by the New York Power Authority (NYPA) for the



James A. Fitzpatrick nuclear plant. The NRC had previously accepted this facility for use by the Fitzpatrick plant. As part of the agreement for the use of this facility, NMPC built and maintained a new JNC facility for use by the two licensees.

The inspectors noted that NMPC had provided for separate resources for their use in the central decision-making area of the EOF and had provided for co-locating with NYPA in the support areas of the EOF for those events that would result in an emergency at both sites. As part of the relocation, NMPC committed to perform a drill with NYPA that would demonstrate the dual activation of the facility by both sites.

The NMPC portions of the EOF were kept in an acceptable state of readiness. Required procedures were in place, including adequate numbers of emergency classification matrices. Telephone lists for important emergency response organization personnel and locations were readily available. A spot check of telephone circuit operability showed no inoperable circuits.

The inspectors noted that there were more items at the EOF and OSC than were specified on the NMPC inventory sheets. Licensee EP staff explained that the overages resulted from the closure of the alternate EOF, which was no longer required, and the transfer of those instruments to the remaining facilities. The inspectors reviewed a sample of inventory and equipment surveillance tests and verified that they had been performed in the last four calendar quarters. The review of DERs showed recurring problems in late submittals of completed inventories to the EP staff for their review (see section P7.1).

The inspectors' tour of the JNC showed adequate telephone capacity for use by both the licensee's staff and the news media. A spot check of telephones showed no inoperable circuits.

c. Conclusions

The inspectors concluded that the maintenance of the emergency response facilities and equipment was being well implemented and that the facilities were operationally ready.

P3 EP Procedures and Documentation (82701)

P3.1 Emergency Plan and Associated Procedures

The inspectors reviewed the change made to the Nine Mile Point Nuclear Station Site Emergency Plan that provided for the EOF relocation and the safety evaluation performed for this change. The inspectors also reviewed recent changes the licensee made to the emergency plan implementing procedures and emergency plan maintenance procedures. The inspectors performed this review in the NRC regional office. The safety evaluation written for the move of the EOF was well-thought out and systematically done. The author drew references from recognized NRC sources, including the plant's safety evaluation report. The safety evaluation



included a review of the change's effect on the emergency plan, including licensing commitments. The inspectors concluded that the changes made to the below procedures did not decrease the overall effectiveness of the Nine Mile Point Nuclear Station site emergency plan and, after limited review of the changes, no NRC approval is required in accordance with 10 CFR 50.54(q). Implementation of these changes is subject to future inspection effort to confirm that the changes have not decreased the effectiveness of the emergency plan.

- EPIP-EPP-08 Off-Site Dose Assessment and Protective Action Recommendation, Revision 7
- EPIP-EPP-12 Re-Entry Procedure, Revision 3
- EPIP-EPP-13 Emergency Response Facilities Activation and Operation, Revision 7
- EPIP-EPP-21 Radiation Emergencies, Revision 3
- EPIP-EPP-28 Fire Fighting, Revision 3
- EPIP-EPP-30 Prompt Notification System Problem Response, Revision 2
- EPMP-EPP-02 Emergency Equipment Inventories and Checklists, Revision 10

P4 Staff Knowledge and Performance in EP (82701)

P4.1 Staff Performance in the Simulator

a. Inspection Scope

The inspectors observed the EP activities of two shift crews, one from each unit, on the respective plant-specific simulators. They observed each crew, which included licensed reactor operators and senior reactor operators, communicators, and dose assessment personnel, in the performance of one scenario: The activities observed included assessment of plant conditions, classification of emergency events, notification of offsite authorities, offsite dose assessment, and the formulation and transmittal of protective action recommendations.

b. Observations and Findings

The crews were knowledgeable in the performance of their duties. Operators were able to assess plant conditions quickly and accurately. All classifications were correct. Notifications were made in a timely fashion. The crews were able to stay current with a rapidly degrading plant condition, in which escalations of emergency classes were occurring within minutes of each other. Dose assessment personnel were familiar with the operation of the automated dose assessment model and were able to make correct protective action recommendations based on the projected offsite doses.

c. Conclusions

The inspectors concluded that the members of the emergency response organization responsible for on-shift plant conditions assessment, classification, notification, and



offsite radiological consequence assessment were adequately trained in the performance of their duties.

P5 Staff Training and Qualification in EP (82701)

P5.1 EP Qualification Tracking

a. Inspection Scope

The inspectors reviewed EP training records, training procedures, and the portions of the emergency plan dealing with training. They also interviewed EP and training staff with EP training responsibilities and reviewed a recent qualification status report for the entire emergency response organization. Finally, they interviewed two individuals to determine their knowledge of their responsibilities for EP qualification tracking.

b. Observations and Findings

A training specialist in the licensee's training department was responsible for administering the EP training program. The specialist maintained a close liaison with the EP staff, although functionally separate from it. The training specialist reviewed qualification status of emergency response organization (ERO) members each calendar quarter, and scheduled the training to ensure that qualifications were kept current.

The continuing training for ERO members to maintain their qualifications was given annually and the training (including specialized training for certain ERO members) was required to be completed within the prior 15 months to prevent lapse of qualification. The data base printouts used for review of this requirement did not sort to give a list of individuals coming due for retraining. Rather, they provided an "X" in the heading for continuing training or specialized training for each member of the ERO who had the training within the required time. The printout did not give any indication of impending lapse of qualifications. It omitted the "X" only after an individual's qualification had lapsed. ERO members qualified within the last year also did not have the "X" in the heading for continuing training or specialized training, since they had been qualified based on their initial training.

The inspectors reviewed the printout for the ERO qualifications and questioned the fact that some individuals assigned dose assessment duties at the EOF did not appear to have completed the specialized training. The training specialist, after reviewing the records of the individual ERO members, discovered that nine members of the dose assessment staff at the EOF had lapsed in their qualifications. Most of these ERO members had lapsed in early June, 1997; however, they continued to be listed on the ERO roster. Three of these individuals were initial responders; i.e., ERO members who are the designated responder for their position during a rotating duty period.



The licensee staff took immediate corrective action to address this oversight, including informing the ERO members whose qualification had lapsed, and designating qualified individuals to respond. The license documented the problem on a DER, and they scheduled remedial training for the members whose qualifications had lapsed. Notwithstanding, the failure to maintain the training requirements of the approved Site Emergency Plan is a violation of NRC requirements. (VIO 50-220/97-06-04 and 50-410/97-06-04)

The licensee has also delegated some responsibilities for the administration of the EP training and qualification program to the individual ERO members. This delegation was proceduralized in NIP-EPP-01, "Emergency Response Organization Expectations and Responsibilities." One of these responsibilities was for the Team 1 initial responders to maintain secondary responder personnel in sufficient quantity to support the requirements of the Site Emergency Plan. Another responsibility was for the individual ERO members to maintain their training and qualifications current. These individuals did not have a method for readily determining the status of their own, or their subordinates, qualifications in order to satisfy these requirements.

The inspectors interviewed two Team 1 initial responders with responsibility for maintenance of subordinate ERO members. Neither of these individuals knew how to verify the qualification status of the secondary responders for which they were responsible. Both believed that the Community Alert Network (CAN) printout listing the telephone numbers of the secondary responders listed only fully qualified ERO members. The Director, Emergency Preparedness, (EPD) told the inspectors that this was not the case, that the CAN printout only listed the names of members who had been designated for ERO response.

c. Conclusions

The inspectors concluded that the licensee's method for tracking EP qualifications was inadequate for meeting the procedure requirements. Licensee training staff could not readily identify personnel who needed periodic training until the qualification had lapsed. Based on the limited number of personnel interviewed, the inspectors concluded that the expectations and requirements of ERO personnel were not clearly understood. The inspectors identified the failure to maintain the training requirements listed in the approved Site Emergency Plan as a violation of NRC requirements. (VIO)

P5.2 Drill and Exercise Performance

a. Inspection Scope

The inspectors reviewed the approved Site Emergency Plan requirements for the conduct of drills and exercises and the EP Maintenance Procedures covering the required drill and exercise scheduling and performance objectives. They also reviewed a recent matrix of drills and objectives to determine how effectively the licensee was complying with the requirements of the plan and procedures.



b. Observations and Findings

The licensee conducts EP drills and exercises in accordance with the requirements of two procedures. EP Maintenance Procedure EPMP-EPP-01, "Maintenance of Emergency Preparedness," lists periodic requirements for drills and exercises, and EPMP-EPP-04, "Emergency Exercise/Drill Procedure," contains a required performance-based matrix for the conduct of drills and exercises. Both procedures specify frequencies at which the various objectives are to be demonstrated.

The licensee's drill matrix lists the drills and exercises for the past six years and the objectives from the two EPMP procedures that were demonstrated in each drill. The inspectors' review of this matrix showed that the objectives were satisfied with one exception. Procedure EPMP-EPP-01 required the conduct of an annual ERO augmentation drill, by activation of the notification system, with actual personnel response from offsite to the emergency facilities.

The inspectors determined that the licensee had been taking credit for satisfying this objective through the periodic notification drills they performed during off-hours. These notification drills, however, did not require actual transit by the ERO members to their assigned emergency response facility. The inspectors learned, through discussion with the EPD, that a call-out of the ERO with actual report to the facilities from offsite had not been performed since November 1994.

The inspectors discussed this fact with the EPD and learned that licensee management did not expect an actual report of the ERO from offsite to the ERFs, and that the procedure did not correctly reflect the actual expectation. The EPD stated that NMPC recognized the value of such augmentation drills, but that they were infrequently performed, and that there was no intention to procedurally formalize such a practice beyond the requirement to conduct an off-hours exercise every six years.

The EPD reported that the annual augmentation drill requirement in EPMP-EPP-01 had been contained in that procedure since 1991. The licensee had failed to recognize the existence of this requirement, despite its explicit wording, and was taking credit for its completion with the performance of the periodic call-out drills in which ERO members respond via telephone with an estimate of their reporting time. The practice of estimating the reporting time, however, had only recently been implemented as a result of an NRC observation during the last EP program inspection. (NRC IR 96-04 Section P2)

The licensee had performed a comparison check of the Site Emergency Plan, the EP implementing procedures, EP maintenance procedures, and established practices within the past year. The purpose of this comparison was to identify and resolve conflicts between the various documents and practices. This effort failed to reveal the discrepancy between the augmentation drill requirement in EPMP-EPP-01 and the accepted practice of performing call-out notifications without actual report to the ERF. The failure to conduct the annual callout drill is a violation of the



Emergency Plan and EP Maintenance Procedures. (VIO 50-220/97-06-05 and 50-410/97-06-05)

c. Conclusions

Emergency drills/exercises have satisfied the requirements of the EP maintenance procedures with the exception of the annual callout drill. (VIO) This is significant in that a comparison was recently performed to identify conflicts, but NMPC failed to recognize the existing requirement.

P5.3 General EP Training

a. Inspection Scope

The inspectors reviewed EP training records, training procedures, lesson plans, job performance measures, and the portions of the emergency plan dealing with training. As part of this review, they reviewed the presentation and training feedback forms from the licensee's recently completed pilot program of computer-based EP-continuing training. They also interviewed EP and training staff with EP training responsibilities. The inspectors attended a training lesson that was given to some ERO members at the newly established EOF and reviewed the lesson plan and attendance records for the training given to ERO responders prior to the relocation to the new EOF. Finally, the inspectors interviewed four individuals to determine their impressions of the EP continuing training recently received.

b. Observations and Findings

The training specialist instructs for some lessons, monitors the instruction given by subject matter experts for other training, and maintains the overall EP training program. This same individual also oversees the maintenance of the general employee and radiation protection training programs.

The training that the inspectors observed was held on-station at the EOF and was administered by the Team 1 initial responder responsible for the clerical staff. The EP Training Specialist also administered some of the lesson. The training was highly-task oriented, with the instructor leading the trainees around to the various work stations where they would be performing duties. The attendees asked questions freely, and the instructor readily answered those questions. The attendees were provided a task to perform, and quizzed at the end of the training.

The licensee instituted a pilot training program during the last unit outage in which initial responders in the ERO were given an opportunity to take their EP continuing training by use of a computer-based training presentation. They were to take a quiz and return it to the Training Department. Also, they were given feedback forms to communicate their impressions back to the Training Department. The inspectors noted that the computer-based training was generally well received by the attendees. Two ERO members interviewed felt that it was a positive experience. Comments received on the feedback forms were mostly favorable.



The content of the computer-based lesson presentation for the Technical Support Center (TSC) initial responder continuing training was consistent with the content of the formal lesson plan for that course. The training included lessons learned from past Nine Mile Point drills as well as lessons learned from the industry that were presented in NRC inspection reports. There were skill-oriented presentations on proper three-way communications and effective listening.

The EP training given in preparation for the relocation of the EOF was completed for nearly all the responders shortly before the move to that facility. Lesson plans focused on the tasks to be performed and equipment to be used by the responders.

c. Conclusions

The inspectors concluded that the general content of the EP training program was well maintained and the program well implemented. The training given to the EOF responders was adequate and conducted before the move. The computer-based training pilot training program was effectively implemented and met all training objectives.

P7 Quality Assurance in EP Activities (82701)

P7.1 Deviation/Event Reports

a. Inspection Scope

The inspectors reviewed the outstanding DERs dealing with EP that were assigned to other groups for resolution, as well as the DER backlog for the EP group and the trend analysis performed by the EP staff on DERs assigned to them. The inspector also reviewed the outstanding entries in the Emergency Preparedness Task Tracking System (EPTTS).

b. Observations and Findings

The licensee EP staff frequently relied on the use of DERs to document and track EP issues. The threshold for use of this corrective action tool was low. The EP staff wrote one DER to document the failure of some senior managers to attend required EP continuing training. The EPD stated that he relies on the DER process to ensure that the EP activities delegated to the line organizations are completed properly.

The inspectors noted six open DERs that the EP group was tracking related to the inventory of ERF equipment. The DERs dealt with improperly completed inventories and with failures of the reporting groups to forward the completed inventories to the EP staff. In May 1997, the EP staff changed the EPMP procedure governing the conduct of the inventories to require forwarding the completed inventories. The inspectors could not establish the success of this action, since another DER was written during the week of the inspection.

The EP staff performed a trend analysis of DERs assigned to them for resolution in accordance with Instruction NTI-3.0, "Nuclear Learning Center Self Assessment Instruction." The inspectors determined that the EP staff had performed the trend



analysis correctly in accordance with NTI-3.0. The inspectors concluded that, due to the small number of DERs assigned to the EP staff, the results of the trend analysis were inconclusive.

The EP staff tracks tasks internally via the EPTTS system. The EPTTS backlog contained some long-standing items that were more than three years old. New due dates had been assigned to items that had missed their original due dates. When questioned by the inspectors about this practice, the EPD stated that the EPTTS was an informal system, used by the EP staff, for tracking tasks that were not captured in any other administrative procedure/system. The inspectors noted that the EPTTS has no procedure or instruction governing its use.

c. Conclusions

The inspectors concluded that the licensee made good use of the DER system to maintain the quality control of EP activities; however, the DER system showed limited success in ensuring adequate oversight of EP activities assigned to other groups, as demonstrated by repeated problems with facility inventory processing. The inspectors concluded that the EPTTS was useful as a reminder file of EP tasks, but a poor indicator of the EP staff's effectiveness in documenting, trending, and correcting problems.

P7.2 External Audits

a. Inspection Scope

The inspectors reviewed the annual QA audit reports for the last three years, paying particular attention to the 1997 audit, which was completed in May.

b. Observations and Findings

The audits reviewed were performed by teams that included personnel from other utilities who were knowledgeable in EP. They were performance-based to a limited extent in that they included observation of a single drill performance. The audits looked at the interface between the licensee with the State and local governments in EP matters. Copies of the audit reports were made available to the State and local governments.

The 1997 audit team reviewed drill records and procedure changes, and had one minor finding in the latter area. Despite this fact, the audit team did not find that the licensee had not followed a long-standing drill requirement (see Section P5.2). Also, the 1997 audit team did not draw any conclusions about the EP staff's need to write repeated DERs dealing with improperly processed facility inventories see Section P7.1).

c. Conclusions

The inspectors determined that the annual QA audits met the regulatory requirements of 10 CFR 50.54(t), but were not effective in identifying some problems in the licensee's EP organization.



P8 Miscellaneous EP Issues (92904)**P8.1 (Closed) IFI 50-220/96-07-19 and 50-410/96-07-19: Weaknesses in the Emergency Preparedness Program**

This item was opened in response to a finding during the 1996 Integrated Performance Assessment Program (IPAP) team inspection (NRC IR 50-220/96-201 and 50-410/96-210), in which the IPAP team concluded that sufficient weaknesses existed in the EP program at Nine Mile Point to warrant increased inspection effort. The inspectors reviewed this item by evaluating whether actions employed by the EP staff to identify, correct, and prevent recurrence of problems were adequate to justify less inspection effort and close the item.

Based on the problems identified during this inspection period, including two violations, the inspectors confirmed that weaknesses still exist in the NMPC EP program. Additional NRC attention in this area will occur during the follow-up to the violations. This item is being administratively closed.

S1 Conduct of Security and Safeguards Activities**S1.1 General Comments**

During routine tours, the inspectors verified that security posts were properly staffed, protected area gates and vital area access points were locked or guarded, and isolation zones were free of obstructions. In general, access controls were in accordance with the Nine Mile Point Security Plan.

S8 Miscellaneous Security and Safeguards Issues**S8.1 (Closed) URI 50-410/97-04-11: NMP2 Refuel Floor Access Gate Found Unlocked**

During a tour of the NMP2 reactor building, NRC inspectors found the access gate to the NMP2 refuel floor improperly secured. At that time, DER 2-97-1806 was initiated to determine the significance, root cause, and necessary corrective actions to prevent recurrence. The inspectors reviewed the completed DER, and discussed the issue with the Security Manager and Nine Mile senior management. The DER disposition noted that the gate was neither a security barrier nor a radiological boundary. As such, there was no requirement for the gate to be locked. However, further review by NMPC determined that there were numerous gates and doors that unnecessarily required the use of a hard key or an electronic card reader. Corrective actions included a review of all locked doors/gates, with the potential to remove the unnecessary access control. The DER identified the cause as weak management direction; in that, expectations were not well understood with respect to ensuring that gates/doors were locked. This URI is closed.



V. MANAGEMENT MEETINGS**X1 Exit Meeting Summary**

At periodic intervals, and at the conclusion of the inspection period, meetings were held with senior station management to discuss the scope and findings of this inspection. The exit meetings for specialist inspections were conducted upon completion of their onsite inspection:

- Emergency Preparedness July 18, 1997
- Radioactive Effluents Monitoring July 18, 1997

The final exit meeting occurred on August 21, 1997. During this meeting, the resident inspectors findings were presented. NMPC did not dispute any of the inspectors findings or conclusions. Based on the NRC Region I review of this report, and discussions with NMPC representatives, it was determined that this report does not contain safeguards or proprietary information.



ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

Niagara Mohawk Power Corporation

R. Abbott	Plant Manager, NMP1 (Acting)
D. Barcomb	Manager, NMP2 Radiation Protection
C. Beckham	Manager, Quality Assurance
D. Bosnic	Manager, NMP2 Operations
J. Burton	Director, ISEG
H. Christensen	Manager, Security
J. Conway	Vice President, Nuclear Engineering
G. Correll	Manager, NMP1 Chemistry
A. DeGracia	Manager, NMP1 Work Control
S. Doty	Manager, NMP1 Maintenance
K. Dahlberg	Plant Manager, NMP2 (Acting)
G. Helker	Manager, NMP2 Work Control
P. Mazzafero	Manager, NMP1 Technical Support
L. Pisano	Manager, NMP2 Maintenance
R. Randall	Manager, NMP1 Engineering
P. Smalley	Manager, NMP1 Radiation Protection
R. Smith	Manager, NMP1 Operations
C. Terry	Vice President, Nuclear Safety Assessment & Support
R. Tessier	Manager, Training
K. Ward	Manager, NMP2 Technical Support
C. Ware	Manager, NMP2 Chemistry
D. Wolniak	Manager, Licensing

INSPECTION PROCEDURES USED

IP 37551:	On-Site Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support
IP 82701:	Operational Status of the Emergency Preparedness Program
IP 84750:	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
IP 90712:	In-Office Review of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92700:	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92901:	Followup - Operations
IP 92903:	Followup - Engineering
IP 92904:	Followup - Plant Support



ITEMS OPENED, CLOSED, AND UPDATED

OPENED

50-220 & 50-410/97-06-01	VIO	Multiple examples of failure to follow procedures
50-410/97-06-02	IFI	Review root cause and additional corrective actions after destructive testing of flex-hose
50-410/97-06-03	NCV	Personnel error resulted in changing from STARTUP to RUN without meeting all conditions of the TS
50-220 & 50-410/97-06-04	VIO	Annual retraining of some ERO members was not completed
50-220 & 50-410/97-06-05	VIO	An annual ERO augmentation callout drill was not performed since 1994

CLOSED

50-410/96-06-02	IFI	Clarification of wording in the NMP2 UFSAR regarding full core offloads
50-410/96-06-04	IFI	Review of corrective actions associated with LER 96-03-01
50-220 & 50-410/96-07-19	IFI	Weaknesses in the emergency preparedness program
50-410/97-04-11	URI	NMP2 refuel floor access gate found unlocked
50-410/ EA-96-116-1012	VIO	Discrimination of an employee for raising safety concerns
50-410/97-06-03	NCV	Personnel error resulted in changing from STARTUP to RUN without meeting all conditions of the TS
50-410/97-02-02	LER	Potential inoperability of EDG service water cooling water outlet valves during a control room fire
50-410/97-03	LER	TS violation caused by procedural non-compliance due to personnel error
50-410/97-05	LER	HPCS system inoperable due to failed unit cooler

UPDATED

none

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ANSI	American National Standard
ASSS	Assistant Station Shift Supervisor
ATS	Analog Trip System
CFR	Code of Federal Regulations
CM	Corrective Maintenance



DER	Deviation/Event Report
DW	Drywell (containment)
DWEDT	Drywell Equipment Drain Tank
DWFD	Drywell Floor Drain
EA	Enforcement Action
EDG	Emergency Diesel Generator
EOF	Emergency Operations Facility
EP	Emergency Preparedness
FCV	Flow Control Valve
GL	Generic Letter
gpm	gallons per minute
HEPA	High Efficiency Particulate Air
HPCS	High Pressure Core Spray
HRA	High Radiation Area
IE	Inspection and Enforcement
IFI	Inspector Follow Item
IR	Inspection Report
I&C	Instrumentation and Control
JNC	Joint News Center
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LPRM	Local Power Range Monitor
NCV	Non-Cited Violation
NMPC	Niagara Mohawk Power Corporation
NRC	Nuclear Regulatory Commission
NYNOC	New York Nuclear Operating Company
NYPA	New York Power Authority
ODCM	Offsite Dose Calculation Manual
OSC	Operations Support Center
QA	Quality Assurance
QARSE	Qualified Applicability Reviewer/Safety Evaluator
RCA	Radiologically Controlled Area
RCIC	Reactor Core Isolation Cooling
RG	Regulatory Guide
RH	Relative Humidity
RMS	Radiation Monitoring System
RWP	Radiation Work Permit
SBLOCA	Small Break Loss of Coolant Accident
SORC	Station Operations Review Committee
SRO	Senior Reactor Operator
SRAB	Safety Review and Audit Board
SSS	Station Shift Supervisor
TS	Technical Specification
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
VIO	Violation
WO	Work Order

