U.S. NUCLEAR REGULATORY COMMISSION

REGION I

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License Nos.:	DPR-63 NPF-69
Licensee:	Niagara Mohawk Power Corporation P. O. Box 63 Lycoming, NY 13093
Facility:	Nine Mile Point, Units 1 and 2
Location:	Scriba, New York
Dates:	March 31 - June 1, 1996
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EXECUTIVE SUMMARY

Nine Mile Point Units 1 and 2
50-220/96-06 & 50-410/96-06
March 31 - June 1, 1996

This integrated inspection report includes reviews of licensee operations, engineering, maintenance, and plant support. The report covers a 9-week period of resident inspection. In addition, it includes the results of the following announced inspections by regional and headquarter-based inspectors:

- engineering,
- the control of radiological waste,
- spent fuel pool design bases and operating practices,
- fire protection, and
- followup to issues identified by the NRC regarding the February 1995 inadvertent reactor recirculation pump runback at Unit 1.

PLANT OPERATIONS

The command and control by the senior control room operators during the Unit 2 feedwater level control transient was very good.

The Unit 1 post-scram and startup activities were characterized by clear operator communications, attentive reactor engineering oversight, evident management oversight, and effective control by shift supervision. A strong questioning attitude by the station operating review committee (SORC) was observed during post-scram and pre-startup meetings.

The management oversight of the Unit 2 electrical protection assembly breaker trip and repair activities was generally effective, as evidenced by their presence in the field and the detailed SORC review. Although the operator actions related to the event were appropriate, the failure by shift supervision to recognize entry conditions for two TS LCOs and the delayed entry into TS 3.0.3 are indicative of a need for additional training in this area.

Unit 1 equipment condition and housekeeping within the drywell and condenser bays were good. Leak repairs effectively reduced drywell floor leakage.

Due to an operator's inattentiveness, an inadvertent release occurred during surveillance testing at Unit 1. The licensee's initial root cause evaluation was weak, in that it did not probe deep enough to determine why the operator was inattentive; however, management review did result in a subsequent indepth analysis. This was considered a Non-Cited Violation.

The ability of Safety Review and Audit Board to assess issues was considered effective. The ability of the Independent Safety Engineering Group to assess issues and concerns was good. They both provided useful feedback to Niagara Mohawk Power Corporation (NMPC) management.

MAINTENANCE

NMPC responded properly to maintenance control and performance concerns identified by the NRC Special Inspection Team related to the February 1995 Unit 1 recirculation pump runback event.

The quality of maintenance work orders and their consideration of human factors was very good. During safety-related maintenance activities, performance by maintenance personnel, and oversight and control of the work was good.

The very good questioning attitude demonstrated by NMPC during repairs to the Unit 2 standby gas treatment system (GTS) discharge valve allowed them to identify a way to repair the valve without having to declare both divisions inoperable.

As a result of enhancements made to address previously identified problems associated with surveillance requirements, NMPC identified three more examples where surveillances were not in compliance with TS requirements. The examples were appropriately described in Licensee Event Reports. Although each resulted in a Non-Cited Violation, the effort to ensure that requirements are incorporated has improved the overall quality of the surveillance procedures.

ENGINEERING

NMPC responded properly to engineering concerns identified by the NRC Special Inspection Team related to the February 1995 Unit 1 recirculation pump runback event.

NMPC's internal responses to four NRC Information Notices were thoroughly reviewed and had appropriately addressed the identified generic technical issues.

The Unit 2 normal refueling practice of a full core offload as a "normal evolution" was not consistent with the current licensing and design basis. Additionally, NMPC failed to meet the single failure criterion for spent fuel pool cooling as stated in the Updated Final Safety Analysis Report (UFSAR) for all previous refuelings. However, controls in place by NMPC for alternate cooling had effectively limited pool temperatures to committed safe levels. The related corrective actions, as stated in the LER, are scheduled to be completed prior to the beginning of the next refueling outage. Unit 1 refueling practices were consistent with the current licensing and design basis.

NMPC had a good quality and effective training program for their engineering and technical support personnel.

PLANT SUPPORT

Those aspects of the solid radioactive waste management and transportation program reviewed were considered to be very good.

NMPC's assessment of the low-level liquid waste program, and compliance with 10 CFR 61 demonstrated a superior safety focus, as these efforts exceeded regulatory requirements.

Radioactive waste received sufficient management attention, as evidenced by very good housekeeping. This allowed operators to perform tours/rounds with minimal dressout and resulted in a considerable decrease in annual dose. The radioactive waste training program was considered very good.

Radiological controls applied during Unit 2's fourth refueling outage were properly planned and effectively implemented.

Actions taken to address earlier identified violations associated with radiation work permit (RWP) adherence have been ineffective to prevent recurrence. Examples of continuing RWP adherence deficiencies include an operator failing to inform radiation protection department prior to breaching a contaminated system, and individuals entering the radiologically controlled area, including entrance into a locked high radiation area, without required dosimetry. Although the inspectors considered it a strength that individuals were self-identifying their our failure to meet RWP requirements, corrective actions were ineffective to prevent recurrence. Based on these examples, NMPC had failed to properly implement its radiation protection program procedures, which is a violation of 10 CFR 20.1101.

The inspectors determined that enhancements made to fire protection turnout gear storage conditions have resulted in fire brigade performance improvements. The analysis and administrative controls to facilitate changes to the fire brigade membership were appropriate. The resolution for conflicts with fire brigade drills was thorough and comprehensive.

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SUMMARY OF ACTIVITIES

Niagara Mohawk Power Corporation (NMPC) Activities

Unit 1

During this inspection period, Nine Mile Point Unit 1 (Unit 1) operated at essentially 100% power, with the following exceptions.

- April 2, Unit 1 shut down to repair feedwater heater tube leaks. Other planned activities included: drywell leakage and steam leak repairs, reactor safety valve thermocouple repair, and a containment spray/core spray pump operation to support a torus water inventory agitation test. The unit was restarted on April 6, in four-loop operation, due to a failure of the No. 15 reactor recirculation pump (RRP), the unit returned to 100 power on April 10. During the power ascension, Unit 1 conducted at-power scram time testing of selected control rods.

- April 20, power was reduced to approximately 40% for control rod scram time testing.

- April 26, #11 RRP tripped due to a voltage regulator failure. As a result, power was limited to 90% due to three-loop operation. No. 11 RRP was repaired and restarted on May 1, and the unit returned to 100% power in four-loop operation.

- May 8, power was reduced to approximately 40% for the restart of No. 15 RRP; a broken wire was found on the exciter of the RRP. The unit returned to 100% power, in five-loop operation, the same day.

- May 18, power was reduced to approximately 50% for an emergency condenser heat load capacity test. Power was returned to 100% on May 19.

- May 20, Unit 1 scrammed on high reactor water level following a failure of the No. 13 feedwater control valve. After completing repairs, the unit returned to full power on May 25.

Unit 2

During this inspection period, Nine Mile Point Unit 2 (Unit 2) operated at essentially 100% power, with the following exceptions.

- May 27, power was reduced to approximately 80% due to feedwater heater level control problems. During the repairs, power was reduced to 70% for control rod scram time testing and sequence exchange. Power was returned to 100% on May 29.

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 and headquarter-based inspectors conducted reviews in the following areas during this inspection period. The results are contained in the applicable sections of this report:

- engineering
- the control of radiological waste
- spent fuel pool design bases and operating practices
- fire protection
- followup to issues identified by the NRC regarding the February 1995 inadvertent reactor recirculation pump runback at Unit 1 (NRC Special Inspection Report 50-220/95-80)

Additionally, a region-based inspection was completed of the emergency preparedness program, including an assessment of NMPC performance during an off-year exercise. The results of which were reported separately in Inspection Report (IR) 50-220 & 50-410/96-04.

Updated Final Safety Analysis Report (UFSAR) Reviews

A recent discovery of a licensee operating their facility in a manner contrary to the 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, with the exception discrepancies identified in Sections E1.3 and E3.1 of this report.

I. OPERATIONS

O1 Conduct of Operations (71707) [1]

O1.1 General Comments

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

O1.2 Unit 2 Control Room Operators Response to Feedwater Heater Level Transient

The inspectors observed the Unit 2 control room operators response to a feedwater heater level transient on May 31. The cause of the transient was an air leak on the feedwater heater level control valve. Operators reduced power to approximately 85% to compensate for the loss of feedwater heating in accordance with the procedures. The command and control by the senior control room operators during the transient was very good.

O1.3 Unit 1 Reactor Scram

On May 20, 1996, Unit 1 experienced a turbine trip and full reactor scram from 100% power. The turbine tripped due to a high reactor vessel water level, caused by a failure of the No. 13 feedwater flow control valve (FCV). The licensee commenced troubleshooting and other post scram activities. The apparent cause for the FCV failure was a malfunction of the volume air booster, resulting from the accumulation of grease and residue on the needle valve and bypass port. The FCV was repaired and the unit was returned to service on May 23, 1996.

The inspectors observed post scram and startup activities in the Unit 1 control room, and associated post-scram and pre-startup management meetings. Following the scram, the inspectors verified that plant systems functioned as intended, and that operators' actions to stabilize the plant in a hot shutdown condition were in accordance with approved procedures . The activities observed were characterized by clear operator communications, attentive reactor engineering oversight, evident management oversight, and effective control by shift supervision. The inspectors noted a strong questioning attitude by the station operations review committee (SORC) during post-scram and pre-startup meetings.

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[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.

O1.4 Operator Response to EPA Breaker Failure

a. Inspection Scope

On April 10, at 12:11 am, the Unit 2 control room received half scram and half main steam isolation valve (MSIV) isolation signals. Upon investigation, the operators determined that one of the two in-series electrical protection assembly (EPA) breakers on a non-safety-related uninterruptible power supply bus (2VBB-UPS3A) had tripped open. An immediate attempt to close the EPA breaker was unsuccessful, resulting in power being unavailable to several systems and components for an extended period of time. Each EPA has a circuit breaker with an associated logic card, that monitors the upstream power source for overvoltage, undervoltage, and underfrequency. Technical specifications (TS) bases state that, "The EPAs provide Class 1E isolation capabilities for the RPS [reactor protection system] power supplies and scram power supplies. This is required because the power supplies are not Class 1E power supplies." A similar event occurred on April 11. The inspectors observed control room and in-plant activities following both events. The inspectors also reviewed the operators' logs and other related documents, attended related NMPC management meetings, and discussed the events with members of the NMPC operating staff and management.

b. Observations and Findings

The actions taken by the operators in response to the trip of EPA breaker 2VBS*ACB2A on April 10 were generally appropriate, with the following exception. Power to the primary containment particulate radiation monitoring system (RMS) and the gaseous effluent RMS was lost as a result of the breaker trip. The condition of having both systems out of service at the same time, is not addressed in TS 3.4.3.1; and thus, requires entry into TS 3.0.3. This requires the initiation of actions for a plant shutdown to begin within one hour. This was not recognized by the operators until one hour and 37 minutes later, at which time a plant shutdown was immediately initiated. During power reduction, operators restored power to specific loads, allowing the limiting condition of operation (LCO) to be exited prior to the completion of the shutdown. Deviation/Event Report (DER) 2-96-1128 was initiated to document this issue. The failure to initiate the actions in the required time, per Section 3.0.3 of the Unit 2 TS, is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the "NRC Enforcement Policy."

While NMPC determined the proper corrective actions, the time limit for the weekly average power range monitor (APRM) surveillance was approaching expiration. This surveillance required equipment which was lost due to the breaker trip. The attempt to close the EPA breaker this time was successful, and operators energized loads required for the performance of the weekly APRM surveillance. The APRM surveillance was completed satisfactorily. Although the EPA breaker appeared to be functioning properly, NMPC decided to replace it since the root cause of the breaker trip was unknown. The licensee prepared a safety evaluation

(SE) and procedure for replacing the breaker while at power. The inspectors attended the SORC meeting that reviewed and approved the SE. The inspectors reviewed the SE and found it to be thorough, including the risk analysis to support the replacement of the energized breaker while at power.

On April 11, at 11:37 pm, the same EPA breaker tripped open again. The operators unsuccessfully attempted to close the EPA breaker. At 12:12 am, a plant shutdown was initiated in accordance with TS 3.0.3, due to the same reasons as before. At 4:26 am, the EPA circuit breaker and logic card were successfully replaced while the unit remained at power. Power was restored to the critical loads, allowing numerous LCOs to be exited, including the TS required shutdown. Calibration of the new logic card utilized the previously developed and SORC approved plan and procedure to install the jumper with the loads continuously energized. The inspector observed portions of this work and identified no issues or concerns.

During a subsequent review of the station shift supervisor (SSS) logbook, the inspectors determined that a TS LCO was not entered during the April 11 EPA breaker trip. TS 3.1.4.3, Action b, both rod block monitoring (RBM) channels inoperable, requires that at least one inoperable RBM channel be placed in a tripped condition within one hour. The necessary actions were taken due to efforts by the operators to address other concerns; thus, a violation of TS did not occur. However, this indicated a lack of attention by the operators to plant conditions with respect to TS requirements. The licensee initiated DER 2-96-1023 to document all missed entries and/or exits of TS LCOs and late entries were made in the SSS logbook.

The licensee directed a shift technical advisor (STA) to review the SSS logbook for any missed TS LCOs. The STA identified that another TS LCO was not entered, this time during the first EPA breaker trip. This was TS 3.4.4, Action a, for chemistry initiation of an auxiliary sample path to meet reactor coolant system sample requirements. The actions associated with this LCO were completed due to plant conditions existing prior to the breaker trip.

Subsequently, NMPC issued a Licensee Event Report (LER) describing this event. The inspectors' review of the LER is contained in Section 08.1 of this report.

c. Conclusion

The inspector considered management oversight of the EPA breaker trip and repair activities to be generally effective, as evidenced by their presence in the field and the detailed review during SORC. Although the operator actions related to the event were appropriate, the failure by shift supervision to recognize entry conditions for two TS LCOs and the delayed entry into TS 3.0.3 are indicative of a need for additional training in this area. The maintenance activities associated with the troubleshooting and replacement of the EPA breaker were completed in

accordance with procedures and appropriately supervised. The inspector's review of the SE noted a conservative attitude in that the licensee considered the risk of replacing the energized EPA breaker while at power versus while shutdown.

02 Operational Status of Facilities and Equipment (71707)

02.1 Unit 1 Planned Outage

a. Inspection Scope

During the Unit 1 planned outage, the inspectors attended licensee's meetings and reviewed outage related documentation (such as work plans, shut down risk evaluations, and outage related DERs). The inspector also accompanied NMPC management on tours of areas that would be high radiation areas during power operation.

b. Observations and Findings

The inspectors observed appropriate communications between the various departments, as evidenced by operations awareness of ongoing activities in the plant. Shut-down risk evaluations were completed shiftly, in accordance with the governing procedure, and the evaluations appropriately considered current work activities to ensure adequate equipment was always available.

Drywell tours, by the inspectors, were completed shortly after the outage began, and again prior to final closeout; the inspectors also toured the condenser bays. The material condition of the equipment, and the general area housekeeping were good. During the first tour of the drywell, NMPC noted some water leakage, identified the source, and repaired the leaks prior to restart. The leaks were primarily packing leaks on the RRP blocking valves. The effectiveness of the leak repairs was validated by a decrease in drywell floor leakage from approximately 2.2 gpm, before the outage, to approximately 1.2 gpm after the outage.

c. Conclusions

Unit 1 operations department activities observed during the outage were considered appropriate. Equipment condition and housekeeping within the drywell and condenser bays were good. Leak repairs effectively reduced drywell floor leakage.

04 Operator Knowledge and Performance (71707, 92901)

04.1 Inadvertent Release During Surveillance Testing

a. Inspection Scope

During conduct of a quarterly operations surveillance test of primary containment isolation valves, the operator performing the test failed to close one valve before opening two others. This resulted in an

inadvertent release to the atmosphere. The inspectors reviewed the associated DER and discussed the event with Unit 1 management.

b. Observations and Findings

During conduct of a quarterly surveillance, N1-ST-05, "Primary Containment Isolation Valves Operability Test," the licensed operator performing the test failed to close one containment isolation valve before opening two other isolation valves. This resulted in an inadvertent release of the primary containment environment to the atmosphere, lasting less than 10 seconds. The highest reading on the main stack radiation monitor was 38 counts per second (cps), less than 1% of that allowed by the TS. The operator self-identified the problem during a subsequent procedure step which directed the valve to be opened.

A deviation/event report (DER #1-96-1164) was initiated to develop the root cause and corrective actions. The initial root cause, per NMPC, was that the procedure was not followed correctly. At that time, the operator's inattention to the task at hand was not included as a root cause; although many behavioral factors were identified as contributing to the event. During subsequent discussions with the Unit 1 Operations Manager, the inspectors were informed that the initial root cause had been rejected by senior managers and modified to state that the operator had applied an insufficient degree of attention. The major contributing causes was a lack of peer verification, this was the first time that this operator had performed this procedure. In addition, several procedure enhancements were recognized for possible future incorporation.

Immediate corrective actions included a chemistry sample. Calculated dose rates for noble gases, particulate, iodine, and tritium were within TS limits. Preventive corrective actions to preclude recurrence included counseling by the Operations Manager, remediated regarding placekeeping techniques, and generation of a "Lessons Learned Transmittal" for incorporation into future training. In addition, the event was reviewed with the shift crews, with an emphasis on shift supervision's responsibility regarding the level of oversight required for individual performing a task for the first time.

The failure to properly implement the surveillance procedure is a violation of the Unit 1 Technical Specifications, Section 6.8.1, and is being treated as a Non-Cited Violation, consistent with Section VII.B.I of the "NRC Enforcement Policy."

c. Conclusions

The inspectors regarded the initial root cause evaluation (the operator did not follow the procedure) weak, in that it did not probe deep enough to determine why the operator did not follow the procedure. Notwithstanding the identification by NMPC of contributing factors that were primarily human factors enhancements to the procedure, the

procedure was adequate for performance of the surveillance, and it had been performed successfully by other operators. The root cause analysis was initially directed at the wrong problem. The evaluation needed to be directed to why the operator failed to follow the procedure, resulting in an inadvertent release; i.e., he was inattentive to the task at hand. It was not until NMPC senior management reviewed the DER that an indepth root cause analysis was completed.

07 Quality Assurance in Operations (40500)

07.1 SRAB Meeting Attendance

The inspector attended portions of the April 1, 1996, Safety Review and Audit Board Group (SRAB) meeting, and subsequently reviewed the meeting minutes. Presentations were given to SRAB by various licensee personnel on subjects such as root cause for handling of environmental qualification information, safety evaluations, operations training, and operations shift supervision perspectives. The inspector observed good discussion amongst the participating SRAB members and the presenters.

The SRAB reviewed 27 safety evaluations and rejected five due to incomplete or inadequate information. The SRAB also reviewed its own semi-annual report for the second half of 1995 and identified a need to provide more details regarding the findings of the SRAB/Quality Assurance (QA) audits and to summarize the SRAB's concerns and focus. Based on the inspectors' review, SRAB's ability to assess issues was considered effective. The inspector concluded that the SRAB proceedings met the intent of the Technical Specifications and provided useful feedback to licensee management.

08 Miscellaneous Operations Issues (90712, 92700)

08.1 (Closed) LER 50-410/96-04: Multiple Engineering Safety Features Actuations Caused by Failure of Electrical Protection Assembly

The inspectors reviewed LER 50-410/96-04, which was a result of the EPA breaker trips described in Section 01.4 of this report. According to the LER, circuit breaker 2VBS*ACB2A was found to function as designed; however, the associated logic card did not function properly. An aluminum electrolytic capacitor in the ±15 volt direct current (VDC) power supply to the logic failed, which caused the board to repeatedly trip 2VBS*ACB2A. This supplies power to operate the circuit board monitoring circuits, to energize the breaker release coil, and supplies the reference voltage for the circuit board setpoints. This capacitor was replaced and the circuit board tested satisfactorily before and after installation.

Corrective actions included replacing the similar EPA circuit boards during the next refuel outage, and evaluating any age-related susceptibility of the aluminum electrolytic capacitors. In addition, NMPC plans to revise the appropriate procedures to clarify the actions required by TS 3.4.3.1 (associated with the primary containment

particulate and the gaseous effluent radiation monitoring systems) and to train the operators on applying the requirements of TS 3.4.3.1. The inspectors considered these corrective actions to be appropriate and acceptable.

II. MAINTENANCE [2]

M1 Conduct of Maintenance (62703, 92901, 92902)

M1.1 General Comments

a. Inspection Scope

The inspectors observed all or portions of the following work order (WO) activities:

- WOs 96-02092-02, 03 electrical troubleshooting of No.11 RRP MG
- WO 96-01057-00 surveillance calibration of main steam hi flow channels
- WO 96-00174-00 surveillance calibration of lo lo rx water level channels
- WO 96-01637-00 performance of torus agitation test
- WO 95-02566-00 troubleshooting of reactor head safety valve thermocouple
- WO 96-00054-01 troubleshooting of reactor head safety valve thermocouple

b. Observations and Findings

The inspectors found the work performed under these activities to be professional and thorough. All work observed was performed with the work package present and in active use. When applicable, appropriate radiation control measures were in place.

For specific discussions of maintenance activities observed, see Sections M1.2 through M1.4.

M1.2 Followup Inspection of Maintenance Issues Related to the February 1995 Reactor Recirculation Pump Runback

Background

On February 1, 1995, Unit 1 experienced a reactor recirculation pump (RRP) runback. The plant had been operating at power with initial conditions of 77% power, and 98% of core flow. One of the five RRPs was out of service so routine maintenance could be performed on the associated RRP flow control system. The four other RRP flow control

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[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."

systems had undergone similar maintenance without incident. The runback resulted in a rapid reduction to minimum pump speed. Reactor power decreased, as expected, with the reduced core flow. The core flow reached a minimum indicated value of 13%, corresponding reactor power was 31% as indicated by the average power range monitors (APRM).

The transient resulted in reactor power and flow parameters being in a region to the left of the natural circulation curve as depicted by the power to flow operating map. Control room operators reduced reactor power and increased core flow to move the reactor operating point away from the region of thermal hydraulic instability. An NRC special inspection team (SIT) was dispatched to review the events. The results of that review are documented in NRC IR 50-220/95-80.

a. Inspection Scope

NRC IR 95-80 identified several issues requiring additional inspection. An inspection plan was developed to review concerns in the areas of operations, maintenance, and engineering. The review of the maintenance issues included the interface between maintenance and operations; the engineering review is located in Sections E1.1 - E1.5 of this report. In the area of plant maintenance, IR 95-80 indicated that those factors that had contributed to the runback event included:

- the design of the maintenance work order with respect to human factors deficiencies,
- the quality and thoroughness of pre-job briefings,
- instrument and control (I&C) technician use of the work order,
- I&C crew chief control of work order implementation,
- self-checking and peer verification, and
- maintenance personnel communication and coordination with the control room operating crew.

During the week of April 29, 1996, a NRC Region I inspector reviewed NMPC's resolution of the maintenance issues identified as a result of the February 1995 runback event. In carrying out the inspection, the inspector: reviewed several recently closed work order packages and packages for jobs still in progress; discussed maintenance practices with maintenance and work control management; observed maintenance activities in the field and in the control room; and reviewed procedures and other written guidance controlling the implementation of maintenance at Unit 1.

b. Observations and Findings

The NRC SIT determined that one of the factors which contributed to the runback event was the failure of the work order to properly communicate the potential plant impact of the maintenance activity being performed. During this inspection, the inspector determined that NMPC had greatly improved the quality of maintenance work orders with respect to clarity and notification of impact of work. Station administrative procedure GAP-PSH-01, "Work Control," and the Unit 1 "Guide for Work Order

Preparation" have been revised and now require work orders to provide notes, cautionary statements, or other means of highlighting work steps which may impact the plant. While recent work orders exhibited varying levels of compliance with these requirements, the inspector found that all work orders which were reviewed displayed human factor considerations superior to the work orders of a year ago. As an additional measure of highlighting these type of work orders, NMPC now requires all work orders to be classified by their potential plant impact; work orders are now classified as either Category 1 (Potentially high impacting work), Category 2 (Potentially impacting work), or Category 3 (Non-impacting work). By observing maintenance crew pre-job briefings and the performance of work activities in the field, the inspector concluded that the improvements in work order preparation had been effective in alerting technicians to work activities which have the potential to impact plant status or operations.

The inspector observed several maintenance activities while onsite, including electrical troubleshooting on the No. 11 RRP motor generator set, and the calibration of the main steam high flow and the reactor water level instrumentation. In addition to observing in-plant activities, the inspector observed a recently implemented training program for maintenance personnel, the Dynamic Learning Activities (DLA) program. The inspector found that pre-job briefings were thoroughly conducted, with supervisory personnel leading the discussion of the work order and a good questioning attitude exhibited by the craft personnel. The performance of the observed activities was well done; technicians were knowledgeable of their responsibilities and carefully followed the requirements of the associated work orders. For the calibration surveillances observed, which were Category 1 jobs, the work was properly controlled by a maintenance supervisor in the unit control room. Craft personnel, including supervisors, were deliberate in the performance of their work and followed the licensee "STAAR" policy (Stop, Think, Ask, Act, Review) before performing a work activity. The inspector determined that maintenance work was being supervised and performed in accordance with the Unit 1 "Maintenance Performance Principles," a non-procedural guideline by which plant management has presented the expectations of how maintenance work is to be performed at Unit 1. Through the observation of the DLA training program, which has plant maintenance crews train together at the Nine Mile Training Center in a simulated plant environment and perform scripted scenario tasks, the inspector determined that the maintenance training program was reinforcing those management expectations.

Although the observed maintenance activities were well performed, the inspector noted that Unit 1 had not responded to the SIT concerns with procedural requirements. The noted improvement in work order quality and performance and coordination of maintenance activities was attributable to increased management involvement and the presentation of guidance documentation to the craft personnel. As an example, when questioned by the inspector, technicians were unclear as to the procedural nature of work order step tasks; i.e., the technicians were unsure if step tasks in a work order were required to be complied with

as if the task had been specified in a procedure. Also, administrative procedure GAP-MAI-01, "Conduct of Maintenance," was a higher order procedure with few specific requirements as to how management expected maintenance to be performed at Unit 1. The inspector identified no performance deficiencies which resulted from the noted lack of proceduralization; however, Unit 1 management informed the inspector that the Unit 1 "Guide for Work Order Preparation" was being revised to better define the requirement for work order step adherence, and that GAP-MAI-01 was being considered for revision in order to better proceduralize management expectations for the conduct of maintenance.

In the area of maintenance coordination with the control room operating crew, the inspector noted good communication by maintenance personnel and good oversight by the operating crew. Maintenance personnel performed good briefings of the operators before initiating work, and for the Category 1 jobs, maintained the required supervision in the control room to provide for coordination with and oversight by the operators. The inspector noted good operator knowledge of equipment status and troubleshooting activities concerning the No. 11 recirculation pump motor generator work.

c. Conclusions

The inspector concluded that NMPC had properly responded in the areas of maintenance control and performance which the NRC SIT had identified as contributing factors in the February 1995 RRP runback event. The inspector determined the quality and clarity of work order step tasks were very good, and that work orders were now required to provide the proper human factor considerations needed to prevent recurrence of similar events. The inspector also noted very good performance of safety-related maintenance work and concluded that NMPC management had provided clear expectations and training for the performance of maintenance activities. In addition, the licensee intends to address the lack of procedural requirements concerning those expectations.

M1.3 Unit 2 Standby Gas Treatment Discharge Valve Repairs

a. Inspection Scope

On April 22, 1996, while the Division II standby gas treatment system (GTS) was inoperable for preplanned work, plant personnel discovered that a pin that holds the limit switch stub shaft to the main shaft for the GTS discharge valve, 2GTS*MOV3B, fell out of position. With Division II of GTS inoperable, Unit 2 is in a seven day shutdown LCO. The inspectors observed various phases of the licensee's effort to recover and reinstall the pin. Additionally, the inspectors attended related management meetings, and reviewed the DER and other associated documents.

b. Observations and Findings

During planned maintenance activities on 2GTS*MOV3B, maintenance personnel heard a piece of metal fall from inside the valve to the GTS fan piping. Upon stroking the valve, the technicians noted no movement of the opposite side stub shaft. The stub shaft operates limit switches provide input to the GTS start permissive circuitry. A high priority work order was initiated to inspect the interior of the GTS piping to locate the loose part. Using boroscope inspection, maintenance personnel were able to locate the stub shaft roll pin, and subsequently retrieved it. Additionally, DER 2-96-1058 was initiated to documented the issue.

After evaluating several options to retrieve the roll pin, Unit 2 decided to remove the piping spool piece upstream of the valve and work from underneath the valve. To complete the repairs, an individual had to work inside a two foot long portion of piping connected to the bottom of the valve. After verifying the space within the piping was safe for personnel entry, the pin was replaced. A visual inspection was completed to verify no further damage had occurred to the internals of the valve. The valve repairs were completed and the Division II of GTS was returned to operable status on April 27. The inspectors monitored the pin replacement evolution, with no identified concerns.

As documented in the DER disposition, NMPC determined the root cause to be a deficiency in the manufacturing process, which resulted in a failure to fully peen the pin in place. NMPC also reviewed past maintenance records and identified one previous failure of a roll pin, however, in that case the roll pin sheared. NMPC evaluated roll pin failure for generic applicability, in accordance with 10 Code of Federal Regulations (CFR) 21, and determined that since a failed roll pin would not prevent the valve from rotating or seating, it did not constitute a "substantial safety hazard," and did not justify a 10 CFR 21 report. The inspectors found the root cause determination and 10 CFR 21 applicability review appropriate.

Initially, Unit 2 management believed the only way to repair the stub shaft would involve the removal of the Division II discharge valve, which in turn would require declaring both divisions of GTS inoperable. At Unit 2, GTS consists of two divisions, with the discharge of each division connected to a common header that provides flow to the main stack. Removal of either division discharge valve would require both divisions of GTS to be declared inoperable. With both GTS divisions inoperable, TS 3.6.5.3 would require Unit 2 to return one division to operable within one hour, or be in hot shutdown within the next 12 hours.

While considering the possibility of declaring both divisions of GTS inoperable to complete the repairs, NMPC completed a safety-evaluation to support the evolution. The inspectors reviewed portions of the safety-evaluation, and attended the associated SORC meetings. The safety-evaluation was thorough, containing a risk based analysis and

appropriate contingency directions should a need for GTS arise during the evolution. Although NMPC approved the safety evaluation to declare both divisions of GTS inoperable to complete the repair, they continued to search for a solution that would not require having to declare both divisions of GTS inoperable. This search resulted in the repair described above.

c. Conclusions

NMPC demonstrated a very good questioning attitude, in that they identified a way to repair the GTS discharge valve without having to declare both divisions of GTS inoperable. The initial safety evaluation to remove both divisions from service contained a risk based analysis and contingency plans.

M1.4 Followup of Potential Safety Concerns with the Repair of the Unit 2 Vent GEMS

In February 1996, NMPC management brought to the inspectors' attention potential concerns associated with recent repairs made to the Unit 2 vent gaseous effluent monitoring system (GEMS) skid. It was rumored that a paper clip was used to correct an equipment deficiency. Supposedly, the paper clip was installed as a ground on the voltage line conditioner for the vent GEMS. The NMPC investigation identified no truth to the rumor. Additionally, NMPC determined that the existing operability determination for the vent GEMS was, and remained, valid. The NMPC investigation concluded that the rumor was proliferated to tease a member of the NMPC staff, and that there was no malicious intent. The inspectors reviewed the results of NMPC's investigation and discussed the issue with appropriate NMPC management. The inspectors considered the scope and depth of the investigation to be appropriate. Furthermore, NMPC's followup of potential safety concerns was aggressive and thorough.

M8 Miscellaneous Maintenance Issues (90712, 92700)

M8.1 (Closed) LER 50-220/96-01: Technical Specification Violation Caused by Improper Recirculation Flow Calibration Procedure

Unit 1 management determined that the quarterly calibration of the reactor recirculation flow was performed inadequately. During the initial portion of the surveillance, if the "as-found" conditions (channel output) were within the acceptance criteria, the remainder of the procedure did not need to be completed. The procedure did not require the measurement of the input signal, nor a comparison to the channel output signal.

The immediate corrective action was a proper calibration of the recirculation flow converters. The converters were slightly outside of the acceptance range, but in the conservative direction. Preventive corrective actions included a review of all instrumentation surveillance procedures for similar problems.

The inspectors noted that the identification of this problem was the result of corrective actions from an earlier LER; specifically, an ongoing effort of increased attention given by the technicians to procedures prior to the performance of the surveillance. This licensee identified violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

M8.2 (Closed) LER 50-410/96-01: Technical Specification Violation Caused by Inadequate Average Power Range Monitor (APRM) Set Point Setdown Channel Functional Test

Unit 2 technical support personnel identified that an inadequate surveillance procedure resulted in a failure to perform a channel functional test prior to each reactor startup since initial operation. This is a violation of TS 4.3.1.1. In addition, TS 4.3.1.2 requires a logic system functional test every 18 months. Because of the inadequate procedure, this also has not been performed since initial operation.

The APRM setdown feature resets the high thermal flux scram setpoint to 15% when the reactor mode switch is in the "refuel," "startup," or "shutdown" position. This provides a backup for the intermediate range high power scram. Per the surveillance procedure, the C51B-K18 relay was replaced with a test relay. By use of the test relay toggle switch, the technicians were able to test the circuit functions. However, this method of testing did not check the C51B-K18 relay or the reactor mode switch position for conditions other than when the mode switch was in the "run" position.

The licensee's root cause was poor written communication as applied to the incorporation of UFSAR requirements. Specifically, the method of testing the APRM did not provide for testing of the setdown function. The procedure was included in the periodic review process, but the inadequacies were never identified. No immediate corrective actions were necessary since the unit was operating. Future corrective actions appear appropriate.

The inspectors noted that this was identified as a result of previous events, which heightened the awareness of the individuals to ensuring that required surveillances are incorporated into the procedures. This licensee identified violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

M8.3 (Closed) LER 50-410/96-02: Technical Specification Violations Caused by Inadequate Surveillance Scheduling

Unit 2 discovered several historical violations of TS surveillance requirement 4.0.4 during their root cause evaluation for LER 50-410/96-01. TS 4.0.4 requires all surveillance requirements associated with limiting conditions be met prior to entry into an operational condition. During planned shutdowns, the surveillances of the nuclear instrumentation for conditions other than operating were not accomplished prior to moving the reactor mode switch out of the "run"

position. The licensee's root cause was a lack of understanding of the requirement of TS 4.0.4 as it relates to entering an operational condition during a shutdown.

The inspectors noted that this was the result of an ongoing investigation from an earlier LER. The violations were minor and corrective actions appear adequate. This licensee identified violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

M8.4 Conclusion of LER Reviews

All three of the above LERs were a result of NMPC personnel having an enhanced understanding of the TS and UFSAR requirements associated with surveillances. The inspectors consider that this effort to ensure that requirements are incorporated into the surveillance procedures has improved the overall quality of the surveillance procedures.

III. ENGINEERING

E1 Conduct of Engineering (37550, 92903)

E1.1 Followup Inspection of Thermal Hydraulic Concerns and Associated Engineering Issues Related to the February 1995 Unit 1 RRP Runback

Background

As noted in Section M1.2 of this report, Unit 1 experienced a RRP runback which resulted in core flow and reactor power being in an undefined region of the power-to-flow operating map. An NRC special inspection team (SIT) reviewed the event and identified several engineering concerns in the associated inspection report (NRC IR 50-220/96-80).

a. Inspection Scope

The NRC SIT inspection report identified the following concerns:

- NMPC needs to understand why indicated core flow, with the RRPs at minimum speed, was less than expected for natural circulation;
- Actual plant conditions were inconsistent with the accident analysis in the UFSAR, a more severe transient resulted in higher core flow than indicated during the transient;
- The technical bases for the 10% minimum flow TS safety limit requirement were not clear (URI 50-220/95-80-01, part 1) and NMPC interim corrective actions did not include power distribution controls to minimize peaking factors during reactor startups (URI 50-220/95-80-01, part 2); and
- The SIT identified an apparent conflict in operating procedures regarding the requirement to scram the reactor following a loss of

feedwater heating, one procedure allowed operations in an area of potential instability.

During the week of May 13, an NRC Region I inspector reviewed the NMPC resolution of the above issues. The results related to the above concerns are detailed in Sections E1.2 - E1.5 of this report.

E1.2 Evaluation of the Core Flow Indicating Less Than Natural Circulation During the February 1995 RRP Runback

The inspector reviewed and verified the Unit 1 personnel understood the reasons that reactor core flow (13%) indicated less that the expected natural circulation flow (22%) on the power-to-flow map. Licensee's engineering analysis (General Electric (GE) calculation GE-NE-A1300351-01-R1) indicated that the bias within the flow instrumentation resulted in an indication lower than actual recirculation flow during the pump runback event on February 1, 1995. The engineering identified showed two areas of potential flow bias in the low flow region. The first area was the instrumentation loop calibration, and the second area was the recirculation flow differential pressure transmitter calibration.

The GE engineering analysis evaluated the venturi vertical orientation. The results of this calculation concluded that a 25-inch section of vertical instrument piping would be at drywell ambient conditions when the reactor was operating at rated temperature and pressure. This resulted in a significant density difference on the high and low pressure taps, the high pressure tap would be at 120°F while the low pressure tap was at 525°F. The loop flow transmitter calibration required a correction factor to properly correlate the venturi differential pressure (dp) to flow relationship. The calculation showed that a bias correction of 5.70 inches of water dp was required.

The inspector found that the effect of this bias on the flow indication provided on the recirculation flow transient runback trace was calculated using GE's flow equations. The measured dp would have been 11.417 inches of water which corresponds to 18.5% rated core flow.

The indicated flow from the runback traces, when corrected for steady state conditions, was 16%. GE's calculation, when corrected for the instrument line bias (approximately 4.5%) and the loop error in the low flow range (1.5%), showed that the actual core flow was approximately 20%.

The inspector reviewed Nine Mile Point 1 Nuclear Engineering Report NER-10-009 (GENE-A12-00088-1), and determined the expected natural circulation flow conditions for Nine Mile Point 1 for 3, 4, and 5 loop operation. This analysis also evaluated the expected minimum flow assuming a 4-loop operation with the pumps operating at minimum speed. The analysis predicted that 4 loops

operating at minimum pump speed would result in a total core flow of 21%.

The inspector reviewed these GE thermal hydraulic reports and calculations along with the flow sensitivity studies. These analytical values agreed with the best estimate of the actual core flow during the runback transient. The inspector concluded that the licensee's corrective actions, with respect to this item, are technically acceptable.

E1.3 Unit 1 UFSAR Accident Analysis Was Inconsistent with Indicated Conditions of the February 1995 Recirculation Pump Runback

The inspector reviewed selected sections of the Unit 1 UFSAR, Chapter 15 (Accident Analysis) pertaining to low reactor core flow. The inspector noted that the UFSAR analysis for the predicted flow coastdown transient, with a trip of all 5 RRPs, was specifically designed to conservatively calculate minimum critical power ratio (MCPR) for this transient. The UFSAR analysis was not intended to define steady state natural circulation conditions, and was not considered to be the design basis for five-loop natural circulation conditions. In addition, the transient trace provided in the UFSAR is only for the initial 20-second pump coastdown transient and steady state conditions were not achieved. As noted in NRC IR 95-80, the natural circulation was established during the initial startup testing program.

The inspector concluded that the UFSAR Chapter 15 five-pump trip analysis was not intended to characterize 5-loop natural circulation, and no changes were required to the UFSAR predicted transient.

E1.4 (Closed) URI 50-220/95-80-01: Review of Unit 1 Licensing Basis for Low Flow Operation

The inspector reviewed the technical justification for Section 2.1.1.b of the Unit 1 TS; specifically, the technical basis for extrapolating to the limit of 25% of rated power at 10% of rated core flow. The SIT had also noted that, for low conditions, the interim corrective actions (ICAs) recommended by the Boiling Water Reactors Owners' Group (BWROG) had not been addressed.

The inspector reviewed the following:

On March 14, 1996, the NRC issued Information Notice (IN) 96-16, "BWR Operation with Indicated Flow Less than Natural Circulation." The IN addressed the safety limit for flow below 10% and flow above 10%. Above 10% flow, the limit is stated in terms of the MCPR and the MCPR safety limit. However, no relevant basis information is provided for flow below 10% with respect to the stated 25% power safety limit in the TSs. The inspector contacted the technical staff of the NRC, in the Office of Nuclear Reactor Regulations (NRR), to validate the translation to 10% lower flow conditions, or low-flow specification.

On January 19, 1996, GE issued a service information letter (SIL No. 516, Supplement 2, "Core Flow Indication in the Low-Flow Region") which recommended that Unit 1 consider performing the following actions:

(1) Check the accuracy of the core flow instrumentation in the low flow range of indication.
(2) Review the power-to-flow maps and revise the low-flow characteristics, such that the maps present a more accurate guide for use by the operators.
(3) Review the wording of the bases for the current TS which address the low power, low flow thermal margin.

The inspector found that, based on the GE recirculation flow loop calibration analysis, Unit 1 has concluded that the low flow indicated during the recirculation pump runback event was not accurate. The calibration process has been modified to accommodate the instrument indication bias at low flow conditions. The inspector reviewed and determined that the corrected differential head bias was technically correct. The detailed calculation is in Section 8.0 of the GE analysis report (GE-NE-A-1300351-01-R1, March 1995). Furthermore, the inspector verified that the instrument biases were implemented in the surveillance procedure, N1-ISP-032-008, Rev. 01, dated March 18, 1995.

Nine Mile Point 1 has revised the power-to-flow operating map for 3, 4, and 5 loop operation. This revision was based on the recommendations of the BWROG, "Guideline for Stability Interim Corrective Action." The region of the power-to-flow operating domain, which is susceptible to thermal hydraulic instability, has been revised based on industry experience and analysis. These maps consist of scram region, exit region, and controlled entry region. The inspector verified the maps (Dwgs. F45683C, Sheet 1 to 3) were technically adequate, as recommended.

On October 19, 1995, Unit 1 issued DER 1-95-2905, relating to the generic unresolved issue of BWR basis for the low core flow safety limit. As outlined and tracked by this DER, Unit 1 will clarify Section 2.1.1.b of the TS bases and submit this change to the NRC by April 1, 1997.

During the SIT for the RRP event, the inspectors noted that there was no guidance available to the operators as to what actions to take if core flow dropped below the natural circulation curve. Subsequent to the inspection, Unit 1 has modified the power-to-flow maps using the recommendations contained in the BWROG document "Guidelines for Stability Interim Corrective Action." Nine Mile strategy consists of staying away from the restricted region. The restricted region also included the lower section of natural circulation curve (Dwgs. F45683C Sheet 1 to 3). These power-to-flow maps are part of the operator aids available in the Unit 1 control room.

The actions taken by NMPC, completed and planned, to review and correct the TS bases for the low flow conditions and the related correlation of low flow to low power were adequate. Based on a review of the actions

taken by NMPC specifically related to the event, and planned actions related to NRC IN 96-16, this item is closed.

E1.5 Resolution of Procedure Conflicts Identified by the RRP SIT

The inspector reviewed the licensee's plant operating procedures for corrections of inconsistencies identified after the RRP runback event of February 1, 1995.

The inspector reviewed operating procedures N1-OP-16 and N1-SOP-2 to assess any apparent procedure conflicts regarding the requirements to scram the reactor following loss of a feedwater heating event. Unit 1 has modified operating procedure N1-OP-16, Rev. 24, to expand the operating conditions. This procedure stated in Section 5.3, "If feedwater temperature drops more than 100°F due to feedwater heating loss, then scram the reactor and execute N1-SOP-1 concurrently." The logic of this modified step is the same as outlined in N1-SOP-02, "Unexplained Reactor Power Change," Rev. 6.

The inspector concluded that, based on licensee modification to these operating procedures, this item is closed.

E1.6 Resolution of Generic Technical Issues

a. Inspection Scope

The inspector reviewed NMPC's internal responses to four selected NRC Information Notices (IN) to assess the quality of their response to industry-identified technical issues. The selected INs were:

- IN 95-02: Problem with General Electric CR2940 contact blocks in medium-voltage circuit breakers;
- IN 95-15: Inadequate logic testing of safety-related circuits;
- IN 95-20: Failure in Rosemont pressure transmitters due to hydrogen permeation into the sensor cell; and
- IN 95-21: Unexpected degradation of lead storage batteries.

b. Observations and Findings

The review process of NRC Information Notices was prescribed in QA Procedure QAP-CCA-15.02, "Review of Industry Operating Experience," Revision 0, dated March 26, 1996. Before issuance of this procedure, the review process was accomplished using a procedure, "Applicability Review and Screening for Industry Documents," (no procedure number), Revision 1, dated October 10, 1991. The inspector interviewed the two QA engineers responsible for screening technical INs, one for Unit 1 and one for Unit 2. The inspector found them to be knowledgeable and familiar with the procedures. The inspector's review of the eight response-packages (four for each unit) indicated that the screening evaluation was thorough and the resolution was of good quality. If an IN was determined to be not applicable to the plant, the evaluation clearly indicated the reason why it was not applicable (as in the case

of IN 95-21 for Unit 1). If the IN was determined to be applicable, a deviation/event report (DER) was issued against the IN and forwarded to engineering to track the issue until it was satisfactorily addressed or resolved. The resolution for the reviewed packages was determined to be appropriate and complete.

c. Conclusion

The inspector concluded that NMPC had provided thorough reviews and evaluations of the four INs, and had appropriately addressed the generic technical issues identified in those INs.

E1.7 Like-in-Kind Replacement Evaluations

a. Inspection Scope

The inspector reviewed the like-in-kind replacement program to determine whether adequate control was provided to the evaluations of like-in-kind replacement items. The inspector also reviewed four like-in-kind evaluation packages (Spare Parts Equivalency Evaluation Report (SPEER) to assess the quality of the evaluations:

- SPEER No. 95-1-0003, Emergency Diesel Generator Fuel Oil Transfer Pump Motor, dated March 6, 1995;
- SPEER No. 95-1-0001, Agastat Relay, 24 Vdc Coil, EGPBC 2004003, dated February 12, 1995;
- SPEER No. 95-2-0007, Valve Disc for a 12" Anchor/Darling Gate Valve, dated October 3, 1995; and
- SPEER No. 95-1-0016, Inner and Outer O-Ring at the Body-to-Cover Connection on Atward Morrill Vacuum Relief Valves, dated October 18, 1995

b. Observations and Findings

NMPC procurement engineering was responsible for the like-in-kind replacement program. NMPC had been using administrative procedure NEP-DES-332, "Spare Part Equivalency Evaluations," dated December 29, 1992, to provide guidance and control of like-in-kind replacement part evaluations. On October 26, 1995, as part of the procedure simplification program, NMPC issued a new procedure NEP-CON-01, "Configuration Change," to replace procedure NEP-DES-332. The inspector reviewed both procedures and found that the old procedure provided more specific guidance and more stringent control, while the new procedure was more flexible to implement and relied more on the skill of the procurement engineer. Training to use the new procedure was completed in November 1995 as part of the procedure simplification program training. Discussion with the procurement engineering supervisor indicated that the new procedure had not yet been used for like-in-kind replacement part evaluations.

Review of the like-in-kind replacement part evaluation packages indicated that the evaluations were thorough and complete, and were performed in accordance with old control procedure NEP-DES-332.

c. Conclusion

The inspector concluded that NMPC had provided adequate control for the like-in-kind evaluation program, and that the like-in-kind evaluations were thorough and complete.

E1.8 Commercial Grade Item Dedication

a. Inspection Scope

The inspector reviewed the procurement engineering's activities in the area of commercial grade item dedication (CGID) process to determine if NMPC had an appropriate procedure to administer and control the CGID process. The inspector also reviewed four selected CGID packages to access the quality of these packages. The following procurement requirements evaluation form (PREF) packages were reviewed:

- PREF No. 4404, hydrogen and oxygen system sample and bypass pump/motor couplings (Unit 1);
- PREF No. 4262, Swagelok 316 SST compression fittings (Units 1&2);
- PREF No. 2598, liquid poison tank temperature probe (Unit 1); and
- PREF No. 1263, aluminum electrolytic capacitors (Units 1&2)

b. Observations and Findings

NMPC procurement engineering was responsible for establishing and implementing the CGID program at Nine Mile Point. The inspector's review of administrative procedure NPAP-PES-410, "Procurement Requirements Evaluation and Dedication Planning/Material Review Checklist Processing," Revision 2, dated July 11, 1995, indicated that this procedure provided sufficient guidance and control of the CGID process. Detailed worksheets for evaluating and verifying the component critical characteristics were provided in Attachment 2 to the procedure. Receipt testing, where required to demonstrate conformance of the critical characteristics of the components, was prescribed in Attachment 3 to the procedure.

The inspector's review of the four CGID packages indicated that these packages were of good quality. Critical characteristics, such as leakage currents, maximum surge voltages, and resistance tolerances were properly specified and verified. The inspector witnessed the receipt testing for pump/motor couplings (PREF No. 4404) and aluminum electrolytic capacitors (PREF No. 1263); in the case of the capacitors, the leakage current was found higher than specified, and the item was rejected. The tests were accomplished as specified.

c. Conclusion

The inspector concluded that NMPC had an appropriate procedure to administer and control the CGID activities at Nine Mile Point. The component critical characteristics were properly identified and verified during the CGID process.

E3 Engineering Procedures and Documentation (92902)

E3.1 Spent Fuel Storage and Cooling

a. Inspection Scope

The Resident Inspectors and the NRR Project Manager (jointly referred to as the inspectors) assessed the Unit 1 and Unit 2 core offload practices and irradiated fuel decay heat management during refueling outages (RFOs) to determine consistency with the current licensing and design bases of the spent fuel pool cooling (SFC) system. Included in this assessment was a review of design basis calculations, current operating procedures and other applicable licensee documents.

b. Observations and Findings

Unit 1

Since 1978, the normal refueling practice at Unit 1 has been to perform full core offloading. The inspectors reviewed UFSAR Revision 13, Section X.H.1, and found that the current licensing and design basis results from a licensee commitment to verify, before the start of refueling and core offloading operations, that spent fuel pool cooling systems are operable and capable of maintaining pool temperatures below 125°F with one cooling train operating and both cooling trains operable. The UFSAR states that this capability to maintain temperatures below 125°F under degraded operating conditions requires verifying that the offload time to the spent fuel pool and the reactor building closed loop cooling (RBCLC) system temperatures are consistent with maintaining this pool temperature limit.

The inspectors reviewed licensee Calculation No. 514-54-HX05 that was performed in advance of the most recent refueling outage, RFO-13, to determine the maximum service water (SW) and RBCLC temperatures for performing an expedited normal refueling (full-core offload) while still maintaining the pool temperature below 125°F. The calculation of the associated heat load was based upon an expedited offload beginning 3.5 days after reactor shutdown and completed 8 days after reactor shutdown. One SW pump, one RBCLC pump, and two of three RBCLC heat exchangers were assumed to be operating. The calculation assumed a maximum RBCLC temperature of 53.2°F, combined with a maximum SW (i.e., lake water) temperature of 40°F, to maintain the spent fuel pool below 125°F.

The inspectors reviewed fuel handling procedure N1-FHP-27A, Revision 02, for the complete core offload for RFO-13, and found it to incorporate

appropriate control parameters from the calculations. These included a table for the schedule (minimum hours after reactor shutdown) to offload fuel assemblies, beginning after 3.5 days and ending after 8 days. It also included a requirement to verify that the SW temperature did not exceed 40°F, that both loops of spent fuel pool cooling were operable, and that the reactor had been shutdown for a minimum of 3.5 days.

The inspectors reviewed plant records for RFO-13 and found that reactor shutdown occurred February 8, 1995, core offloading began February 15, and offloading was completed February 21. The inspectors concluded that the actual delay times and offloading schedule for RFO-13 had been accomplished consistent with the associated calculation and procedure. The inspectors reviewed plant records of lake water temperature measurements during core offloading for RFO-13. On February 15, 1995, lake water temperature was 32.1°F and by February 21, had reached a peak of 33.2°F. The inspectors concluded that SW temperature had been appropriately verified to be within allowable limits during core offloading activities. The inspectors reviewed measurements of spent fuel pool temperature recorded throughout RFO-13 and found that the peak pool temperature was 105°F. The inspectors concluded that pool temperatures had been appropriately verified to be within the limiting temperature of 125°F throughout RFO-13.

Discussions with the licensee revealed that Unit 1 procedures and actual practices do not allow removal of either spent fuel cooling train for servicing during a refueling outage. From their review of spent fuel pool temperature measurements for previous outages, the inspectors generally found wide margins to the limiting temperature of 125°F. The inspectors consider that these ample margins support the licensee's statement that the cooling trains are maintained operable during refueling, and no detailed inspection to this end was performed.

Unit 2

Each of the four previous refueling outages for Unit 2 was accomplished by offloading the full core to the spent fuel pool. The current design bases is contained in the UFSAR, Section 9.1.3. The SFC system is designed, in part, to maintain pool water temperature no more than 125°F under normal operating conditions and below 150°F under all other conditions. Additionally, the UFSAR states, in part: "Each loop of the SFC system is capable of providing cooling for the maximum normal heat load . . . . . Should spent fuel cooling be lost due to a single-failure in one loop, the other loop can be placed into service within 1 hr."

During the inspectors' attempt to verify that the design basis analysis was consistent with the UFSAR, NMPC identified that the past practice of full core offloads was outside their design basis. Particularly, full core offloads had been analyzed as an abnormal evolution allowing a maximum temperature of 140°F instead of the 125°F described in the UFSAR. A subsequent review by NMPC also discovered that the redundant SFC loop was not maintained available during any of the completed Unit 2

refueling outages. Particularly, the practice during all previous Unit 2 refueling outages had been to perform divisional electrical bus outages, rendering the redundant train of SFC unavailable. Therefore, NMPC did not met the single failure criterion as specified in the Unit 2 UFSAR.

NMPC initiated a DER to document the discrepancies, and a task team was assigned to determine the root cause and corrective actions. Subsequently, on April 29, 1996, NMPC issued LER 50-410/96-03, "Full Core Offload and Spent Fuel Pool Cooling System Operation Outside of Design Basis." On May 31, NMPC issued Supplement 1 to the LER (LER 50-410/96-03-01).

As a result of these discrepancies, NMPC analyzed the past refueling outages to determine the peak spent fuel pool temperatures that would have been experienced if only one train of SFC had been available, as required, for a normal evolution. This analysis used parameters from RFO-4, which was determined to bound the earlier refueling outages. The results of this analysis, as described in LER 96-03, demonstrated that the spent fuel pool temperatures could have been maintained at 125°F with one loop of SFC operating with cooling water available to the spent fuel pool heat exchanger at a temperature of <71°F. This analysis also demonstrated that with a 95°F cooling water, the maximum design temperature for normal cooling water supply to the SFC heat exchanger, the temperature in the spent fuel pool would not have exceeded the maximum design temperature of 150°F for the pool. The inspectors reviewed portions of this analysis and determined that it supported the licensee's conclusion.

Subsequently, NMPC evaluated each Unit 2 RFO, assuming a maintenance bus outage concurrent with the loss of the operating SFC cooling train due to a single failure. For RFO-1, the time to boil calculation required cooling to be restored in 4½ days. Since the maximum bus outage during RFO-1 lasted 3½ days, NMPC concluded that at no time could a single failure have caused boiling of the spent fuel pool. For RFO-2 through RFO-4, NMPC concluded that the "N + 1" philosophy (The N + 1 philosophy used by NMPC ensures that there is always the minimum number of required systems/divisions available plus an additional system/division available in case of a failure), available feed and bleed methods, and substantial time to boil would have allowed time for recovery actions to provide adequate assurance that the pool would not have been in jeopardy of boiling. The inspectors reviewed portions of this evaluation and determined that it supported the licensee's conclusions.

The inspectors reviewed operator rounds data sheets for each of the four refueling outages and determined that the spent fuel pool temperature has always been maintained below 125°F, with a maximum temperature of 113°F. The inspectors also reviewed procedure NIP-OUT-01, "Shutdown Safety," which ensured alternate cooling systems to be available for SFC. The inspectors concluded that, although not consistent with the UFSAR, the use of alternate cooling systems had effectively limited pool temperatures to committed safe levels.

As documented in LER 50-410/96-03-01, NMPC determined the root cause of the full core offloads being completed as a normal evolution, when it was analyzed as an abnormal evolution, to be an inadequate safety review. Procedure N2-FHP-13.1, "Complete Core Offload," was developed and implemented without a review of UFSAR Section 9.1.3, "Spent Fuel Pool Cooling and Cleanup System." LER 96-03 listed a contributing cause as Section 9.1.3 being confusing and difficult to understand. NMPC misinterpreted the abnormal full core offload case described in the UFSAR as being a bounding case for a routine full core offload. The inspectors considered NMPC root cause determination and corrective actions, as documented in the LER, to be appropriate. However, the completion of full core offloads at Unit 2 as a normal evolution, while not being analyzed as such is an unresolved item (URI 50-410/96-06-01), pending the receipt of additional guidance regarding enforcement actions. Additionally, NMPC committed to revise the Unit 2 UFSAR, Section 9.1.3, "Spent Fuel Pool Cooling and Cleanup System," to clarify the wording to minimize further misinterpretation regarding the design basis for full core offloads. Pending completion of the UFSAR revision, and NRC review, this will be an inspector follow item (IFI 50-410/96-06-02).

As documented in the supplement to LER 50-410/96-03, NMPC determined the root cause of the failure to meet the single failure criterion to be inadequate safety review. Specifically, operating procedure N2-OP-38, "Spent Fuel Pool Cooling and Cleanup System," did not contain the requirements to be able to place the redundant train in service within one hour as stated in the UFSAR. According to NMPC, personnel developing the procedure did not thoroughly review the UFSAR requirements. Therefore, the single failure criterion as stated in the UFSAR was not considered by NMPC during particular electrical buses outages resulting in a loss of power to the spent fuel pool cooling equipment during refueling outages. The inspectors considered NMPC root cause determination and corrective actions as documented in the LER to be appropriate. However, the failure to met the single failure criterion for SFC, as stated in Section 9.1.3, of the Unit 2 UFSAR, is an unresolved item (URI 50-410/96-06-03) pending the receipt of additional guidance regarding enforcement actions.

During the review, the inspectors noted that the most recent revision to the UFSAR (November 1995) included the following statement. "For a normal full-core offload, it must be verified that the offload time to the spent fuel pool and the RBCLC temperatures are consistent with a pool temperature of <125°F with one cooling train operating and both cooling trains operable." Although no core offloads occurred since the incorporation of this UFSAR revision, the inspectors were unable to identify the procedural controls to ensure this verification would be completed prior to core offload. Additionally, the inspectors ascertained that NMPC intends to complete a 1/3 core offload during RFO-5, scheduled for September 1996. However, no procedures exist to support a 1/3 core offload at Unit 2. Both of these concerns appear to be appropriately addressed by NMPC's corrective actions as stated in LER 96-03-01.

During their review, NMPC recognized that they had missed a number of opportunities to identify these discrepancies. As listed in LER 96-03-01, those missed opportunities included:

- NMPC's 1986 review to complete full core offloads,
- 1989 TS amendment to request full core offload/reload using the spiral methodology,
- Several related procedural reviews,
- NMPC's review of recent industry operational experience, and
- NMPC's review during the Unit 2 power uprate modifications.

The inspectors considered the corrective actions detailed in the LER to be appropriate to prevent recurrence. In addition, a review of the overall corrective actions described in LER 96-03-01, are appropriate, in depth and scope, to address the root causes identified above. Pending completion of the corrective actions listed in the LER 96-03-01, and NRC review, this will be an inspector follow item (IFI 50-410/96-06-04).

c. Conclusions

Unit 1

The inspectors concluded that the licensee's normal practice of a full core offload is consistent with the current licensing and design basis. NMPC is meeting the licensing and design basis commitment by performing outage-specific calculations of offloading schedules. The schedules, and associated control parameters used in the calculations, are incorporated into Unit 1 refueling procedures, and verified before and during fuel movement, to assure consistency with single failure criteria, in that a pool temperature of 125°F will not be exceeded.

Unit 2

The inspectors conclude that the licensee's normal refueling practice of a full core offload for Unit 2 is not consistent with the current licensing and design basis. Specifically, full core offloads as a normal evolution had not been analyzed for Unit 2 by NMPC. Additionally, NMPC failed to met the single failure criterion for SFC as stated in the UFSAR for all four previous RFOs. Although not consistent with the UFSAR, the controls in place for alternate cooling systems had effectively limited pool temperatures to committed safe levels. Additionally, the refueling-related corrective actions as stated in LER 96-03, are scheduled to be completed prior to the beginning of the next refueling outage.

E5 Engineering Staff Training and Qualification (37550)

E5.1 Technical Staff Training

a. Inspection Scope

The inspector reviewed the training program at Nine Mile Point to determine if adequate training was provided to the engineering and technical staff.

b. Observation and Findings

The training program for Units 1 & 2 was prescribed in administrative procedure NTP-TQS-404, "Training for Engineering Support Personnel." Three types of training were provided to engineering and technical staff (including design engineering and system engineering personnel): (1) orientation training, (2) position-specific training, and (3) elective training. The orientation training, about six weeks in all, covered basic engineering courses and regulatory requirements, such as reactor theory and 10 CFR 50.59 safety evaluations. This training was required of all engineering personnel at the time of initial employment, including transfers from fossil plants. The position-specific training was tailored to specific need by the employee's supervisor. The elective training was chosen by the staff and approved by the manager. The courses could be taken in-house or at other training centers.

At the time of the inspection, there were two full-time engineering instructors, providing the training needs of about 210 technical and managerial staff. NMPC also combined and shared their training facility with Fitzpatrick to provide more flexible training for their staff. The inspector reviewed procedure NTP-TQS-404, Revision 4, dated December 28, 1995, and noted that this procedure prescribed specific training requirements and provided guidance for implementing the training requirements. The inspector also reviewed the core training matrix for 11 new employees/transfers (several were from FitzPatrick) and the training material for two elective course (protective relaying and vibration analysis). The inspector noted that the new employee received appropriate training in accordance with the procedural requirements, and the elective courses covered appropriate topics.

The inspector interviewed the two engineering instructors and found them to be very knowledgeable. The inspector also interviewed two new transfers to discuss the core training they had received and found they had benefitted from the core training. In addition, the inspector also interviewed five technical staff who had completed the protective relaying course or the vibration analysis course. These individuals demonstrated that they all applied the learned techniques to their job functions.

c. Conclusion

The inspector concluded that NMPC had a good quality and effective training program for their engineering and technical support personnel.

E7 Quality Assurance in Engineering Activities (40500)

E7.1 Unit 2 ISEG Report Review

The inspector reviewed the February 1996 Independent Safety Engineering Group (ISEG) activity report for Unit 2. Some of the major activities reviewed by ISEG were the engineering modification assessment process, maintenance training and qualification program, operations simulator training, chronic emergency diesel generator air compressor problems, and industry operational experience information. The report also contained follow-up reviews of concerns identified previously by ISEG.

ISEG appeared to be aggressive in seeking out areas needing improvement, rather than just responding to events and information from outside sources. The reviews by ISEG of programs and processes provided appropriate recommendations for issues identified. The ISEG report contained sufficient detail to illustrate an understanding of current issues and concerns.

The inspector considered the ability of ISEG to assess issues and concerns to be good. The ISEG report provided useful feedback to NMPC management.

E8 Miscellaneous Engineering Issues (90712, 92700)

E8.1 (Closed) LER 50-410/96-03: Full Core Offload and Spent Fuel Pool Cooling System Operation Outside of Design Basis

E8.2 (Closed) LER 50-410/96-03, Supplement 1: Full Core Offload and Spent Fuel Pool Cooling System Operation Outside of Design Basis

The inspectors' review of the issue related to the above LER, and the associated supplement, is contained in Section E3.1 of this report. The LERs satisfactorily described the event, the root cause evaluation, and corrective actions to prevent similar occurrences in the future.

IV. PLANT SUPPORT

R1 Radiological Protection and Chemistry (RP&C) Controls (83750, 86750)

R1.1 Refueling Outage RP Controls (Fourth Unit 2 Refueling Outage)

a. Inspection Scope

The inspector reviewed the licensee's program to maintain exposures as low as is reasonably achievable (ALARA) during the fourth Unit 2 refueling outage (RFO-04) by reviewing goals, results, and post outage reports and by interviewing the Unit 2 ALARA Supervisor. Direct observation of RFO-04 work was detailed in NRC IR 50-220 & 50-410/95-10.

b. Observations and Findings

The licensee established a goal of 305 person-rem for RFO-04. Actual exposure accumulated in completing RFO-04 tasks was 325 person-rem. The inspector reviewed several radiologically significant jobs that were completed during RFO-04. The inspector reviewed the licensee's post-outage review report entitled, "Post Outage Rad Protection Report April 8, 1995 - June 2, 1995." The report noted good practices, problems, and areas for improvement for use in future job planning. The following table summarizes exposure performance for several significant outage activities:

JOB	Person-Rem (estimated)	Person-Rem (actual)
drywell in-service inspection (ISI, inside bioshield)	70.4	43.8
drywell ISI (outside bioshield)	29.7	34.5
drywell snubber reduction modifications	33.6	26.1
drywell snubber functional testing and visuals	4.4	18.3
control rod drive (CRD) exchanges	10.5	12.5
drywell surveys and RP job coverage	18.1	10.9
drywell change out safety relief valves (SRVs)	13.6	9.7
repair/replace SRMs and IRMs	4.1	7.0
suppression pool cleanup	7.0	4.5
reactor vessel disassembly	4.0	2.5
reactor vessel reassembly	12.1	9.0
jet pump beam inspection/repairs	1.3	2.3
reactor and turbine building snubber functional and visual testing	2.0	3.1
exchange LPRMs	3.0	3.0

reactor cavity decontamination	3.3	1.8
drywell decontamination	3.0	3.9

As noted in the following table, the licensee has made excellent progress in reducing the dose accrued from reactor disassembly and reactor reassembly work over the past several outages. The licensee noted that new detensioning equipment and more proficient use of the General Electric WET LIFT equipment were primary reasons for this progress.

JOB	RFO-02 (rem)	RFO-03 (rem)	RFO-04 (rem)
reactor disassembly	7.2	4.2	2.5
reactor reassembly	17.1	13.9	9.0

There were two primary factors as to why more exposure was accumulated in completing CRD work than had been expected. First, original plans were to exchange 24 CRDs. In actuality, 25 CRDs were replaced because workers were unable to recouple one CRD after it had been exchanged. The other primary factor was that 10 position indicator probes were replaced. One fact noted by the inspector was that the licensee has averaged about 500 person-mrem per CRD replaced over the last three Unit 2 refueling outages which compares favorably to other boiling water reactors. One of the key good practices noted by the inspector was the application of video cameras which permitted supervision to view the entire job remotely.

As noted in the outage summary table above, drywell snubber functional testing and visuals were completed for considerably more exposure than had been originally planned. The primary reason for this was that the exposure estimate had been based on testing and inspecting 85 snubbers. By task completion, the licensee had tested and inspected 309 snubbers, a work scope increase of 239%.

All 18 SRVs were replaced during RFO-04. The licensee noted that experienced crews, flushing of the "A" an "C" low pressure core injection lines, remote cameras, and temporary shielding were primary factors for exceeding expected ALARA performance. The inspector noted excellent ALARA performance as compared to previous Unit 2 outages (i.e, RFO-04 0.54 person-rem/SRV, RFO-03 0.75 person-rem/SRV, RFO-02 1.36 person-rem/SRV).

IRM and SRM work took more dose than expected primarily due to work outside expected job scope. This increase in work scope resulted from troubleshooting and repairs identified after RFO-04 began.

The licensee noted several generic concerns in the planning and conduct of RFO-04 work. The licensee noted that the RFO-04 work scope was not frozen and that about 1,900 work orders were submitted to the RP department for review after the 11/16/94 RFO-04 freeze date. The licensee also noted that the reactor water cleanup and the spent fuel cleanup systems were unavailable simultaneously which led to higher dose rates than expected on the refueling bridge and near the reactor cavity.

The licensee noted several generic key achievements in carrying out RFO-04 work. The flushes and hydrowashing carried out during RFO-04 saved about 60 person-rem, and good engineering support had allowed maximum temporary shielding for several installations leading to a saving of about 39 person-rem. The inspector noted that a dedicated window within the outage schedule was provided for shielding installation prior to the conduct of bulk work within the drywell.

The inspector reviewed several licensee assessments to determine if there was an ALARA benefit to use respirators for several jobs. The inspector found that the efficiency factors used were comparable to other licensees. No inadequacies in calculational methods were noted. The licensee estimated that about 3 person-rem was saved as a result of an overall reduction in respirator use.

c. Conclusion

Overall, implementation of radiological controls during RFO-04 was characterized by good application of planning and controls for work in radiologically controlled areas (RCAs).

R1.2 Solid Radioactive Waste Program Controls

a. Inspection Scope

The inspector reviewed the licensee's solid radioactive waste (radwaste) management program to verify that the licensee's program provides for the proper preparation of wastes requiring stabilization. The inspector interviewed the Unit 1 and Unit 2 radwaste operations supervisors, conducted tours, and reviewed pertinent documentation.

b. Observations and Findings

The inspector assessed that the radwaste management program organization provided sufficient personnel to manage the radwaste/materials program. The licensee has identified specifically trained and qualified individuals to certify radwaste shipments. No inadequacies in scaling factor development were noted by the inspector. No recent discrepancies in stability were noted regarding the dewatered resin shipments by either the licensee QA Department or the receiving station in Barnswell, South Carolina.

c. Conclusions

Overall, this program area was assessed to be very good.

R1.3 Radwaste and Radioactive Materials Shipping Program

a. Inspection Scope

The inspector reviewed the licensee's shipping program to verify that the licensee met applicable NRC and Department of Transportation (DOT) requirements. The inspector discussed this area with the Unit 1 and Unit 2 radwaste operations general supervisors and reviewed shipment manifests. There was no opportunity to review an out-going radwaste/materials shipment during the conduct of the inspection.

b. Observations and Findings

The inspector noted that the licensee shipping personnel maintained current copies of pertinent regulations and licenses of all facilities to which the licensee shipped radwaste/materials. The inspector noted no inadequacies in any of the documentation packages reviewed. No discrepancies were noted by either the licensee QA department or the State of South Carolina during recent shipments. There was no significant backlog of radwaste/materials awaiting transport for burial or off-site processing.

a. Conclusions

Overall, the aspects of this program area that were reviewed were assessed to be very good.

R2 Status of RP&C Chemistry Facilities and Equipment

R2.1 Radwaste Equipment Condition and Storage

a. Inspection Scope

The inspector reviewed the current conditions of radwaste/materials equipment, and the areas in which the equipment was stored and maintained. The applicable sections of the UFSAR were current for both units (Section XII for Unit 1, Section 11 for Unit 2). The inspector toured the Unit 1 and Unit 2 radwaste buildings, reviewed Unit 1 work orders, interviewed the Unit 1 and Unit 2 radwaste operations general supervisors, and reviewed pictures of rooms/equipment in the Unit 1 and Unit 2 radwaste buildings.

b. Observations and Findings

Overall, the inspector assessed that housekeeping in the Unit 1 and Unit 2 radwaste buildings was very good. The inspector noted that rounds were possible with minimal dressout in protective clothing in both radwaste buildings. No significant adverse conditions in either

components or rooms were found by the inspector. The Unit 1 radwaste operations general supervisor informed the inspector that the annual dose has dropped considerably over the past several years and indicated that the dose budget has changed from 15 rem/year in 1994 to 6 rem/year in 1996.

Work orders pertaining to the Unit 1 radwaste building and liquid radwaste system were reviewed. The Unit 1 and Unit 2 radwaste operations general supervisors and the Unit 1 radwaste building system engineer were satisfied with the support provided by maintenance. No in-use systems were inoperative at the time of the inspection. The inspector questioned licensee personnel if there were any rooms with degraded conditions or equipment in the Unit 1 and Unit 2 radwaste buildings and was informed that no such conditions existed.

No discrepancies in the UFSARs were noted by the inspector. The licensee was still testing the Thermex system at both Units; as such, the licensee has not modified the UFSARs. During tours of the radwaste buildings, the inspector noted that the Thermex u nits were connected to existing components with hosing (see Section R8.1). Unit 1 staff indicated that there were no plans to install hard piping for the Unit 1 Thermex system. At the time of the inspection, a plant change request had been submitted to evaluate hard piping to the Unit 2 Thermex system.

c. Conclusion

The inspector concluded that the radwaste management program facilities and equipment were receiving sufficient attention on the part of licensee management and staff and that the UFSAR was maintained current.

No degradation of the radwaste management and transportation programs was evident as a result of changes to facilities or equipment.

R4 Staff Knowledge and Performance in RP&C (92904)

R4.1 Staff Adherence to Radiation Work Permits

a. Inspection Scope

The inspectors reviewed three open items related to the licensee's performance in the area of radiation work permit (RWP) adherence. The inspectors reviewed the licensee's root cause and corrective actions for Notices of Violation (NOVs) 50-220/95-04-01 and 50-410/95-10-01, as documented in the associated NMPC letters dated April 3, 1995, and June 15, 1995. The inspectors also evaluated the root cause and corrective actions associated with the URI 50-410/94-04-01.

To evaluate the adequacy of the licensee's corrective actions to prevent recurrence, the inspectors reviewed their performance in the area of RWP adherence since the beginning of 1996. Additionally, the inspectors held discussions with the Radiation Protection (RP) department managers for both Units regarding the issue of RWP adherence.

b. Observation and Findings

The observations and findings associated with these three open items are contained in Sections R4.2 through R4.5.

R4.2 (Closed) URI 50-410/94-32-03: Contractors not properly signed onto RWP

In January 1995, the inspectors identified that three contractor personnel improperly signed onto the specific RWP for sandblasting inside a contaminated area. The root cause of this issue, as described in the licensee's DER, was a failure to follow procedure. TS 6.11 states, "Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure."

This failure to follow procedures constitutes a violation of minor significance and is being treated as a Non-Cited Violation, consistent with Section IV of the "NRC Enforcement Policy."

R4.3 (Closed) VIO 50-220/95-04-01: Workers entered RCA without dosimetry

On two occasions in February 1995, individuals entered the RCA without required electronic dosimetry; in addition, one of the individuals failed to sign in on an RWP. The inspectors' assessment of the corrective actions associated with this violation is contained in Section R4.5; based on that assessment, VIO 50-220/95-04-01 is closed.

R4.4 (Closed) VIO 50-410/95-10-01: Failure to Follow RP Procedures during Outage

In April 1995, four maintenance workers and a maintenance supervisor:

- failed to sign in under the proper RWP. Additionally, one also failed to wear extremity dosimetry, as required by the RWP.
- the maintenance crew was wire brushing on contaminated bolts without first notifying the RP Department, as required by the RWP.

The inspectors' assessment of the corrective actions associated with this violation is contained in Section R4.5; and based on that assessment, VIO 50-220/95-10-01 is closed.

R4.5 Assessment of NMPC Corrective Actions to Address Previously Identified Violations Associated with RWP Adherence

The root causes and immediate corrective actions were appropriate to address the specific violations discussed in Sections R4.3 and R4.4. The root causes for these items were poor work practices; particularly, personnel applied an insufficient degree of attention to RCA entry process, and personnel were distracted by other work activities at the entrance to the RCA. The immediate corrective actions included work stoppage on the related jobs to restore safe radiological conditions,

and counseling of the individuals involved on the importance of adherence to the RP program requirements. Additionally, in response to Violation 50-220\95-04-01, NMPC established a full time dedicated person at the entrance to the RCA to ensure personnel had activated electronic dosimetry prior to entering the RCA. This action was in place through the end of refueling outage 13.

The corrective actions taken to prevent recurrence included:

- work stand-down periods to conduct training of licensee and contractor personnel with respect to the requirement and expectations for RWP compliance;
- industry benchmarking of nine other nuclear power plant to determine means to minimize similar errors;
- Unit 1 reconfigured the access and egress areas for the RCA to eliminate background distractions and allow individuals to concentrate on RCA entry, and
- installation of an orphaned electronic dosimetry timer, to alarm if a dosimeter with a completed transaction is left in the machine.

Although these corrective actions addressed the root cause of the specifically identified concerns, they have been ineffective in preventing recurrence. This is evidenced by the continuing RWP adherence deficiencies documented in DERs by the licensee since the beginning of 1996. Examples of the deficiencies include:

- On January 4, 1996, an operator breached the residual heat removal system, which is contaminated, without first notifying the RP department, as required by RWP. (DER 2-96-0018)
- On January 8, 1996, a contractor entered the RCA without a thermoluminescent dosimeter (TLD), as required by RWP. (DER 1-96-0045)
- On January 22, 1996, a technician entered the RCA without electronic dosimetry, as required by RWP. (DER 1-96-0158)
- On March 2, 1996, a worker entered the RCA, including a locked high radiation area within the RCA, without electronic dosimetry, as required by RWP. (DER 2-96-0544)
- On April 26, 1996, an individual entered the RCA without signing onto an RWP, and failed to wear electronic dosimetry, as would have been required by the RWP. (DER 2-96-1106)

Based on the above examples, NMPC had failed to properly implement its radiation protection program procedures. This is a violation of 10 CFR 20.1101, which requires that licensees implement a radiation protection program commensurate with the scope and extent of licensed activities. Furthermore, the corrective actions taken by NMPC for previously identified RWP violations have been ineffective to prevent recurrence. **(VIO 50-220 & 50-410/96-06-05)**

The inspectors reviewed the above mentioned DERs and verified that these failures to follow the RWP requirements did not result in personnel overexposure or contamination. Additionally, many of the concerns

documented in the reviewed DERs were self-identified by the individuals involved, which was considered a strength by the inspectors. The corrective actions for the DERs reviewed appeared to be appropriate for their respective root causes. However, the effectiveness of the corrective action to prevent recurrence will take time to be assessed.

The inspectors observed several incidences where NMPC management stressed to their staff the importance of RWP compliance. These included work stand-downs at both units in March, and periodic reminders in the shift operating crew briefs.

c. Conclusions

The inspectors identified that corrective actions associated with repetitive failures to follow RWP requirements have been ineffective in preventing recurrence. Although the inspectors considered it a strength that individuals were self-identifying their our failure to meet RWP requirements, corrective actions were ineffective to prevent recurrence.

R5 Staff Training and Qualification in RP&C (86750)

R5.1 Radwaste Organization Training

a. Inspection Scope

The inspector reviewed radwaste organization training records to determine whether individuals were receiving required training and to verify that lessons learned were incorporated into the appropriate training tasks.

b. Observations and Findings

The inspector verified that licensee personnel had received training in accordance with the licensee's established training program. The inspector verified that lessons-learned were properly incorporated into the training program. There were no significant recent findings with a root cause of less-than-adequate training. The inspector noted that a training class on the revised transportation regulations was provided to appropriate personnel.

c. Conclusions

Overall, the aspects of this program area that were reviewed were assessed to be very good.

R7 Quality Assurance in RP&C Activities (86750)

R7.1 Oversight of the Radwaste/Material Programs

a. Inspection Scope

The inspector appraised licensee oversight of the radwaste/material program. The inspector reviewed NMPC QA audit 95018, "Radiation Protection and Radioactive Materials Processing, Transport and Disposal," QA surveillances, quality control surveillances, and self-assessments. The inspector also discussed with licensee management their response to adverse conditions and audit/assessment findings.

b. Observations and Findings

Two technical specialists were used during the audit. One had experience as a radwaste system engineer and the other had coordinated radwaste/materials shipments. The licensee auditor's training in the radwaste/materials area was current.

No significant discrepancies were identified by the audit team. The audit team concluded that the program for transportation of radioactive material was being effectively controlled and implemented at both units. However, it did not appear that the audit team reviewed any shipments or had performed an overall review of quality control surveillances leading support to the audit team's conclusion on the overall state of the quality of the program. This was considered to be a minor weakness because of the number of surveillances which had been conducted.

The inspector noted that surveillances were well targeted. For example, the first shipment of radioactive waste during the current shipping campaign was evaluated by members of the licensee's audit department. No significant discrepancies were identified in any of the surveillances reviewed.

The licensee's response to findings and adverse conditions was both timely and appropriate (see Section R8 of this report and Section 5.2 of NRC IR 50-220 & 50-410/95-25).

The inspector reviewed an assessment of the low-level liquid waste program, conducted by an outside organization. The assessment was comprehensive and provided many suggestions to the licensee for improvement of their liquid waste control program. Also, at the time of the inspection, an independent evaluator was contracted to perform an assessment of compliance with 10 CFR Part 61. These assessments demonstrated superior safety focus, as these efforts exceed regulatory requirements.

c. Conclusions

Overall, this area was assessed to be well implemented.

R8 Miscellaneous RP&C Issues (83750, 86750)

R8.1 Spent Resin Spill - Unit 1 Radwaste Building Elevation 261

A connector hose failed during a resin transfer from the Unit 1 spent resin tank to a shipping cask in the radwaste building truck bay. The resin spill covered an area of about 300 square feet (ft^2).

The licensee conducted a change analysis of the event. The licensee's causal analysis was that the hose had failed at the end-fitting due to fatigue (a failure due to cyclically imposed stress). The licensee noted that the hoses and end-fittings had been hydrostatically tested by the vendor. NMPC modified the hose length prior to installation but did not test the hose end-fitting connection.

In response, licensee management precluded resin transfer until the associated DER had been preliminary dispositioned, a hose specification was established, and a surveillance and testing program was developed and implemented.

The resin transfer pump used at Unit 1 was an air driven pump, with a maximum discharge pressure of 100 pounds per square inch gage (psig) when driven by 100 psig air pressure. Current vendors have provided hoses with a nominal rating of 200 psig, and end-fittings with a nominal rating of 600 psig. The licensee noted that vendor testing of similar hoses and end-fittings have demonstrated that, at pressures of 650 psig or greater, failure would occur through hose bursting rather than hose to end-fitting uncoupling. Consequently, the inspector assessed these corrective actions as reasonable.

R8.2 Potential Liquid Release from the RCA

This matter was initially described in NRC IR 50-410/95-24 and detailed a situation in which licensee personnel had drained an air conditioning Unit to the storm sewer system using a contaminated hose. The inspector discussed this matter further with the Unit 2 radiation protection manager (RPM) to determine the adequacy of the long-term corrective action(s) and licensee causal analysis. Through surveys, the licensee determined that the hose had been contaminated. The licensee was not able to identify the department/individual who had contaminated and improperly handled the hose.

The primary contributing factor noted by the licensee was that no procedural guidance existed for uncontaminated hoses. Other contributing factors noted were: (1) improper handling of equipment, in that after the hose had been used on a contaminated system it was expected that the hose should have been bagged and taped for a survey by RP; and (2) verification was not performed, in that after personnel

noted that the storm sewers would be the flow path, RP or environmental protection were not contacted to get their concurrence.

In response, a licensee team was assembled to review the event. The hose control program will be modified to control all hoses in the power block (by 6/28/96), operations personnel were counseled, and the need to contact RP prior to draining systems was re-emphasized in a memorandum. In addition, applicable procedures were evaluated and modified to note the proper drain path, and the need to contact other departments prior to draining. The inspector found these actions to be reasonable.

S1 Conduct of Security and Safeguards Activities

S1.1 Fitness for Duty Random Selection Process Software Altered

On May 29, 1996, NMPC discovered that several individuals had been intentionally removed from the random selection process associated with fitness for duty (FFD) testing. Initial investigation indicated that two contract computer programmers were responsible for the altering of the initial software program. The alteration also exempted several NMPC employees. All of the exempted personnel still associated with Nine Mile were subjected to a FFD test. Test results for the NMPC employees were negative; the one contractor who still worked for NMPC tested positive for drugs, and was suspended.

Pending the completion of NMPC's investigation, and subsequent NRC review, this item will remain unresolved. (URI 50-220 & 410/96-06-06)

F8 Miscellaneous Fire Protection Issues (92904)

F8.1 General Comments

a. Inspection Scope

In NRC IR 50-220 & 50-410/95-24, a number of concerns and issues were identified with the Fire Protection Program (FPP) that warranted followup and review for adequacy of NMPC corrective actions. The inspectors performed document reviews, personnel interviews, and a walk down of accessible Unit 1 areas to assess both the degree to which the issues and concerns were addressed on field and equipment conditions.

b. Observations and Findings

The observations and findings associated with this review are contained in Sections F8.2 through F8.4 of this report.

F8.2 Fire Brigade Equipment

While ample "turnout gear" (equipment and supplies) for fire brigade (FB) personnel exists at the site, the inspectors previously noted that the gears' arrangement was not "user-friendly." During the current inspection period, the inspectors observed that the gear in the fire

equipment storage cabinets was reorganized to improve fire brigade member dress out time. Also, new fire helmets with adjustable ratchet head bands facilitate ease in use and an improved comfort level.

The inspectors reviewed the NMPC Report of the 1996 First Quarter Fire Drills. This report documented the improvements made in this area and stated that the aforementioned features were considered a performance strength. The inspectors agreed with this assessment, based upon field observations, and acknowledged that the efforts expended in this area reflected strong management support for the FPP.

c. Conclusions

The inspectors determined that enhancements made to fire protection turnout gear storage conditions have resulted in FB performance improvements.

F8.3 (Closed) URI 50-220 & 50-410/95-24-05: Review the adequacy of FPP Changes

During the earlier inspection, the inspectors identified a weak change process for recent modifications to the FPP and procedures. Specifically, the basis for SE No. 95-102, developed for the FPP changes that were the result of the restructuring of NMPC's Nuclear Strategic Business Unit, lacked clarity and detail. The proposed changes to the UFSAR and respective procedure changes were revoked, and NMPC stated that future proposed changes would undergo more detailed evaluation with respect to 10 CFR 50.59 and the impact on fire safety, prior to implementation.

In response to the above noted NRC issue and concern, NMPC implemented a number of corrective actions. These included:

- issuance of SE No. 96-002, February 13, 1996, that evaluated a change in the FB membership requirements to no longer rely on fire protection staff and the use of professional fire fighters, as well as in other program changes;
- the development of Licensing Document Change Requests 1-96-UFS-003 and 2-96-UFS-003, Units 1 and 2 respectively, which described changes to the UFSAR that allows the fire brigade to be composed of personnel other than fire protection staff;
- effectiveness reviews for LDCRs 1-96-UFS-003 and 2-96-UFS-003, which documented that the proposed changes to the requirements for FB membership did not adversely affect the ability to achieve and maintain safe shutdown of the plants in the event of a fire; and
- development of a proposed revision to Nuclear Division Interface Procedure NIP-FPP-01, "Fire Protection Program," which is consistent with the aforementioned documents and basis described therein.

Additionally, NMPC provided the inspectors with recently revised procedure NIP-LPP-01, Rev: 3, "Control of Licenses, UFSARS, and NRC

Approved Plans and Programs," that provides for the administrative control of changes to the enumerated documents.

Regarding the NRC's concerns that the originally developed 50.59 SE lacked an appropriate level of detail and clarity to support the proposed change, NMPC representatives indicated that DER C-95-3282 addresses this issue and SORC members have been coached by the NMPC licensing organization regarding 50.59 determinations. Also, the inspectors noted, following discussions with Unit 1 FPP management representatives, that additional management review was ongoing as a result of recent NRC concerns stemming from other 50.59 issues. NMPC representatives indicated that corrective actions that result from this review will also be used to address FPP changes.

c. Conclusions

The changes made to the FPP that consisted of FB membership requirements no longer relying on fire protection staff and the use of professional fire fighters were determined by the inspectors to be supported by appropriate changes to licensing and program documents. Also, supporting analysis were of an appropriate level of detail and clarity, and administrative controls used by NMPC to facilitate these changes were appropriate. SORC members were appropriately made aware of the need to focus in a comprehensive and reasonably thorough manner on the plant design and licensing basis for facility and procedural changes.

F8.4 (Closed) URI 50-220 & 50-410/95-24-06: Conflict Between Competing Performance Requirements for Fire Brigade Members Responding to a Fire Drill

NMPC procedure S-SAD-FPP-0101, "Fire Watch/Patrol/Inspection," allows a person responsible for a continuous fire watch or fire watch patrol, who is a member of the fire brigade, to leave the watch to respond to a fire alarm. The inspectors questioned the practice being applied to fire brigade members responding to a fire drill, as this situation would not result in the possibility of involving the brigade in a real fire situation. Alternatively, to exempt the fire brigade members from participating in the fire drill was not considered by the inspectors to be consistent with good training practices. NMPC addressed the resolution of the conflict between these competing performance requirements by the corrective actions associated with DER 1-96-0374. This DER tracked the unresolved item and ensured that NMPC evaluated the practice.

The DER concluded that the informal policy to allow the temporary suspension of hourly fire patrols for the performance of fire brigade drills (note: NMPC clarified the issue for the inspectors by stating that the informal policy would not have been used for brigade members involved in continuous patrols) was a misapplication and misinterpretation of design inputs associated with fire protection. Specifically, the DER stated that the application of the patrol exclusion to brigade drills is an incorrect and overly broad

interpretation of the licensing basis. Regarding corrective actions for this issue, the following NMPC actions occurred:

- independent of the DER, NMPC has established a blanket emergency drill/exercise exemption for fire protection personnel, therefore not interrupting the compensatory measures;
- in March 1996, the practice of temporary patrol suspension for brigade drills has been discontinued pending additional NMPC review;
- NMPC will perform a sample record review to provide further assurance that patrols have not been missed as a result of brigade drills;
- the engineering department will review the temporary patrol suspension practice and evaluate the risk significance and impact on the ability to achieve and maintain safe shutdown;
- if this evaluation supports the practice, the FPP Manager will generate UFSAR changes, a 50.59, and program changes to incorporate the practice; and
- in parallel, and as an alternative to a license basis resolution approach, the operations department will review the possibility of fire brigade realignment so that no interruption of compensatory measures would be needed to support fire drills.

c. Conclusions

The inspectors verified that NMPC corrective measures associated with FB drill conflicts reflected an appropriately thorough and comprehensive resolution of the issue, and that these actions were assigned appropriate schedule completion dates.

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 following meetings were held by specialist inspectors upon completion of their onsite inspection:

• Spent Fuel Pool Related Issues	April 30
• Followup of Fire Protection Unresolved Items	May 3
• Maintenance Followup to Inspection 50-220/95-80	May 3
• Engineering Inspection	May 10
• Engineering Followup to Inspection 50-220/95-80	May 17
• Control of Radiological Waste	May 24

The final exit meeting occurred on July 1, 1996. During this meeting, the resident inspector's findings were discussed, and overall conclusions for the entire inspection period were provided to the NMPC management. Also during this meeting, the inspectors verified NMPC's commitment to revised the Unit 2 UFSAR, Section 9.1.3, "Spent Fuel Pool Cooling and Cleanup System," to clarify the wording to minimize further misinterpretation regarding the design basis for full core offloads. 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.

X2 Pre-Decisional Enforcement Conference Summary

On April 12, a pre-decisional enforcement conference was held at the NRC Region I office to discuss issues identified in IR 50-220 & 410/96-05. The issues were related to design control concerns with Unit 1 reactor and turbine building blowout panels. Handouts used in the licensee's presentation at the conference are included as Attachment A to this report.

On May 10, a pre-decisional enforcement conference was held at the NRC Region I office to discuss issues related to possible discrimination against a former NMPC employee who was engaged in protected activities (10 CFR 50.7). Handouts used in the licensee's presentation at the conference are included as Attachment B to this report.

X3 Management Meeting Summary

On May 10, 1996, a meeting was held in the NRC Region I office to discuss concerns related to the discovery by NMPC that a small number of personnel at the site had been exempted from the random selection process for fitness for duty testing. This was discovered during an NMPC investigation of the computer software used for the selection process. Handouts used at the meeting contained privacy and safeguards information, all copies were either returned to the licensee or destroyed.

PARTIAL LIST OF PERSONS CONTACTED

Niagara Mohawk Power Corporation

R. Abbott, Vice President & General Manager - Nuclear
J. Aldrich, Maintenance Manager, Unit 1
M. Balduzzi, Operations Manager, Unit 1
D. Barcomb, Radiation Protection Manager, Unit 2
C. Beckham, Manager, Quality Assurance
D. Bosnic, Operations Manager (acting), Unit 2
J. Conway, Plant Manager, Unit 2
K. Dahlberg, General Manager - Projects
R. Dean, Engineering Manager, Unit 2
K. Knight, Work Control/Outage Manager (acting), Unit 1
M. McCormick, Vice President - Nuclear Safety Assessment & Support
L. Pisano, Maintenance Manager, Unit 2
N. Rademacher, Plant Manager, Unit 1
P. Smalley, Radiation Protection Manager, Unit 1
K. Sweet, Technical Support Manager, Unit 1
K. Ward, Technical Support Manager, Unit 2
W. Yaeger, Engineering Manager, Unit 1

INSPECTION PROCEDURES USED

IP 37550:	Engineering
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 62703:	Maintenance Observation
IP 71707:	Plant Operations
IP 83750:	Radiation Exposure
IP 86750:	Solid Radioactive Waste Management and Transportation of Radioactive Materials
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 92902:	Followup - Engineering
IP 92903:	Followup - Maintenance
IP 92904:	Followup - Plant Support

ITEMS OPENED, CLOSED, AND UPDATED

OPENED

50-410/96-06-01	URI	Full Core Offloads as a Normal Evolution had not been Analyzed
50-410/96-06-02	IFI	Commitment to Clarify the Wording in Unit 2 UFSAR, Section 9.1.3
50-410/96-06-03	URI	Failure to Meet the Single Failure Criterion for SFC as stated in the UFSAR
50-410/96-06-04	IFI	Corrective Actions Associated with LER 96-03-01 for the Unit 2 Spent Fuel Pool
50-220 & 50-410/96-06-05	VIO	Inadequate Adherence to RWPs
50-220 & 50-410/96-06-06	URI	Fitness for Duty Random Selection Process Software Altered

CLOSED

50-220/95-80-01	URI	Thermal Hydraulic concerns associated with Recirculating Pump Runback
50-410/94-32-03	URI	Contractors not properly singed onto RWP
50-220/95-04-01	VIO	Workers entered RCA without dosimetry
50-410/95-10-01	VIO	Failure to follow RP procedures during outage
50-220 & 50-410/95-24-05	URI	Review the adequacy of Fire Protection Program (FPP) Changes
50-220 & 50-410/95-24-06	URI	Conflict Between Competing Performance Requirements for Fire Brigade Members Responding to a Fire Drill
50-220/96-01	LER	Technical Specification Violation Caused by Improper Recirculation Flow Calibration Procedure
50-410/96-01	LER	Technical Specification Violation Caused by Inadequate APRM Setdown Channel Functional Test
50-410/96-02	LER	Technical Specification Violations Caused by Inadequate Surveillance Scheduling
50-410/96-03	LER	Full Core Offload and Spent Fuel Pool Cooling System Operation Outside of Design Basis
50-410/96-03 Supplement 1	LER	Full Core Offload and Spent Fuel Pool Cooling System Operation Outside of Design Basis
50-410/96-04	LER	Multiple Engineering Safety Features Actuations Caused by Failure of Electrical Protection Assembly

UPDATED

NONE

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
APRM	Average Power Range Monitor
BWR	Boiling Water Reactor
BWROG	Boiling Water Reactor Owners Group
CFR	Code of Federal Regulations
CGID	Commercial Grade Item Dedication
cps	counts per second
CRD	Control Rod Drive
DER	Deviation/Event Report
DLA	Dynamic Learning Activities
DOT	Department of Transportation
dp	differential pressure
EPA	Electrical Protection Assembly
FB	Fire Brigade
FCV	Feedwater Control Valve
FFD	Fitness for Duty
FPP	Fire Protection Program
ft^2	square feet
GE	General Electric
GEMS	Gaseous Effluent Monitoring System
GTS	Standby Gas treatment System
I&C	Instrument and Controls
IN	Information Notice
IR	Inspection Report
IRM	Intermediate Range Monitor
ISEG	Independent Safety Engineering Group
ISI	In-Service Inspection
LCO	Limiting Condition of Operation
LER	Licensee Event Report
LPRM	Local Power Range Monitor
MCPR	Minimum Critical Power Ratio
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NMPC	Niagara Mohawk Power Corporation
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
PIP	Position Indicator Probes
psia	pounds per square inch absolute
psig	pounds per square inch gage
QA	Quality Assurance
RBM	Rod Block Monitor

LIST OF ACRONYMS USED
(continued)

RCA	Radiologically Controlled Area
RCS	Reactor Recirculation System
RFO	Refueling Outage
RP	Radiation Protection
RP&C	Radiation Protection and Chemistry
RPM	Radiation Protection Manager
RPS	Reactor Protection System
RRP	Reactor Recirculation Pump
RWP	Radiation Work Permit
SE	Safety Evaluation
SFC	Spent Fuel Pool Cooling
SIL	Service Information Letter
SIT	Special Inspection Team
SORC	Station Operations Review Committee
SRAB	Safety Review and Audit Board
SRM	Source Range Monitor
SRV	Safety Relief Valves
SSS	Station Shift Supervisor
STA	Shift Technical Assistant
TLD	Thermoluminescent Dosimeter
TS	Technical Specification
UFSAR	Update Final Safety Analysis Report
URI	Unresolved Item
VDC	Volts Direct Current
VIO	Violation
WO	Work Order

ATTACHMENT A

NMPC HANDOUT

ENFORCEMENT CONFERENCE FOR

UNIT 1 BUILDING BLOWOUT PANEL

NRC ENFORCEMENT CONFERENCE

NMP1 BUILDING BLOWOUT PANELS

April 12, 1996

Niagara Mohawk Presentation

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

AGENDA

Introductory Comments. . . . . (Sylvia)

Agenda & Summary Timeline . . . . . (Abbott)

Structural Design Basis & Safety Significance . . . . . (Terry)

1993 Design Control Deficiency . . . . . (Yaeger)

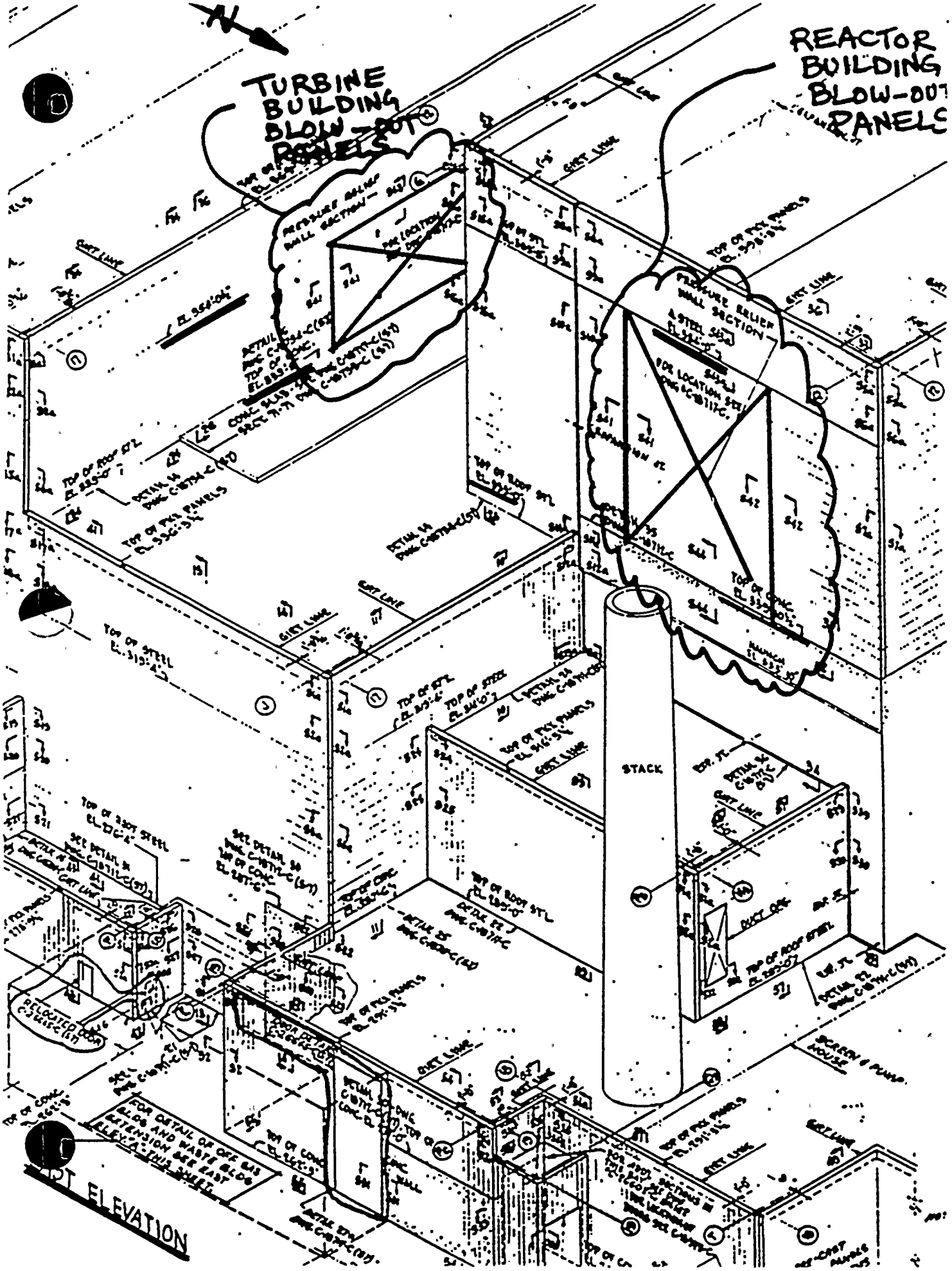
50.59 Evaluation . . . . . (Terry)

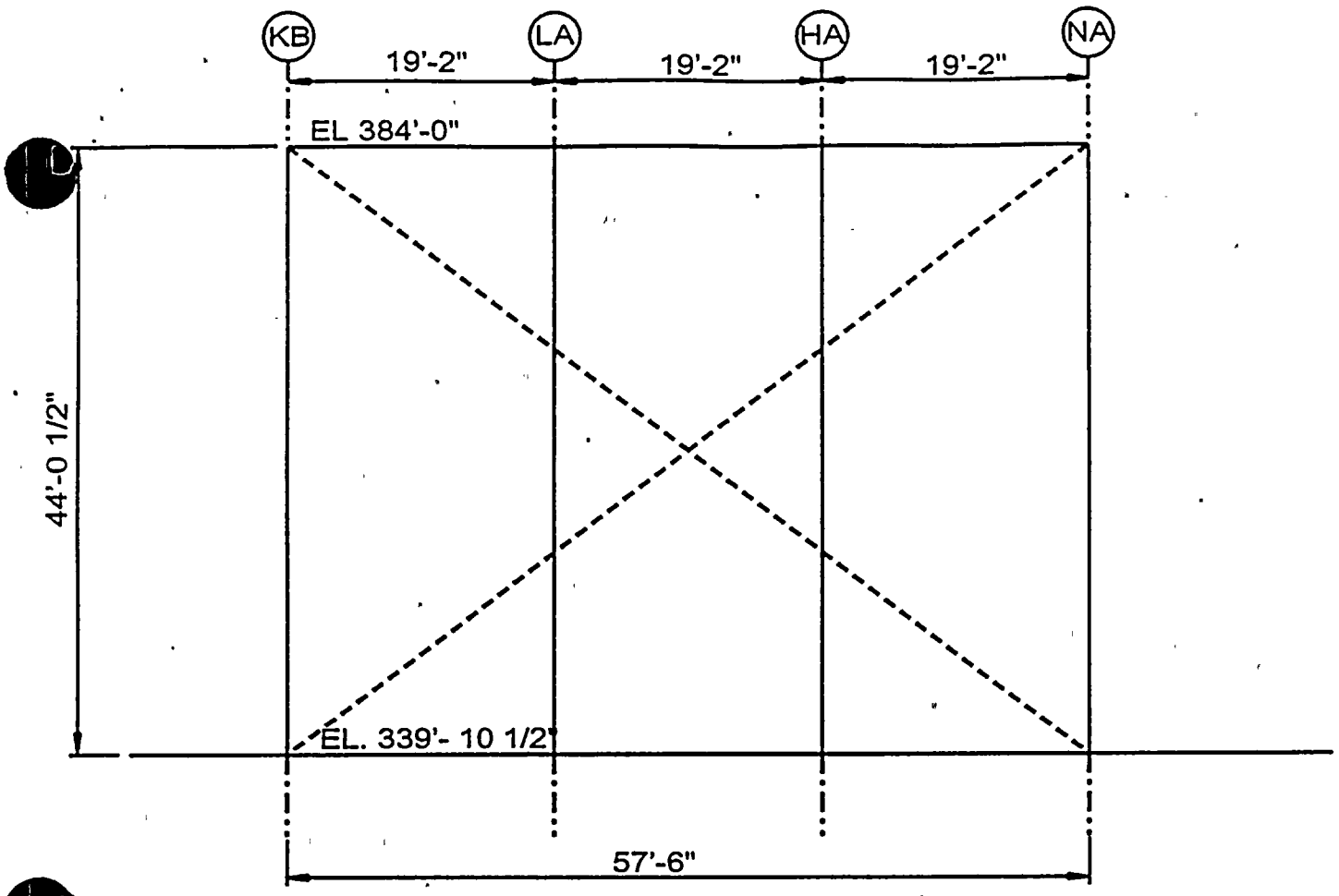
Reportability 1993 & 1995 . . . . . (Rademacher)

Procedure Compliance . . . . . (Yaeger)

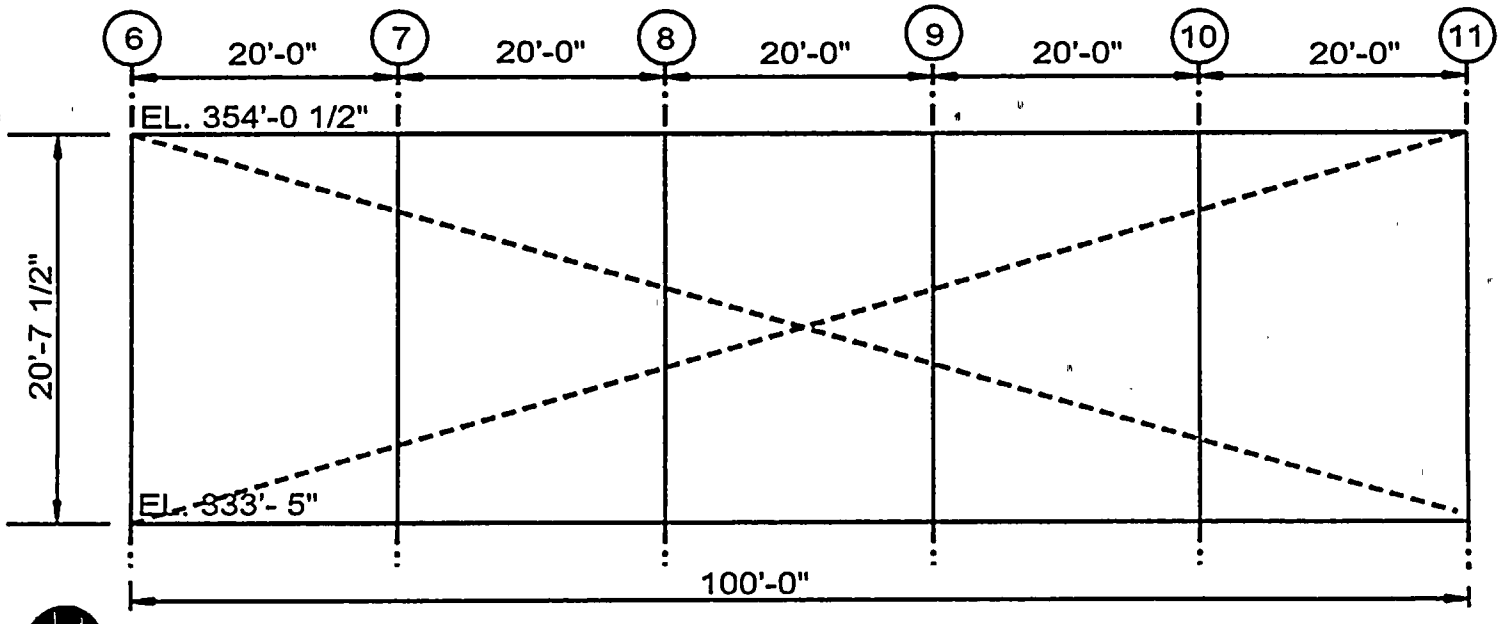
Summary of Apparent Violations & Corrective Actions . . . . . (Abbott)

Concluding Comments . . . . . (Sylvia)


TURBINE BUILDING BLOW-OUT PANELS
REACTOR BUILDING BLOW-OUT PANELS
STACK
SCREEN & PUMP HOUSE
FOR DETAIL OF OFF GAS BLDG AND WASTE BLDG EXTENSION SEE EAST ELEVATION THIS SHEET
EAST ELEVATION



REACTOR BUILDING PRESSURE RELIEF WALL PANELS
(ELEVATION LOOKING EAST)



TURBINE BUILDING PRESSURE RELIEF WALL PANELS
(ELEVATION LOOKING NORTH)

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

SUMMARY TIMELINE

August 1993	Engineering completes calculation to resolve minor FSAR discrepancy (45 psf vs. 40 psf)
October 1993	Blowout panel bolts pulled to verify calculation assumptions; Bolts identified as 1/4 inch vs. 3/16 inch
October 1993	Calculations revised using 1/4 in. bolts; blowout pressures stated as 53 psf (RB) and 60 psf (TB)
	DER 1-93-2526 initiated; operability determination performed; DER disposition and scheduled for implementation by 6/30/95 (after RFO-13); determined not reportable
March 1995	DER reviewed for Unit 1 restart; error found in calculation; revised blowout points >90 psf
	Blowout panels declared inoperable; design change with applicability review implemented; bolts removed to restore 45 psf blowout point; determined not reportable
June 1995	DER 1-93-2526 required SORC review; directed re-review reportability
July 1995	SORC review and closure of DER 1-93-2526; determined not reportable
August 1995	Operations personnel question reportability determination
October 1995	Management review meeting held on issue; Plant Manager decides event is reportable; DER 1-95-3012 issued
November 1995	LER submitted

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

STRUCTURAL DESIGN BASIS

- Original FSAR
  - Turbine Bldg./Reactor Bldg. blowout panels described; intended to protect building superstructure - assumed MS & EC line break
  - Predated GDC-4
  - No design basis pressurization loads (no load combination includes pressurization loads in FSAR)
- NRC requests evaluation of extent of conformance to GDC-4 in December 1972
  - Series of questions/correspondence
  - NMPC provides justification of safe operation primarily based upon redundance, separation and design for adverse environmental conditions
  - NRC issues SER in June 1974
  - Building pressurization not addressed
    - Main steam tunnel subcompartment is addressed

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

STRUCTURAL DESIGN BASIS

- Bulletin 80-11 issued in May 1980
  - Requests input relating to masonry walls
  - Initial response primarily evaluated seismic effects
  - Further requests from NRC resulted in evaluation of pressurization loads due to HELB
  - NMPC evaluation of HELB in reactor and turbine building indicated that it was unnecessary to consider a double-ended pipe break as a design basis for defining pressurization loads
- Conclusions
  - Blowout panels are a FSAR described design feature in the event of reactor building or turbine building pressurization.
  - Main steam and emergency cooling line breaks are the postulated events considered in design of the panels.

BUT

  - Line breaks which cause such reactor and turbine building pressures are not design basis events for Unit 1.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

SAFETY SIGNIFICANCE

- Wall Panel Capacities (Reactor Building)
  - Metal siding ultimate strength is 149 psf
  - Blowout panel as found capacity = 93 psf

- Impact of 93 psf load on superstructure members (RB)
  - Roof purlin members 8% above allowable stress but below failure which is expected at 200 psf
  - Most columns remain below allowable stresses
  - Some columns are stressed above allowables but remain below yield
  - Column buckling could occur at 110 psf at ends of building
  - Would not result in building collapse

- Conclusions
  - Reactor and Turbine Building pressurization due to HELB is not a design basis event for NMP1
  - 93 psf actuation of blowout panels (RB) would have prevented superstructure failure due to pressurization
  - Negligible safety significance

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

UNIT 1 IPE REVIEW

- Inconsistencies in IPE
  - 40 & 45 psf - because 45 psf was "approximate" and both well below 80 psf, IPE team did not feel it was significant.
  - 36 psf inadvertently referenced - similar value used for NMP2 and several other BWRs.
- Risk Significance
  - HELB events of little risk significance due to low probability of occurrence - consistent with other risk assessments; e.g., NUREG-1150 and Oyster Creek PRA.
  - Numerous areas in Reactor Building judged to be capable of relieving pressure even if blowout panels fail. Similar judgements should be applicable to Turbine Building.
- Conclusions
  - Blowout panel design and operation are of little risk significance and the structural failure of the Reactor Building is an event of negligible probability.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

1993 DESIGN CONTROL DEFICIENCY

➡ Initial Calculation (August 1993)

- Used 3/16" Dia. bolts shown on Dwg/assumed A-307 material.
- Determined need for testing to confirm material assumption.
- One-way span analysis correctly concluded failure of 3/16" diameter bolts at ~40 psf.
- Two-way span analysis was also done which assumed incorrect load distribution.
- Two Engineering errors made:

  ① Calculation inappropriately contained two-way load analysis.

  ② Supervision failed to catch error.

➡ Calculation revised to incorporate test results (October 1993).

- DER 1-93-2526 issued documenting installation deficiency.
- One-way span analysis correctly concluded failure of 1/4" diameter bolts at 94 psf (RB) and 92 psf (TB).
- Two-way span analysis again used incorrectly and determined failure mode by tearing of sheet metal at 53 psf (RB) and 60 psf (TB).
- Three Engineering errors made:

  ① Two-way span analysis erroneously used to calculate panel failure and results used in operability determination.

  ② Resulting failure mode was inconsistent with FSAR description, i.e., metal tearing vs. bolt shearing.

  ③ Supervision failed to catch errors.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

1993 DESIGN CONTROL DEFICIENCY

- Corrective Actions

  - DER 1-93-2526 revised (March 1995) to document calculation error.

  - Structural engineering group coached/counseled at that time on responsibilities/requirements when preparing/checking/approving design documents.

  - Initiated independent review of Unit 1 Structural calculations/analysis.

  - Initiated review of DERs to ensure evaluation of plant deficiencies considered design basis described in the FSAR.

  - DER 1-96-0922 issued to address the corrective and preventive actions for human performance issues.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

POTENTIAL VIOLATION OF 10CFR50.59 - 1993

- Initial problem identification - October 1993
  - USAR deviation promptly documented via DER
  - Nonconforming condition evaluated for operability - determined that function of panels to protect superstructure maintained
  - Long-term fix to be determined based on comparison of cost for analyses to "accept as is" vice cost of repair.
  - DER closure scheduled for June 1995 based on low safety significance (panel still capable of performing function).
- Timeliness of corrective actions can be determined based on current operability and safety significance (NRC GL 91-18).
- 10CFR50.59 evaluation not required for interim conditions pending completion of corrective actions.
  - Not a change to the facility.
- Corrective action was not timely. Should have more promptly repaired or written 50.59 evaluation to justify this length of time.
  - Decision on schedule did not include plant management approval.
  - Corrective Action: DER process has been changed to improve plant management review and approval of dispositions.
- No reduction in safety margin
  - Based on NSAC 125 guidance margin of safety is difference between NRC acceptance limit (80 psf) and superstructure failure point.
  - Because 53 and 60 psf would maintain pressure below NRC acceptance limit hence no reduction in safety margin.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

POTENTIAL VIOLATION OF 10CFR50.59 - 1995

- Upon determination of calculation error in March 1995 blowout panels declared inoperable - plant in refueling outage.

- Modifications performed prior to restart.
  - Blowout panels reworked to meet 45 psf FSAR design description.

- Applicability review completed to determine need for 10CFR50.59 safety evaluation.
  - NMPC determination of no need for safety evaluation as facility would now be consistent with FSAR.

- Changes to FSAR structures, systems, or components which are beyond the level of detail included in the FSAR and which do not affect the function as described in the FSAR do not require a safety evaluation.

- Neither the FSAR panel function nor the FSAR description were affected, hence, no 10CFR50.59 safety evaluation was required.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

REPORTABILITY 1993

Potentially Applicable Rule

> 50.73(a)(2)(ii) "The licensee shall report...any event or condition...that resulted in the nuclear plant being in a condition that was outside the design basis of the plant."

Operability Information Provided by Engineering

Not Outside Design Basis Because Functional Goal of Blowout Panel Was Met

> Calculated Blowout Pressure (53 psf and 60 psf) Higher Than Stated in FSAR (45 psf)
>
> ***BUT***
>
> Less Than Building Structural Design Value (80 psf) Stated in FSAR

Meeting Functional Goal as a Reportability Basis Supported by Regulatory Guidance (FR 8/29/83, FR 4/8/93, NUREG 1022)

Based upon the information provided, we were in the design basis of the plant, and the event was not reportable.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

REPORTABILITY 1995

MARCH

Revised calculation indicated blowout panels were inoperable.

Panels modified to meet FSAR description during ongoing outage.

Reportability revisited by Shift Supervisor and Engineering
Pressure profile loads from a high energy line break outside containment not included in structural design; therefore, not reportable. This was an erroneous conclusion.

JUNE

SORC meeting reviewed DER and directed that reportability be re-evaluated.

JULY

SORC Meeting to review DER Closure and Reportability Evaluation
Design Basis improperly defined as only Design Basis Events. Failed to consider other Design Bases described in FSAR.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

REPORTABILITY 1995

OCTOBER

Decision by Plant Manager to report condition.

Considered FSAR in entirety; blowout panels are described in Design Basis Section of FSAR.

➡ Corrective Actions

- Ongoing Back-to-Basics Training covering Licensing Basis being conducted for each branch.

- Training on reportability (including NUREG-1022, 10CFR50.72 and 10CFR50.73) planned for key branches.

- Developing specific Lessons Learned for SORC concerning evaluation of reportability for Design Basis issues.

- Reviewing DERs for potentially reportable Design Basis issues.

- Evaluating supplement to LER.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

PROCEDURAL COMPLIANCE

- The calculation error identified in March 1995 was promptly incorporated in a revision of DER 1-93-2526.
  - Therefore, a separate DER was not needed.

- Certain management actions taken at that time not documented in DER 1-93-2526 (documented later in DER 1-95-3012).

- Engineering failed to take adequate corrective actions to address human performance issues relative to the calculational error.

- Corrective Action:
  - DER 1-96-0922 was initiated to address this failure and determine corrective/preventative actions for human performance issues.

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

SUMMARY OF APPARENT VIOLATIONS

① Calculation Error in 1993/Design Control

a. Agree with Apparent Violation

② Non-conforming Conditions Without a 50.59 Evaluation

a. Agree with Apparent Violation for 1993 on Timeliness but not Reduced Safety Margin

b. Disagree with Apparent Violation for 1995

③ Reportability Decisions 1993 & 1995

a. Disagree with Apparent Violation for 1993

b. Agree with Apparent Violation for 1995

④ Failure to Issue DER for Calculation Error

a. Disagree with Apparent Violation

NRC ENFORCEMENT CONFERENCE
NMP1 BUILDING BLOWOUT PANELS

SUMMARY OF CORRECTIVE ACTIONS

- Panel Attachment Design verified and modified
- Counseled Structural Engineering Group regarding calculation assumptions
- Conducting independent review of calculations performed by Structural Engineering since 1993.
- DER written to address human performance issues related to calculation error
- Improved DER process for management review and approval of dispositions
- Back-to-Basics Training being conducted for each branch covering Licensing Basis
- Training on reportability planned for key branches
- Developing specific Lessons Learned for SORC concerning evaluation of reportability for Design Basis Issues
- Reviewing DERs for potentially reportable Design Basis Issues
- Evaluating supplement to LER

ATTACHMENT B

NMPC HANDOUT

ENFORCEMENT CONFERENCE FOR

POSSIBLE DISCRIMINATION AGAINST A FORMER NMPC EMPLOYEE

NRC ENFORCEMENT CONFERENCE

EMPLOYEE DISCHARGE

May 10, 1996

Niagara Mohawk
Presentation

AGENDA

Introduction	B. R. Sylvia
Status of the Case	B. R. Sylvia
Rightsizing Process	K. M. Miles
Facts of the Case	C. D. Terry
Discussion of Findings of the Administrative Law Judge	C. D. Terry/ R. B. Abbott
Climate for Raising Safety Issues	R. A. Hall
Corrective Actions	R. B. Abbott
Enforcement History	B. R. Sylvia
Closing Remarks	B. R. Sylvia

STATUS OF THE DOL CASE

Mr. [redacted] notified of termination	February 15, 1994
Mr. [redacted] files with DOL	June 26, 1994
Wage & Hour Division, DOL finds no discrimination	October 21, 1994
Hearing before ALJ	December 20-21, 1994
ALJ issues Recommended Decision	March 15, 1996
Offer of Re-employment	May 3, 1996
Decision on damages expected	May 15, 1996

THE RIGHTSIZING PROCESS

- Reduced professional staff by 200 positions in 1993-1994

- Issues

  - Reductions were not equalized across branches
  - Develop a selection process to ensure fairness and retain the best talent

- Pool/Assessment

  - Branch Managers assessed and ranked personnel
  - Lower ranked personnel pooled and submitted to Review Board (20% in 1993 and 40% in 1994)

- Review Boards

  - Two boards with cross-section of Branch Managers headed by Vice President
  - Review process

    - HRD managed process to ensure fairness (no vote)
    - Personnel grouped by common skill sets
    - Board reviewed:

      - Branch Manager assessment and recommendation
      - Employee feedback
      - Resume data

THE RIGHTSIZING PROCESS (cont'd)

- Common for Board to disagree with supervisor's recommendation (80/320 - 1994)
- Each Board challenged the other's decisions
- Board was final factor in decision process

- By secret ballot voted to retain, terminate or hold pooled personnel

➠ Appeal process available - appeal to B. R. Sylvia

FACTS OF THE CASE

- Mr. [redacted] was hired in 1982 as a startup engineer
- Joined ISEG in 1989; was one of 9 individuals in group
- Duties identical to other ISEG engineers
  - Investigation
  - Evaluation
  - Identify Issues
  - Issue PRs/DERs
- Rightsizing program began in 1993
  - Eliminate 10% of all positions
  - Lower ranked 20% of individuals on a site basis identified for consideration
- In 1993, Mr. [redacted] was ranked in bottom 20% of group
  - Considered in rightsizing pool
  - Retained
- In 1994, a second round of rightsizing was begun
  - Eliminate 20% of all positions
  - Lower ranked 40% of individuals on a site basis identified for consideration

FACTS OF THE CASE (cont'd)

APPLICATION OF PROCESS TO ISEG

- Unit 2 Technical Specification requirement for 5 degreed engineers in ISEG would be satisfied
- Supervisor position would be counted against degreed engineer requirement
- Three individuals were technicians and did not meet the degree requirements for retention in ISEG
- One engineer's position would have to be eliminated
- Supervisor evaluated all engineers and selected three for consideration by the review process
  - Supervisor informed [redacted] that he was submitted for rotation (non-specific) only
  - Supervisor submitted Board evaluation forms - noting [redacted] ranked in lower 40%
- Review panel considered all candidates separately
  - Candidates given opportunity to provide feedback for Board's consideration ([redacted] did so)
  - Secret ballot
  - Selected [redacted] for transition

FINDINGS OF THE ADMINISTRATIVE LAW JUDGE

- Agree that Mr. [redacted] was a protected employee
- Mr. [redacted], as well as all other ISEG members, was directed by management to raise and evaluate safety issues and all did so
  - Persistence and dogged pursuit of issues are positive attributes for ISEG
- Four issues discussed in Judge's decision:
  - 1991 PR
  - 1993 DER
  - Evaluation of Operating Experience reviews
  - Containment Spray Systems - repeated safety evaluations
- Mr. [redacted] was not threatened with termination by Mr. Abbott
- Mr. [redacted], termination process was non-discriminatory
  - 1993 DER was not a consideration of Board; senior managers not aware of DER
  - Notified of consideration for transition
  - Feedback form submitted by [redacted]
  - [redacted]'s supervisor actions unfortunate
  - Board evaluation based on performance
  - Common for Board to conclude differently than supervisors

CLIMATE FOR RAISING SAFETY ISSUES

PROGRAMS IN PLACE

- DER program
  - 1994 3,588
  - 1995 3,423
  - 1996 (to date) 1,174
- Back to Basics training
- Technical training to improve knowledge levels
- Four 4-C's meetings per month
  - Compliments
  - Convictions
  - Concerns
  - Comments
- Town Hall meetings
- HRD breakfast
- Diversity Task Force
- Support for Q1P (employee concerns program)
- Normal safety oversight
  - QA
  - ISEG
  - SORC
  - SRAB

CLIMATE FOR RAISING SAFETY ISSUES
(cont'd)

QUALITY FIRST PROGRAM

- Program began 1984
- NIP-ECA-04 provides administrative control
  - Applies to employees and contract personnel
- Scope includes
  - Safety related issues
  - Quality related issues
  - Non-safety related issues
- Overall responsibility with Chief Nuclear Officer
- Program offers protection including confidentiality and anonymity
- Contact can be accomplished via:
  - Phone
  - Mail
  - Face to face visit
- Issues addressed to senior management with notification to NRC
- Available anytime; offered at termination
  - Concernee informed of issue resolution; opportunity to dispute results

CLIMATE FOR RAISING SAFETY ISSUES
(cont'd)

- If disputed, goes to Chief Nuclear Officer for final decision

➠ Statistics to date

- 1994 24
- 1995 31
- 1996 (to date) 3

CORRECTIVE/PREVENTIVE ACTIONS

➡ Station standdown by end of June 1996

- Open climate depends on effective management and oversight, not a single program
- Re-emphasize rights and responsibilities to raise safety issues
- Effective self-identification/assessment
- Management reinforcement at all levels of the value of reporting issues to improve performance
- Re-emphasize availability of Q1P

ENFORCEMENT HISTORY

- Relatively few ERA §210/211 cases filed against Niagara Mohawk in past 12 years
- None have resulted in DOL finding of discrimination by Niagara Mohawk
- Intend to appeal the ALJ's decision in this case
- Positive record based on favorable environment for reporting issues
  - Encourage reporting without fear of intimidation, discrimination or harassment
  - Management committed to improvement through reporting

NIAGARA MOHAWK *NUCLEAR SBU* WORKSHEET

1994 MANAGEMENT EMPLOYEE ASSESSMENT

Branch Manager Ranking within group:

_____ of _____

Is position being rightsized: _____ Yes _____ No

Branch Manager recommendation: (choose one)

_____ Place in Transition Program

_____ Retain in current non-rightsized position

_____ Retain within another branch (*see below)

EMPLOYEE NAME: _____ JOB TITLE: _____

BRANCH: _____ MANAGER: _____

1993 PERFORMANCE EVALUATION LEVEL: _____ (currently being completed)

Assess the employee based on categories below using the following rating scale: 5 HIGHEST / 1 LOWEST; INSTRUCTIONS: 1) Current performance ratings shall match the annual performance evaluation being performed. 2) Flexibility and; 3) Potential shall be comparative ratings to others in your work group.

1) CURRENT OVERALL PERFORMANCE

a) RESULTS ACHIEVED	5	4	3	2	1
b) SKILL ASSESSMENT	5	4	3	2	1
2) COMPARATIVE FLEXIBILITY: A ready capability to adapt to new, different or changing requirements. Capable of fulfilling multiple responsibilities.	5	4	3	2	1
3) COMPARATIVE POTENTIAL: Possesses the experience and/or capabilities and willingness to take on additional responsibility to fulfill immediate business needs.	5	4	3	2	1

TOTAL OF RATINGS: _____ ← PLEASE TOTAL RATINGS & COMPLETE

PLEASE PROVIDE ADDITIONAL COMMENTS: PLEASE PRINT - MUST BE LEGIBLE

STRENGTHS:

LIMITATIONS:

** If position is rightsized and recommendation is retain in another Branch, please explain What Branch and Why?

NIAGARA MOHAWK

EMPLOYEE FEEDBACK FORM

NAME: _____ BRANCH: _____

Identify significant accomplishments during your career at Niagara Mohawk:

Identify your key skills and/or experience:

Additional comments:

In addition to other information, this form will be reviewed by the Review Board. Please limit your feedback to this page only. Completion of this form is voluntary. If you choose to do so, please forward to:

Kathy Miles
O-2 , NMP2
NO LATER THAN JANUARY 28, 1994

WORKSHEET

EMPLOYEE ASSESSMENT

Branch Manager Ranking within group:

6 of 8

Is position being rightsized: ____ Yes X No

Branch Manager recommendation: (choose one)

____ Place in Transition Program

X Retain in current non-rightsized position

____ Retain within another branch (see below)

[ISEG ROTATIONAL POSITION]

EMPLOYEE NAME: [redacted] JOB TITLE: ENGINEER 3 (Mechanical)

BRANCH: NUCLEAR ENGR (ISEG) MANAGER: ____

1993 PERFORMANCE EVALUATION LEVEL: Fully Competent (III) 14.3 (currently being completed)

Assess the employee based on categories below using the following rating scale: 5 HIGHEST / 1 LOWEST; INSTRUCTIONS: 1) Current performance ratings shall match the annual performance evaluation being performed. 2) Flexibility and; 3) Potential shall be comparative ratings to others in your work group.

1) CURRENT OVERALL PERFORMANCE					
a) RESULTS ACHIEVED	5	4	(3) 3.0	2	1
b) SKILL ASSESSMENT	5	4 (3.8)	3	2	1
2) COMPARATIVE FLEXIBILITY: A ready capability to adapt to new, different or changing requirements. Capable of fulfilling multiple responsibilities.	5	(4) 4.0	3	2	1
3) COMPARATIVE POTENTIAL: Possesses the experience and/or capabilities and willingness to take on additional responsibility to fulfill immediate business needs.	5	4 (3.5)	3	2	1

TOTAL OF RATINGS: 14.3 ← PLEASE TOTAL RATINGS & COMPLETE

PLEASE PROVIDE ADDITIONAL COMMENTS: PLEASE PRINT - MUST BE LEGIBLE

STRENGTHS: Top level Computer skills & Analysis Techniques capable of reviewing any type of work and completing the required effort. Good level of experience in Startup, I&C and Mechanical Areas. Very flexible in adapting to changes.

LIMITATIONS: Rated in lower 40% to quantify only reason for submittal (verbal skills with others sometimes difficult)

TO Be Reviewed as a ROTATIONAL POSITION with ANOTHER Generation or Engineering Position only reason for Submittal to the Board Review Process

** If position is rightsized and recommendation is retain in another Branch, please explain What Branch and Why?

System Engineering, Mechanical Engineering, I&C, QA, Tech Services,