

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

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Licensee: Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Facility: Nine Mile Point, Unit 1

Location: Scriba, New York

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Inspectors: T. Johnson, Senior Resident Inspector, Peach Bottom
W. Cook, Senior Resident Inspector, Nine Mile Point
L. Plisco, Senior Assistant to the Deputy Director, NRR

Approved By: Glenn W. Meyer 11-22-89
Glenn W. Meyer, Chief date
Reactor Projects Section No. 1B
Division of Reactor Projects.

Summary of Results: The special team inspection of the Readiness for Restart Report and the Niagara Mohawk self-assessment on which the report was based concluded that the self-assessment was thorough and effective. However, the team expressed concern to Niagara Mohawk management regarding whether the facility was ready for the planned NRC integrated assessment team inspection (IATI) due to Niagara Mohawk identified issues and the amount of remaining work prior to restart. An Executive Summary is provided in Section A.



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Attachment 1 - Persons Contacted

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A. EXECUTIVE SUMMARY

A special team inspection reviewed Niagara Mohawk's readiness assessment process to evaluate its effectiveness and thoroughness. The team reviewed specific areas of the assessment and found evidence of thorough assessments. The team concluded that the Niagara Mohawk assessment process was comprehensive, thorough, and effective. The effectiveness of field implementation of corrective actions was planned to be assessed during the subsequent NRC integrated assessment team inspection (IATI).

The team identified the following assessment strengths and weakness.

Strengths

1. Effective involvement of and interactions among line management, assessors and panel members (Section D).
2. Development of detailed assessment plans (including criteria) by each area assessor including the ability to modify these plans (Section D).
3. Effective use of performance based data collection techniques such as interviews, observations, meeting attendance and document reviews (Section D).
4. Independence and qualifications of the assessors, the staff director, the area coordinators and panel members (Section D).
5. Recognition by senior management of the need for the Independent Assessment Group (IAG) (section E.4).

Weakness

1. Limited depth of assessment in the areas of quality assurance (QA) and oversight review committees (Section D).

Also, the team concluded that the Restart Readiness Report did not totally reflect the extensive depth of the assessment process, which became evident only after the team's interviews and review of backup material. (Section D).

The team noted that many of the corrective actions resulting from the Restart Action Plan (RAP) appeared to have been newly installed. Accordingly, the team could not assess the effectiveness of such actions. This was particularly true in the underlying root causes (URCs) of problem solving and standards of performance/self-assessment.



Further, there were numerous open issues identified by the self-assessment process whose associated root cause(s) and related corrective action(s) may not be bound by the Restart Action Plan (RAP) or the Restart Readiness Report (Section E). Examples included: (1) 125 VDC resolution and root cause analysis (Sections E.2, E.9), (2) 1981 radwaste spill cleanup and root cause analysis (Section E.2), (3) Unit 2 operator requalification program failures (root cause and effect on management issues) (Section E.6), and (4) configuration control/design bases (Sections E.7-E.9).

Any problems in implementing the corrective actions effectively and the resolution of these open issues could potentially affect the restart schedule. Based on this and the large amount of work remaining prior to restart, the team expressed concern to Niagara Mohawk management regarding the readiness of the facility for the NRC IATI, planned for October 4-20, 1989.

B. BACKGROUND

In December 1987 Nine Mile Point Unit 1 (NMP-1) was shut down following excessive vibration in the feedwater system. During the shutdown, Niagara Mohawk Power Company (Niagara Mohawk) committed to resolve identified problems associated with the Inservice Inspection Program. In the course of the outage, additional technical and programmatic deficiencies were identified by Niagara Mohawk and the Nuclear Regulatory Commission (NRC). These deficiencies led to the issuance of Confirmatory Action Letter (CAL) 88-17, dated July 24, 1988. The CAL specified that NMP-1 would not be restarted until the root causes were determined of why Niagara Mohawk management had not been effective, a restart action plan had been submitted addressing the corrective actions for the root causes, and a written report had been provided on the readiness of NMP-1 to restart, including a self-assessment of the restart action plan.

Niagara Mohawk formed a special task force to prepare a comprehensive Restart Action Plan (RAP), which was submitted to the NRC on December 21, 1988. The RAP identified five underlying root causes (URCs) for the management effectiveness problems and eighteen specific issues. The plan described the identified problems, their root causes, and the planned corrective actions.

While the Restart Action Plan corrective actions were being implemented, Niagara Mohawk assembled the Restart Review Panel (the panel) to perform the required restart readiness self-assessment and to prepare a report presenting the results of that self-assessment. The resulting Restart Readiness Report represented a comprehensive evaluation of the corrective actions in the RAP and was submitted on September 8, 1989. The report stated that NMP-1 could be safely restarted and operated, subject to completion of certain corrective actions.



An NRC special team inspection of Niagara Mohawk's restart readiness assessment process and the basis for their conclusions was conducted at the NMP-1 site during the period of September 25-29, 1989. The special inspection team (the team) was composed of two Senior Resident Inspectors from Region I and a Special Assistant from Nuclear Reactor Regulation. This inspection report documents the results of the team inspection.

C. PURPOSE

The purpose of this inspection was to evaluate the thoroughness and effectiveness of Niagara Mohawk's readiness assessment as documented in the September 1989 Restart Readiness Report. To evaluate the readiness assessment process, the team reviewed all five URCs and selected six of the eighteen specific issues to review in detail. This detailed review involved the examination of the assessment conclusions and recommendations, supporting information and data, and interviews with members of the Restart Review Panel, assessors and line management.

Further, the team evaluated Niagara Mohawk's progress toward restart, both in terms of completing work needed prior to restart and of developing its ability to self-identify and effectively correct problems, to determine whether the NRC integrated assessment team inspection (IATI) scheduled for October 1989 remained appropriate. The overall effectiveness of the field implementation of the RAP was planned to be assessed during the IATI. Accordingly, the team did not review the technical adequacy nor the effectiveness of corrective actions.

D. SELF-ASSESSMENT PROCESS

1. Niagara Mohawk Process

The principal elements of Niagara Mohawk's self-assessment were the Restart Review Panel, supported by a staff consisting of a staff director, assessment area coordinators, area assessors and interviewers. In addition, specific line managers were assigned responsibility for specific tasks. The panel consisted of three Niagara Mohawk individuals and three non-Niagara Mohawk individuals. The panel's experience was broadly based including: Niagara Mohawk Executive Vice President Nuclear Operations, Niagara Mohawk Vice President Consumer Services, Niagara Mohawk Vice President QA, Illinois Power Company Senior Vice President, Rochester Gas and Electric President, and a consultant.



The panel focused the self-assessment process on determining the effectiveness of the Restart Action Plan (RAP) corrective actions by developing a set of bases for assessing restart readiness. Together these bases described the conditions expected prior to the plant restarting. The panel viewed the bases as positive descriptions of conditions which would support safe nuclear plant operation, in contrast to the negatively stated deficiencies identified in the RAP. For each of these bases, one or more targets were developed to act as measuring criteria. Together, the bases and targets provided a results-oriented method to measure the effectiveness of the corrective actions.

The self-assessment process involved gathering, analyzing, and synthesizing facts to determine the adequacy of corrective actions. The self-assessment utilized interviews, documentation audits, performance reviews, and direct observations throughout the plant, Training Center and other nuclear related facilities.

Niagara Mohawk reviewed and assessed three primary areas composed of the five underlying root causes (URCs), the 18 specific issues, and five NRC generic restart criteria. Each of the areas reviewed had a principal assessor, a task sponsor, and a designated panel member, who acted as an advisor. The effort was supported by a staff director, three primary area coordinators, and interview and assessment personnel. The panel advisors met with the area assessors, coordinators and task sponsors numerous times. The panel met approximately on a monthly basis from April to September 1989.

Following identification of all of the issues requiring corrective action, the actions required to be closed prior to restart were defined. All of the required actions, if not complete, were evaluated to ensure a plan was in place to correct the item and was being tracked by a formal mechanism. Many of the long term issues were included in the Nuclear Improvement Program. Acceptance of delaying improvements until after restart was contingent upon having interim controls in place before restart.

2. NRC Review and Conclusions

The team reviewed the Niagara Mohawk self-assessment process as follows:

- Reviewed the Restart Readiness Report
- Reviewed backup documentation (see Attachment 2), including area final assessment reports
- Interviewed each panel member (in person or by phone)
- Interviewed the staff director, each area coordinator and selected area assessors and task sponsors (see Attachment 1)



The team noted that each assessor developed detailed assessment plans in order to validate the bases and targets. Each assessor worked closely with his panel advisor, and the assessment plans were modified as necessary. The plans and modifications are further discussed in the specific area reviews of this report (Section E). The team concluded that the assessment plans represented a strength of the assessment.

The team reviewed the qualifications, experience and independence of the assessors, panel members, area coordinators and staff director. The panel composition included a mix of well qualified Niagara Mohawk and non-Niagara Mohawk personnel. The assessors and area coordinators were also noted to be well qualified, and most were independent. The team concluded that the independence and qualifications of the assessment personnel represented a strength of the assessment.

Based on interviews and document review, the team concluded that there was effective interaction among the panel members, assessors and task sponsors/line management. The interactions are further discussed in the specific area reviews of this report (Section E). The team concluded that the interactions among assessment personnel represented a strength of the assessment.

Niagara Mohawk utilized independent interviewers to provide feedback to the assessors for each area. The assessors and the panel members also interviewed personnel, attended meetings, observed activities and reviewed documentation. The effective use of such performance based data collection techniques, independent of the line organization, was considered a strength.

The quality assurance (QA) organization was utilized in data collection and the Niagara Mohawk Vice President - QA was a member of the panel. However, the QA function was not specifically assessed by the panel. Also, oversight review committees (e.g., Station Operations Review Committee, Safety Review and Audit Board) were used as a tool for the process, but they were not themselves directly assessed. The team concluded that limited assessment of both the QA functions and oversight review committees was a weakness of the self-assessment process.

The team was unable to fully understand the entire self-assessment process by reviewing the Restart Readiness Report. Only after reviewing the backup documentation, primarily the final assessment reports for each area, and by interviewing the personnel involved in the process, was the team able to assess the process. In summary, the Restart Readiness Report did not totally reflect the extensive depth of the assessment process.



E. SPECIFIC AREA REVIEW

1. Underlying Root Cause 1 - Planning and Goal Setting

The RAP determined that "the management tasks of planning and goal setting have not kept pace with the changing needs of the Nuclear Division and with changes within the nuclear industry."

1.1 Niagara Mohawk Review

The principal assessor for this area met with the area coordinator, panel advisor and task manager/sponsor. Discrete bases and targets were developed to ensure that the root cause had been addressed and to measure the effectiveness of corrective actions. This detailed assessment plan was then reviewed by and modified as necessary during panel meetings.

Verification actions included interviews with personnel, attendance at meetings, surveys of managers and direct reports, and review of documentation. The assessor concluded that the targets were either completely met or adequate progress had been made. During the first and second panel meetings, progress was noted as being slow in meeting the targets for this URC. However, at the final panel meetings, the assessor concluded that a business plan was in place; printouts were established; a nuclear vision, mission and goals were developed and communicated to the organization; management was setting a good example through leadership; and a nuclear commitment tracking system and integrated priority system were part of the long range Nuclear Improvement Program. Three open items for this URC were identified. These dealt with a process for notification of a commitment prior to its due date, and approval and training for the integrated priority system and implementing procedures.

Niagara Mohawk concluded that the restart basis had been met by reviewing the status and progress of each target. In particular, management had adequately communicated vision and mission goal statements, senior management had reinforced performance standards for the individual, and adequate progress had been achieved towards an integrated priority system.

1.2 NRC Conclusion

The assessment process for this URC appeared to be thorough. There was effective interaction among the task manager, assessor and panel advisor. The team interviewed the assessor in this area. Although progress had initially been slow, Niagara Mohawk



appeared to have recognized this, and had taken additional and stronger actions to ensure management and personnel were making progress. Overall, Niagara Mohawk conducted a comprehensive review of this area and provided reasonable assurance that the root cause was addressed.

2. Underlying Root Cause 2 - Problem Solving

The RAP determined that "the process of identifying and resolving issues before they become regulatory concerns was less than adequate in that there was not an integrated or consistent process used to identify, analyze, correct, and assess problems in a timely way."

2.1 Niagara Mohawk Review

To address this URC and provide the organization with a target for resolving the consequences of the root cause, Niagara Mohawk established a corrective action objective. The objective was to develop and implement an integrated and consistent problem solving process by which issues are effectively identified and analyzed, and corrective actions are implemented and assured in a timely way. In order to assess the viability of the problem solving process, certain targets were established to measure whether the corrective action objective had been met. The principle assessor for this issue developed a detailed assessment plan, clearly defining the approach to assess each of the specific targets. The assessment consisted of documentation reviews, interviews, audits and observations of activities. The assessment focused on the identification and determination of root cause, prioritization, implementation and assessment of effectiveness. Early in the assessment, the assessor determined that the corrective action end of the problem solving process was not effective. The assessor found that the principle deficiencies were: 1) an inability to prioritize a broad range of problems; and 2) an inability to fully implement the resolution of a problem.

During the preliminary assessment, the assessor noted that the corrective actions established for the RAP provided for a comprehensive identification of past and current problems, but these corrective actions did not adequately specify the process by which issues are effectively analyzed and corrective actions are implemented and assessed in a timely way. In response, additional targets were formulated to provide assurance that the objective would be fully and effectively met. The preliminary assessment also found that the Independent Assessment Group (IAG) charter did not indicate a focused emphasis on problem solving. The final IAG charter was revised to explicitly identify that problem solving was a target of the evaluation process.



Later in the assessment process, the panel discussed two issues which were added as open items. At the September 1, 1989 panel meeting, there was a discussion of the radwaste spill which occurred in 1981. The panel determined that management attention should have been immediately focused on the problem to expedite the cleanup. Following the discussion, the panel directed the line organization to perform a root cause analysis prior to restart of why the spill was not cleaned up expeditiously. The panel also discussed Specific Issue 18, which had experienced delays in completing corrective action milestones, and directed that a root cause analysis be performed to determine why the issue had not been closed earlier. Niagara Mohawk stated that the resulting root causes would be checked to confirm that they were covered by the remedial action already underway.

Niagara Mohawk determined that the results of the assessment indicated that past and current performance limiting deficiencies had been identified and were being resolved through self-assessment of past performance and implementation of appropriate corrective actions. The assessment concluded that substantial progress had been made relative to problem solving. The final assessment found that certain enhancements were still in the early stages, but the problem solving process had developed enough to meet the intent of the targets, and therefore, supported restart of Unit 1.

2.2 NRC Conclusion

The assessment process for this URC included interaction between the task manager, principle assessor, and panel advisor. There was evidence of probing questions from the panel advisor and assessor and of the addition of issues to the open items, indicating a thorough assessment of the problem areas. The review was of broad scope and was not limited to the specific corrective actions in the Restart Action Plan.

A large number of individual systems for identification and tracking of problems remained. Niagara Mohawk was making efforts to integrate the systems in order to provide the hierarchy to accommodate lower tier department level procedures and to provide for evaluation of deficiencies.



Actions were initiated to provide a uniform prioritization process and to establish a mechanism for assuring that problems were fully and effectively resolved. These activities included an integrated priority system and classification of responsibilities for resolving problems. These activities represented a significant enhancement in the tools available for problem solving, but were predicated on effective implementation of the initiatives in place.

Niagara Mohawk conducted a comprehensive review of the problem solving process and provided reasonable evidence and assurance that these issues were appropriately addressed. However, many of the corrective actions had been only recently implemented, or deferred into the Nuclear Improvement Program, and the effectiveness of the upgraded program had not been assessed. The IAG appeared capable of performing an important role in continuing to assess the implementation of this program.

The team was concerned that two open items which involved the performance of root cause analyses could potentially exceed the scope of the five URCs. Since the analyses had not been completed, it could not be verified that the causes of the two events were bounded by the actions already taken in the RAP.

3. Underlying Root Cause 3 - Organizational Culture

The RAP determined that "management's technical focus has created an organizational culture that diverts attention away from the needs and effective use of employees."

3.1 Niagara Mohawk Review

The principal assessor for this area met with the area coordinator, panel advisor and the task manager/sponsor. Discrete bases and targets were developed to measure the effectiveness of corrective actions. A detailed assessment plan was then presented to the panel.

The assessment process included interviews with personnel, and attendance at town hall and employee meetings. Employee feedback on the RAP was initiated. Managers' skills in the area of personnel practices were assessed and determined to be satisfactory. Communication skills and conflict resolution were noted as showing improvements. Team building and coaching skills were noted as being improved.



Niagara Mohawk concluded that the restart basis and targets were met. There were significant actions taken. Observed behavior demonstrated a positive change in culture. A "Management By Walking Around" program was being advocated from senior management. Self-assessment was accepted and practiced throughout the organization. The communication process had improvements up and down the chain of command.

3.2 NRC Conclusions

The assessment process for this URC appeared to be thorough and adequate. The team interviewed the assessor, task sponsor and panel members. All individuals noted an improvement in organizational culture as reflected by a change in behavior by the entire organization. Overall, Niagara Mohawk appeared to adequately assess this area.

4. Underlying Root Cause 4 - Standards of Performance and Self-Assessment

The RAP determined that "standards of performance have not been defined or described sufficiently for effective assessment and that self-assessments have not been consistent or effective."

4.1 Niagara Mohawk Review

The standards of performance were established earlier this year and published for broad dissemination to all Nuclear Division personnel. The assessors for this URC determined early in the self-assessment that the Division's chain of command was not fully embracing the standards and were neither communicating nor overtly incorporating these standards into their day-to-day routines. Towards the end of the self-assessment process, the assessors were observing many examples of management modeling the standards of performance and workers challenging their supervisors on their implementation of these standards. The level of awareness of the standards was determined to be much higher via interviews performed later in the self-assessment process.

Similarly, the assessors found that in the early phases of the assessment, the majority of Nuclear Division personnel were not utilizing the self-assessment processes. These findings were discussed at the June and July Restart Review Panel meetings and at subsequent Executive Vice President's direct report meetings.



In later phases of the assessment, the assessors and panel members identified improvement in this URC. However, to ensure continued progress in this area the Chairman called for the formation of the Independent Assessment Group (IAG). The purpose of the IAG was to act as a catalyst to incorporate self-assessment into Nuclear Division daily routines and to monitor the effectiveness of the same thorough independent assessments.

4.2 NRC Conclusion

Niagara Mohawk's assessment of the effectiveness of their corrective actions and progress in the resolution of this URC was thorough. Interviews with the assessors and panel members supported the conclusion that these URC corrective actions have been slow in being implemented and integrated into the daily work practices. The progress in achieving any success in this area has come at the prompting of the panel and self-assessment team. This was further evidenced by the development of the IAG, which appeared capable of emphasizing the need for continuous self-assessment and, for a certain period of time, formalizing that process. The team concluded that senior management's recognition of the need for the IAG represented a strength of the assessment process.

In summary, Niagara Mohawk conducted a thorough assessment of this URC and has taken measures to reasonably ensure a lasting change in the overall performance standards and self-assessment abilities of the Nuclear Division.

5. Underlying Root Cause 5 - Teamwork

The RAP determined that "lack of effective teamwork within the Nuclear Division and with support organizations is evidenced by the lack of coordination, cooperation, and communication in carrying out responsibilities."

5.1 Niagara Mohawk Review

The assessors and panel members identified significant progress towards teamwork. This was evidenced by individuals and groups observed to be effectively working together to make decisions and solve problems.



Assessment team interviews demonstrated that Nuclear Division employees were aware that effective coordination, communication and cooperation are essential to meet the Nuclear Division visions and goals. Virtually every interviewee reported that teamwork had improved during the past year. Although progress had been observed, additional enhancement was needed in the area of timely feedback, especially at the supervisor/worker level.

5.2 NRC Conclusion

The assessment process for this URC appeared to be thorough. The team determined that the assessor, task manager and panel advisor worked closely together to evaluate and accurately assess the progress in this area. Based on review of the backup material, preliminary, interim and final assessments, and an interview with the task manager and assessor, the team concluded that Niagara Mohawk had exhibited continuous progress throughout the self-assessment process. The Integrated Team, consisting of middle managers, and Operations Training Program Advisory Committee (OTPAC), consisting of operators and trainers, modeled, early on, the teamwork standards desired in the entire Division. The senior management team was observed to be slower to improve their team building abilities.

In summary, Niagara Mohawk conducted a comprehensive assessment of this URC with numerous observations to support their final conclusion that this area was satisfactory for unit restart.

6. Specific Issues 2 and 3 - Operator Licenses and Emergency Operating Procedures (EOPs)

The RAP determined that operator licenses were not maintained in accordance with regulations and that implementation of EOPs in response to events was less than adequate.

6.1 Niagara Mohawk Review

The principal assessor met with the area coordinator, the panel advisor and the task sponsor/manager. Discrete, measurable targets were established and accepted by the panel. This detailed assessment plan was modified as required and then implemented.



Verification actions included direct observation in the control room, training classes, simulator evolutions, and operator/training meetings; interviews with operators, training personnel and operations/training management; reviewing revised administrative procedures and EOPs; verifying training records, including instructor qualifications; and verifying that processes were in place to prevent recurrence.

Niagara Mohawk concluded that there was assurance that operators have demonstrated a professional attitude in identifying and resolving concerns associated with maintaining their licenses, and they understand and accept rising performance expectations. The conflict between operations and training personnel has been resolved. Niagara Mohawk also concluded that results are sufficient to provide assurance to management that EOP issues related to operator training and qualification, procedures and processes, and hardware deficiencies will not have an adverse effect on safe plant operation.

6.2 NRC Conclusion

The assessment process for these specific issues appeared to be thorough. The team interviewed the assessor, the task sponsor and the panel advisor. The assessor's qualifications included previous operations management experience and a senior reactor operator (SRO) license. The assessor verified operations management ownership of these two issues. The team noted that the assessor used various performance based techniques to arrive at his conclusion. The team questioned why the Unit 2 operator requalification failures were not reflected in the Unit 1 operator assessment. The assessor stated that the final assessment reports for these two issues did address this concern; however, the Restart Readiness Report did not address this issue. This was another example where the report did not reflect the depth of the assessment. Also, a root cause analysis for these Unit 2 failures was still in progress. Any root causes and corrective actions may not be bound by the URCs in the RAP. This appeared to be a potential problem regarding Niagara Mohawk restart schedules and the planned NRC IATI.

7. Specific Issue 6 - Fire Barrier Penetrations and Specific Issue 14 - Safety System Functional Inspection

While installing a modification in March 1988, a wooden plug was discovered in a fire barrier under the Unit 1 battery rooms. Further investigations identified additional fire barrier penetrations that deviated from the design requirements. In some cases the material used to fill the penetrations was inadequate, and in other cases the



design of the penetration itself was either inadequate or untested. In September 1988, an NRC Safety System Functional Inspection (SSFI) was conducted at Unit 1. This inspection identified deficiencies in the Core Spray System. Both of these specific issues involved complex design bases issues.

7.1 Niagara Mohawk Review

The principal assessor for these issues developed detailed assessment plans, following review of the applicable documentation and commitments. The corrective actions and verification actions were broken into discrete elements in the plans and were clearly defined. The assessor identified several commitments which were not specifically included in the Restart Action Plan and additional verification actions to further define the adequacy of the verification actions. The plans were further modified to ensure that the established restart readiness targets were met. The assessor reviewed the plans and targets with the task managers and met with those assigned verification actions to ensure the expected conditions were understood by the verifiers. The assessor had discussions with the lead panel members for the issues, as well as the Restart Review Panel. Comments from the panel members were included in the assessment plans.

For the fire barrier penetration issue, the assessment included review of the walkdown specification, work packages, computer data bases, drawings, and procedures. The assessment process included interviews with individuals involved with fire protection to determine if additional problems existed. The results of the interviews were reviewed by the assessor and several additional issues were identified for followup. In addition, problem reports were reviewed, QA involvement was assessed, and a Safety Review and Audit Board audit was reviewed. During the fire barrier penetration assessment, the assessor determined the need for an independent consultant. The consultant was used to review the results of the fire barrier walkdowns and to evaluate the adequacy of the issue resolutions.

For the SSFI issues, the assessor reviewed documentation related to the issue and interviewed key individuals involved in the resolution of the issue. The assessor found the required calculations and analysis completed and adequate to resolve the concerns. Necessary modifications required before restart and set-point changes resulting from the calculations and analysis were



initiated and scheduled to be completed prior to restart. Procedures and specifications were revised to strengthen the control of design configuration in order to prevent further deficiencies. A comprehensive plan for design basis reconstitution was established. Supplemental reviews were performed by independent parties of the SSFI documentation and the history of the loss of coolant accident (Appendix K) calculations.

During the course of the evaluations, periodic feedback to the task manager was provided concerning findings and results of interviews. Where appropriate, supervision was made aware of the assessors findings.

The assessment found that the corrective actions for both issues were satisfactory. All of the findings required for restart were resolved to the point where the assessor was confident that restart would not be affected. The panel concluded that the effectiveness of the corrective actions in the area supported restart of Unit 1.

7.2 NRC Conclusion

The assessment process for these issues included interaction between the task manager, principal assessor, and panel advisor. There was evidence of probing questions from the advisor and assessor and the addition of issues to the open items, indicating a thorough assessment of the problem areas. The reviews appeared to have a broad scope, not limited to the specific corrective actions in the RAP. The use of an independent consultant to review and validate conclusions for the fire barrier issue was a good initiative of this assessment. Another strong point noted was the review performed by the assessor of the URCs in this specific area reviews. For example, problems were identified with the problem report process, which were properly referred to the appropriate area for follow-up.

Niagara Mohawk conducted a comprehensive review of the fire barrier penetration and SSFI issues and provided reasonable evidence and assurance that these issues were appropriately addressed. However, a large number of open issues related to these issues remained to be closed prior to restart. The open items were being tracked adequately by a formal mechanism.



8. Specific Issue 17 - Inservice Testing

Niagara Mohawk implemented the first ten-year interval of the Inservice Testing (IST) Program in December 1979. In December 1985 a revision to the Unit 1 Q-list was made; however, the IST Program was not revised to reflect this Q-list change. As a result, certain ASME class 1, 2 and 3 safety related pumps and valves were not included in the first ten-year program testing.

Niagara Mohawk decided that rather than correct the deficiencies in the first 10-year program they would finalize and implement the second 10-year IST program prior to startup from the 1987-1990 refueling outage. The second 10-year program would correct all of the identified deficiencies of the first 10-year interval and implement the necessary administrative controls to ensure the program remained current and accurate.

8.1 Niagara Mohawk Review

To review this specific issue (SI) the assessor developed a detailed assessment plan which was closely adhered to throughout the self-assessment process. In addition, the assessor used an experienced engineer who had been responsible for the Unit 2 Inservice Testing Program. This engineer conducted an independent review of the second 10-year interval program. For further verification, the assessor contracted Bechtel Corporation to perform a detailed review of the core spray and reactor building closed loop cooling systems to ensure adequate inservice testing had been established. The results of this review indicated no errors by the Niagara Mohawk IST staff. The assessor met with the primary panel advisor and responsible task managers frequently throughout the self-assessment process.

8.2 NRC Conclusion

The team found that Niagara Mohawk conducted a thorough assessment of Specific Issue 17. Interviews with the assessor and primary panel advisor indicated that the five targets identified to assess this issue were comprehensive and sufficient to evaluate the corrective actions taken to address the deficiencies previously identified with the Unit 1 IST Program and its implementation. The team determined that the assessor was planned to be retained to evaluate the adequacy of the resolution of the self-assessment open items for SI-17.



9. Specific Issue 18 - 125 VDC

A December 1987 root cause analysis of a rapid degradation of the 125 VDC batteries #11 and #12 revealed the principle cause was the application of a low float and low equalizing charge since initial installation in 1981. During the preparation of the 10 CFR 50.59 review for a proposed resolution of this problem, the Niagara Mohawk staff identified the need for a complete review and verification of the 125 VDC electrical systems design basis. This design basis reconstitution effort identified several concerns regarding the ability of the installed batteries to perform their design function and thus, became a specific issue for Unit 1 Restart.

9.1 Niagara Mohawk Review

As discussed in the Restart Readiness Report, the resolution of Specific Issue 18 (SI-18) was slow and remained to be completed. As a result, the Chairman requested the Vice President of Nuclear Engineering and Licensing perform a root cause analysis of why SI-18 had not been closed earlier. Extensive review of the Restart Panel's assessment of this SI identified the following:

- Although the lack of effective action to resolve this SI was representative of many of the URCs identified for corrective action by the RAP, the panel concluded that this example was an isolated case and not representative of the overall progress and general improvement made to date.
- The panel concluded that the reasons for the slow resolution of SI-18 were bound by the URCs and their associated corrective actions.
- The Chairman requested the root cause analysis be performed and to reinforce the lessons learned from this specific management effectiveness concern.
- The panel observed that, upon recognition of the slow progress in resolving SI-18, Niagara Mohawk line management took appropriate corrective action, in their view, to address the immediate concern. This demonstrated to the panel, to some degree; the effectiveness of the URCs' corrective actions.



9.2 NRC Conclusions

The team concluded that Niagara Mohawk conducted a thorough assessment of the resolution, or lack thereof, of Specific Issue 18. The self-assessment process identified the lack of progress being made to appropriately resolve this concern. The assessor identified several additional action items concerning SI-18 that should be performed prior to restart. In addition, the assessor identified a long term programmatic enhancement to be incorporated after restart. The interaction of the assessor, primary panel advisor, and task manager appeared to have been effective in critically assessing the readiness to support restart of this specific issue. Although characterized as punitive action and reinforcement of the lessons learned, the formal root cause analysis to be conducted by Nuclear Engineering and Licensing could result in root causes and corrective actions not currently bound by the RAP. This appeared to be a potential problem regarding Niagara Mohawk restart schedules and the planned NRC IATI.

10. NRC Restart Guidelines

As part of Niagara Mohawk's overall assessment of Unit 1 Readiness for Restart, the five NRC guidelines for plant restart were considered. These guidelines were taken from an NRC memorandum, "Staff Guidelines Concerning Plant Restart Approval" by the Executive Director of Operations to the NRC Office Directors and Regional Administrators, dated November 23, 1988. These guidelines include the review of: Restart Plan (root causes identified and corrected); management organization; plant and corporate staff; physical state of readiness of the plant; and regulatory requirements.

10.1 Niagara Mohawk Review

Niagara Mohawk took these five areas and formed one readiness for restart basis to judge whether the unit was ready for restart. This basis was, "Results of corrective actions and plant improvement activities sufficiently address and satisfy NRC restart guidelines, such that all issues necessary to support readiness for restart and safe operation have been demonstrated and NRC approval for plant restart may be requested." Similar to the assessments of the URCs and 18 Specific Issues, Niagara Mohawk established specific targets for the five guidelines to measure progress and plant readiness. In addition, task managers/sponsors, assessors and primary panel advisors were assigned for each guideline. The assessment processes were much the same as the other issues.



The assessment concluded that in spite of the work still remaining to complete the RAP corrective actions, it appeared that the overall program was well controlled and processes were in place to sufficiently address each of the NRC restart guidelines.

10.2 NRC Conclusions

The assessment by Niagara Mohawk of this area was thorough. Based upon interviews with the area coordinator and the primary assessor and review of the supporting assessment documentation, the team concluded that this area assessment was effective in identifying some broader programmatic items requiring resolution prior to restart. The outstanding items are documented in Appendix 4 to the Restart Readiness Report. One item with significant impact on the restart schedule is the development of an engineering staff justification to provide assurance that the as-built design does not conflict with the safety design bases.

The scope of this self-assessment area was broader than the Restart Action Plan corrective actions and appeared to have provided further assurance that the unit will be ready for restart, both physically and programmatically. This initiative appeared to have been a good second, independent check of restart readiness.

F. OVERALL CONCLUSIONS

The team identified noteworthy strengths in the Niagara Mohawk readiness assessment process. A strength of the approach chosen by Niagara Mohawk was that it required independent assessors to develop bases and targets in their action plans to independently measure corrective action effectiveness. There was effective interaction between the assessors, line management, and panel members. The assessors used performance based criteria in finalizing their conclusions.

The assessors, area coordinators, panel and staff director were well qualified with noted independence. The panel also conducted in-plant visits, personnel interviews or records reviews in the areas considered in order to make their own independent assessment of readiness. Some reliance was also placed on the quality assurance personnel to fulfill this function. However, the depth of the assessment in the areas of QA and oversight review committees was limited.



The NRC team noted that a number of open issues were identified by the self-assessment process. The associated root causes and related corrective actions for these open issues may not be bound by the RAP or the Restart Readiness Report. These items may have an impact on the readiness for Unit 1 to restart.

The inspection team concluded that the September 8, 1989, report lacked sufficient detail and clarity to support the conclusions made by the assessors, Restart Review Panel and line management. Based upon further document review and interviews, the team determined that the readiness assessment process was much more detailed and thorough than described by the report.

In summary, based on the specific areas reviewed, the NRC team concluded that Niagara Mohawk had the essential components to self-assess activities. This was based on reviewing the Restart Readiness Report, associated final assessment reports, and by interviewing all panel members, all area coordinators, the staff director, and selected area assessors and task sponsors. The team did not review the technical adequacy nor the effectiveness of corrective actions.



ATTACHMENT 1

Persons Contacted

Panel Members

- * L. Burkhardt, III - NMPC Executive VP Nuclear Operations (Chairman)
- J. Ash - NMPC VP Consumer Services
- D. Hall - Illinois Power Company Senior VP
- J. Hendrie - Consultant
- R. Kober - Rochester Gas & Electric President
- * J. Perry - NMPC VP Quality Assurance

Others

- * A. Bernat, Manager, Information & Client Services
 - W. D'Angelo, Manager, Nuclear Consulting Services
 - * R. Halsey, Manager, System Protection Eng
 - * L. Kammerzell, Integrated Management Solutions
 - F. Lange, Manager, Business Planning
 - J. Larizza, Rochester Gas & Electric
 - C. Mangan, Sr. Vice President - Nuclear
 - * J. Martore, Tenera
 - D. Palmer, Manager Non Nuc. - QA Operations
 - * A. Tudury, Management Analysis Company
 - R. Vollmer, Tenera
 - * L. Zimmerman, Director, Corp. Performance Services
 - * J. Spadefore, NMPC
 - * W. Drews, NMPC
 - * R. Richards, NMPC
 - * M. Dooley, NMPC
 - * D. Stein, NMPC
 - * M. Colomb, NMPC
 - * B. Wolken, NMPC
 - * B. Burtch, NMPC
 - * C. Terry, NMPC
 - * J. Willis, NMPC
 - K. Dahlberg, NMPC
 - * K. Roenick, New York State Public Service Commission
- * Present at Entrance/Exit Meetings



ATTACHMENT 2

Documents Reviewed

- Restart Readiness Report, September 1989
- SALP Report 220/88-99, 410/88-99, May 22, 1989
- Special Team Inspection Report 220/89-200, 410/89-200, May 20, 1989
- Assessment Matrix, Revision 2, September 11, 1989
- Status of RAP Corrective Actions, dated September 19, 26, 1989
- NRC Restart Guidelines Assessment Handout
- Final Assessment Reports:

- Underlying Root Cause No. 1
- Underlying Root Cause No. 2
- Underlying Root Cause No. 3
- Underlying Root Cause No. 4
- Underlying Root Cause No. 5, August 29, 1989
- Specific Issue 2, August 30, 1989
- Specific Issue 3, August 30, 1989
- Specific Issue 6, August 30, 1989
- Specific Issue 14, August 30, 1989
- Specific Issue 17, August 30, 1989
- Specific Issue 18, August 30, 1989

