

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-220/89-15  
50-410/89-13

Docket No. 50-220  
50-410

License No. DPR-63  
NPF-54

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

Facility Name: Nine Mile Point Nuclear Station - Units 1 and 2

Inspection At: Oswego, New York

Inspection Conducted: May 8-12, 1989

Inspectors: J. K. Eapen 6/13/89  
for Joseph A. Golla, Reactor Engineer date

Approved by: J. K. Eapen 6/13/89  
Dr. P.K. Eapen, Chief, Special Test date  
Programs Section

Inspection Summary: Inspection on May 8-12, 1989 (Combined Inspection Report  
No. 50-220/89-15 and 50-410/89-13)

Areas Inspected: Special announced safety inspection of the licensee's implementation of their second 10-year interval IST Program with respect to Restart Action Item No. 17 (Inservice Testing) for Unit 1. Inspection of Unit 2 inservice testing of Diesel Generator Air Start System check valves.

Results: The licensee has done a credible job thus far in their efforts to implement the second 10-year interval Inservice Testing Program. They have established a task force to perform the procedure rewrite and are providing good engineering and operations support for the effort. The licensee has completed a significant amount of work required to implement their program, however, baseline testing of components has yet to be completed. The inspection of inservice testing of Unit 2 Diesel Generator Air Start System check valves resulted in an unresolved item. Also, unresolved item No. 50-220/88-80-03 was closed.

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## DETAILS

### 1.0 Persons Contacted

#### 1.1 Niagara Mohawk Power Corporation

- \*R. Bough, Nuclear Regulatory Compliance
- G. Brownell, Nuclear Regulatory Compliance
- \*M. Colomb, Director, Nuclear Regulatory Compliance
- K. Dahlberg, Station Superintendent
- G. Dolney, Unit 2 Supervisor ISI/IST
- A. Egap, Procedures Supervisor
- \*G. Montgomery, Nuclear Regulatory Compliance
- R. Parry, Senior Mechanical Engineer
- \*R. Shelton, Unit 1 Supervisor ISI/IST
- \*J. Shepherd, NQAO - NDE Supervisor
- R. Strusinski, Assistant Shift Supervisor
- K. Thomas, ISI Superintendent
- J. Willis, General Superintendent

#### 1.2 U.S. Nuclear Regulatory Commission

- W. Cook, Senior Resident Inspector
- \*R. Laura, Resident Inspector NMP2
- \*R. Temps, Resident Inspector NMP1

\*Indicates those present at the exit meeting held on May 12, 1989

### 2.0 Implementation of Inservice Testing of Pumps and Valves (73756)

The issue of inservice testing (IST) implementation has been identified by the licensee as a restart item (No. 17).

This inspection was conducted to review and assess the licensee's progress toward addressing this restart item.

The licensee has developed a Restart Action Plan (RAP) for Unit 1 which consists of a number of core reload corrective actions, restart corrective actions, and verification actions. Portions of IST implementation are included in all three of the above categories. IST administrative and implementing procedures are being rewritten to address item No. 17. This restart item was written as a result of inadequacies in both the IST Program and procedures as previously identified by the licensee. A synopsis of Program history is presented in the next section.

The licensee's IST Program is in its second revision of the second 10-year IST interval. The licensee is currently awaiting its safety evaluation report (SER) and formal approval from the NRC to implement this program. They have, however, received interim approval of the Program verbally from



the NRC. Also, a letter of interim approval is being drafted by the NRC which will allow implementation of the current revision of the Program while it is under formal review and pending the issuance of the SER on it. The inspector noted that extensive communication and review has already taken place between the licensee and the NRC regarding the Program. The licensee has committed to adhere to the provisions of Generic Letter 89-04, "Guidance On Developing Acceptable Inservice Testing Programs" when proposing alternate testing methods in instances where requests for relief from Code requirements have been submitted.

The IST Program for pumps and valves is required by 10 CFR 50.55a(g) to comply with the ASME Boiler and Pressure Vessel Code, Section XI. Niagara Mohawk Power Corporation is committed to the 1983 Edition of Section XI through Summer 1983 Addenda for Unit 1.

## 2.1 Program History

A historic review of the Nine Mile Point Unit 1 IST Program is presented on a time line basis here to support and provide an explanation for the discussion of the Program and its new implementing procedures development which appear in Sections 2.0 and 2.2 of this report.

### Nine Mile Point Unit 1 IST History

<u>DATE</u>	<u>ISSUE</u>
02/27/76	10 CFR 50.55a revised to incorporate the requirement that operations of boiling or pressurized water-cooled nuclear power facilities adhere to and perform the inservice testing requirements set forth in Section XI of editions of the Boiler and Pressure Vessel Code and Addenda.
06/20/79	NMPC commits to develop and implement an IST Program.
05/21/80	IST Program submitted.
06/06/81	Program revised per NRC comments.
08/07/81	Program revised per NRC comments.
11/04/83	Tech. Spec. amendment on IST submitted to include the requirement that the plant be tested specifically in accordance with the provisions of the first 10-year interval IST program.
	Second 10-year interval IST Program development initiated. An outside consultant is contracted to perform the work.



<u>DATE</u>	<u>ISSUE</u>
04/18/84	Tech. Spec. amendment on IST issued.
12/85	Nine Mile Point 1 "Q" list revised. Note: The Salem ATWS event prompted utilities to re-review and redefine their plants safety related boundaries. As a result of this, the "Q" list was revised to identify many more components as safety related. This resulted in an approximate 50% increase in the scope of the second 10-year interval IST Program.
12/11/85	Second interval IST Program submitted and incorporates "Q" list changes. Note: This version of the second interval Program was generated by the licensee's contractor (NES) and is not a NMPC document. Upon attempting to implement this program, the licensee identified deficiencies with it and notified the NRC of intent to drop back to the original (first 10-year interval) IST Program.
04/02/87	Revised second interval IST Program submitted.
04/28/87	Meeting with NRC Region I on IST and Appendix J. NRC informs NMPC to continue implementing the first interval IST Program because Tech. Specs. specifically reference it. NRC also specifies that NMPC move footnote in Tech. Specs. which specifies the use of the first interval program to the Tech. Spec. Basis. NMPC can then change the footnote in the Basis to reference the second interval IST Program when ready to implement it.
09/09/87	NRC site meeting to review 04/02/87 IST Program submittal.
08/29/88	IEN 88-70 Check Valve IST Program Deficiencies sent to holders of operating licenses. NMPC evaluates first interval Program for similar problems.
11/23/88	LER 88-19 first interval IST Program deficiencies reported. Within this LER, NMPC identifies the second interval IST Program as Specific Issue 17 of the RAP and commits to implement prior to startup.





<u>DATE</u>	<u>ISSUE</u>
02/23/89	Second NRC site review meeting with NMPC.
03/23/89	Revision 2 of second interval IST Program submitted. This incorporates NRC comments from 02/23/89 meeting.

## 2.2 IST Activities for Implementation

### 2.2.1 IST Task Force

The licensee has established an IST Task Force charged with supporting all activities required to implement the second 10-year interval IST Program. The inspector discussed the organization and efforts of the Task Force with the IST Implementation Manager. The Task Force is organized such that all activities are supported by a subgroup with a supervisor in charge who is responsible for the group's work. Subgroup supervisors report to the IST Implementation Manager who reports to the IST Task Force Manager. The subgroups provide expertise in the following areas:

- Operations Support
- Modification Engineering Support
- Design Engineering Support
- Maintenance Support
- IST Program Engineering Support
- IST Administrative/Technical Support
- IST Procedure Writing Support

It is the combined efforts of the subgroups that will comprise NMPC's plan for IST Program implementation and closure of the IST restart item.

### 2.2.2 IST Task Force Charter

The IST Task Force charter is to implement the second 10-year interval IST Program. The inspector reviewed the efforts of the Task Force and found that it is providing support of its charter which is in-depth and of high quality. The activities of the Task Force can be described by their efforts in four areas. These are: support of the IST Program Plan, IST Implementation, IST Program Administration and IST Training. A synopsis of these efforts is as follows:



A. IST Program Plan (Prior to reload/restart)

1. Establish Administrative controls for IST Program development.
2. Develop IST Program.
3. Obtain NRC approval of IST Program.

B. IST Implementation (Prior to reload/restart)

1. Generate test procedures to satisfy IST Program requirements.
2. Establish Administrative controls for defining component design basis.
3. Determine IST component design basis.
4. Review plant instrumentation requirements for IST.
5. Perform modifications to plant instrumentation as necessary for IST.
6. Establish Administrative controls for evaluation of IST results.
7. Perform baseline testing of IST components.
8. Evaluate baseline test results against design basis for acceptability.
9. Complete IST Temporary Reload Procedure for IST Closeout.

C. IST Program Administration (Prior to restart)

1. Establish Administrative controls for implementation of ISI/IST requirements following plant maintenance and modifications.
2. Establish Administrative controls for updating ISI/IST Programs as necessary based on plant modifications.
3. Establish Administrative controls for updating ISI/IST Programs as necessary based on Licensing (Q-List) changes.

D. IST Training (Prior to restart)

1. Conduct training to appropriate personnel on all IST Administrative controls.

2.2.3 Status of IST Task Force Efforts

The approximate status of efforts described in the above four areas is as follows:

A. IST Program Plan

The development of the program is complete. Formal NRC approval of the Program (SER) is pending and interim approval has been granted.



B. IST Implementation

Administrative controls and procedures for defining component design basis, evaluation of test results, establishment of pump and valve reference values, procedure writing, etc..., have been written and are in place. Approximately 20 of 22 procedures needed to support reloading are written and reviewed. Approximately 23 of 33 procedures needed to support startup are written and reviewed. Baseline testing of components has yet to be completed.

C. IST Program Administration

The majority of new procedures which will provide control of Administration of the Program are complete.

D. IST Training

Training of appropriate personnel on IST Administrative controls is planned prior to restart.

2.3 Procedure Review and Engineering Support

The inspector reviewed a sample of the licensee's new administrative and implementing (test) procedures produced by the IST Task Force. All procedures reviewed appear to be well written. Test procedures are established from component design basis and receive a thorough review and "walk down" by the operations department before issuance. Component design basis is established by members of the IST Task Force who provide engineering support to the procedure writers.

The inspector reviewed a sampling of work done through the combined efforts of the Engineering Support staff of the IST Task Force and the Nuclear Engineering Department. The following work was reviewed by the inspector:

1. Preparation of field corrected IST pump curves for the Emergency Diesel Generator (EDG) Cooling Water Pumps: The curves were developed from a calculation which was written in accordance with SEI-708.A, "NMP1 Pump Reference Value Acceptability" which is one of several new Site Engineering Instructions (SEI's) written to facilitate and validate the test procedure writing process. SEI-708.A defines the overall site engineering approach to establish pump baseline reference values for the NMP2 second 10-year interval pump and valve inservice testing program. The procedure also defines the interface between individual test procedures and the specified pump curve and acceptance criteria. The pump curves and test



reference values for IST of the EDG Cooling Water Pumps (and all other safety related pumps in the IST program) are prepared in accordance with the SEIs. The calculation was well prepared and documented.

2. Establishment of IST leakage rates for pressure isolation valves and pressure isolation valve test pressure corrections: This work was performed utilizing a thorough design origination search of site specific (Tech. Spec.) RCS leakage requirements as well as adherence to applicable industry codes such as ASME Section XI and ANS OM-10, "Inservice Testing of Valves."
3. Calculation No. S14-81-M008, "Inservice Test Instrument Accuracy for System 81": This calculation determined the accuracy of instrument and analog instrument loops to be used in the Core Spray, System 81 Pump Tests. Parameters measured were: pump inlet pressure, differential pressure, and flow rate. The ASME Section XI Code requires that instruments used have an accuracy of  $\pm 2.0\%$  of full scale per Table IWP-4110-1, "Acceptable Instrument Accuracy." The licensee is adhering to the NRC position and the requirement of the new ANS OM-6 standard, "Inservice Testing of Pumps" that total instrument loop calibration be accurate to  $\pm 2.0\%$  of full scale. This calculation was also well documented and provided loop calibration accuracy within  $\pm 2.0\%$  of full scale for instrument loop System 81.
4. The inspector also reviewed the following new Test procedures:
  - N1-ST-Q1 Core Spray Pumps and Valves Operability Test
  - N1-ST-Q5 Primary Containment Isolation Valves Exercising Test
  - N1-ST-Q12 Spent Fuel Pool Pump and Valve Operability Test
  - N1-ST-V8 Main Steam, FW/HPCI, SD Cooling, EM Cooling, Rx Head Vent Valve Operability, Test & Rx Auto Trip Signal Verification
  - N1-ST-Q20 Reactor Building, Cooling and Ventilation System
  - N1-ST-R11 Valve Remote Position Indicator Verification

These procedures were written in accordance with a new governing document which standardizes procedure format. All were well written and received thorough engineering and operations support.

The inspector reviewed several administrative procedures governing inservice testing requirements for core reload and restart, and Site Engineering Instructions governing the administration and determination of NMP1 inservice testing acceptance criteria. These documents are also well written and appear to be providing adequate control of IST implementation.





## 2.5 Organization to Implement Inservice Testing

The organization which will oversee the implementation of inservice testing resides within the Site Engineering Department under the cognizance of the ISI Superintendent. Under the ISI Superintendent is the Unit 1 ISI/IST Supervisor who heads a staff of engineers and technicians. This group is responsible for the administration and implementation of IST.

Other departments are involved in the actual conduct of testing, i.e., Operations does valve stroke timing and measures pump hydraulic parameters and the I&C Department will conduct pump vibration measurement. Initial data review and test acceptance will be performed by Operations. The Unit 1 IST group will then review and evaluate the data and log the tests for record keeping and data trending purposes. The IST group also has responsibility for ongoing program maintenance and post modification testing cognizance.

## 2.6 Findings

The licensee's IST Task Force is doing a good job carrying out their charter. They are taking an in-depth approach to rewriting the procedures which will implement the provisions of the second 10-year interval IST Program. New administrative procedures have been written which control IST activities from core reload through restart and operation. There are administrative procedures which govern the administration and determination of NMP1 IST acceptance criteria to standardize the format of new test procedures. The licensee is providing good engineering and operations support for the Task Force procedure writers. Engineers are determining component design basis to be utilized in generating reference parameters and acceptance criteria. They are qualifying instrument calibrations to  $\pm 2.0\%$  of full scale for entire instrument loops. All new test procedures are given a thorough "walk down" by the operations department before issuance. The licensee is also adopting some of the latest industry initiatives such as instrument loop calibrations as stated above and using spectrum analysis for measuring velocity displacements to detect bearing degradation.

## 2.7 Conclusion

The licensee has completed a significant amount of work required to implement the second 10-year interval IST Program. They have done a credible job thus far, and it appears that this will continue provided the administrative controls and the structured task force continue to function. The inspector concluded that the licensee will be able to adequately implement their second 10-year interval IST Program when the work of the Task Force is completed.



### 3.0 Followup of Previously Identified Open Items

#### (Closed) Unresolved Item No. 50-220/88-80-03: Fail-Safe Testing of Air Operated Valves

This item was opened to address the licensee's applicability to IE Information Notice No. 85-84, "Inadequate Inservice Testing of Main Steam Isolation Valves" and a concern regarding fail-safe testing of the non-safety related air operated valves included in the FSAR transient analysis.

Information Notice No. 85-84 discusses air assisted MSIVs which utilize non-safety related instrument air. The inspector discussed with the licensee the safety classification of the instrument air supply utilized by the NMP-1 MSIVs. The classification of the instrument air supply to the MSIV actuators is in fact safety related. Information Notice No. 85-84 therefore is not applicable and this portion of the unresolved item is closed on that basis.

The other part of the unresolved item dealt with an IST program deficiency which did not provide for fail-safe testing of non-safety related air operated valves included in the FSAR transient analysis upon loss of air. The inspector also discussed this with the licensee and reviewed the second 10-year interval IST program with respect to fail-safe testing of air operated valves. Approximately 105 additional valves have been included in the program to be fail-safe tested which include the appropriate valves in the FSAR transient analysis. This item is closed.

### 4.0 Inservice Testing of Unit 2 Diesel Generator Air Start System Check Valves

Due to a procedural error, six check valves in the division 1, 2 and 3 Diesel Air Start Systems may not have been tested in accordance with the inservice testing surveillance requirements of Technical Specification 4.0.5. This problem was discovered by the licensee during the performance of Operations Surveillance Procedure No. N2-OSP-EGA-Q001, "D.G. Air Start System Valve Operability Test" on May 10, 1989. During the performance of this test, check valve 2EGA-V62A was reverse flow tested by opening drain valve 2EGA-V68A and observing that the pressure in air receiver tank 2EGA\*TK1A remains stable. However, with bypass valve 2EGA-V94A in the Air Dryer Assembly closed it appeared that the Dryer Assembly valves would trap air and prevent depressurization of tank 2EGA\*TK1A even if the subject valve being tested (2EGA-V62A) fails. The licensee's operators identified this test deficiency while performing it. They then revised the subject procedure (N2-OSP-EGA-Q001) to open bypass valve 2EGA-V94A prior to opening drain valve 2EGA-V46A. This allows the check valve 2EGA-V62A to receive a valid test, i.e., allows the valve to be subjected to test differential pressure. The test was run with this temporary change in place and declared satisfactory. The LCO which the plant was in at this point was then lifted.



The inspector reviewed vendor drawings of the dryer assembly, piping drawings of the Air Start System, test procedure No. N2-OSP-EGA-Q001 and discussed corrective actions with the licensee. The licensee is presently evaluating the Air Dryer Assembly to determine if, with bypass valve 2EGA-V94A closed, there is a path through the other valves in the assembly. They will also conduct some informational testing to support this evaluation. Depending on their findings, it may be discovered that in the past, the valves in question (check valve 2EGA-V62A and five other similar valves) did in fact receive valid testing. The subject valves are :

<u>No. 1 Diesel</u>	<u>No. 2 Diesel</u>	<u>No. 3 (HPCS) Diesel</u>
V62A V62B	V63A V63B	V29A V29B

The question regarding the validity of past tests (with bypass valve in Air Dryer Assemblies closed) is being investigated by the licensee. This issue is unresolved pending their findings. This is unresolved item (UNR 50-410/89-13-01).

#### 4.0 Exit Meeting

Licensee management was informed of the purpose and scope of the inspection at the entrance interview. The findings of the inspection were periodically discussed and were summarized at the exit meeting on May 12, 1989. Attendees at the exit meeting are listed in Section 1.0 of this report. At no time during the inspection was written material provided to the licensee by the inspector. The licensee did not indicate that the inspection involved any proprietary information.

