

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-220/89-19

Docket No. 50-220

License No. DPR-63

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

Facility Name: Nine Mile Point Generating Station, Unit 1

Inspection At: Syracuse, New York

Inspection Conducted: July 24 - 28, 1989

Inspectors: *S. K. Chaudhary*  
S. K. Chaudhary, Sr. Reactor Engineer, DRS

8/29/89  
date

*J. Carrasco*  
J. Carrasco, Reactor Engineer, DRS

8/31/89  
date

Approved by: *J. R. Strosnider*  
J. R. Strosnider, Chief, Materials and  
Processes Section, EB, DRS

9/1/89  
date

Inspection Summary: A routine announced inspection at Nine Mile Point  
Generating Station, Unit 1 on July 24 - 28, 1989, Report No. 50-220/89-19

Area Inspected: This inspection focused on the licensee's identification,  
analysis, evaluation, and disposition of large bore pipe support deficiencies.  
The inspection was focused on those systems needed for fuel reload.

Results: It appears that the licensee is effectively implementing a program  
to identify and correct deficiencies in large bore pipe supports. No violations,  
deviations or unresolved items were identified.



## Details

### 1.0 Persons Contacted

#### Niagara Mohawk Power Corporation

- \* H. L. Caywood, Lead Engineer - Structural, Unit 1
- C. A. DiNatale, Senior Project Designer (Rct)
- \* P. E. Francisco, Assistant Manager, Licensing
- \* P. B. George, Assistant Manager, Nuclear Design
- L. Klosowski, Manager, Nuclear Design, Unit 1
- \* R. F. Oleck, Jr., Project Manager
- C. Terry, Vice President, Nuclear Engineering and Licensing
- \* W. R. Yaeger, Manager, Special Projects

Personnel marked with (\*) attended the exit meeting. The inspectors also contacted other technical and management personnel during the course of inspection as their work interfaced with the inspection.

### 2.0 Structural Integrity Analysis and Evaluation of Large Bore Pipe Support

#### Background

The in-service inspection of pipe supports in 1988 identified deficiencies in large bore pipe supports covered by the ASME Section XI ISI program. The licensee analyzed the data and concluded that the number of deficiencies identified (6%) was statistically unacceptable. In the course of their evaluation of the significance of these deficiencies, the licensee also determined that the design basis for many of the supports were either not readily available, inadequate, or at variance with the support as installed in the plant. The licensee, therefore, decided to initiate a program to inspect and evaluate all large bore (greater than 2.5" diameter) pipe supports in the plant for adequacy of design, installation, and operability.

This structural integrity assessment program was divided in two parts: (1) supports in safety-related systems and (2) supports in all other plant systems. Out of a total of approximately 3300 large bore pipe supports in the plant, approximately 1100 supports were included in the safety-related group; because, these supports were either part of a safety-related system, or were part of a system which directly supported the operability of a safety-related system (even if they were not part of a safety-related system). The balance of the supports were covered by the non-safety-related inspection and evaluation program.

This inspection focused on determining the adequacy of the licensee's efforts to resolve large bore pipe support deficiencies in systems required to support fuel reload.



### Program Review

The licensee's investigation of the pipe support problem is documented in Report No. 02-1120-1453, titled, The Structural Integrity Investigation of the 1988 ISI Pipe Support Deficiencies for Nine Mile Point Station No. 1. The findings of this investigation confirmed the licensee's preliminary evaluation that there was a lack of accurate "as-built" pipe support information and identified a large number of deficiencies. Dispositions of these deficiencies was hampered due to a lack of accurate data for pipe support loads; and, for some systems, there was a lack of traceability to design loads used in bulletin 79-02 and 79-14 calculations and evaluations.

To address the above concerns and resolve the associated problem, the licensee established a special task force under the cognizance of a manager for special projects. This special project included personnel from licensee's own engineering organization and outside consultants.

The licensee's program includes examination, evaluation, and upgrading, if necessary, of all large bore pipe supports so that they meet the original design margins or greater.

### Implementation

To assess the adequacy of implementation, validity of technical analyses, procedural controls, and methods for tracking the disposition of identified deficiencies, the inspectors held discussions with cognizant licensee personnel and reviewed documentation (Attachment C).

The inspectors selected the following safety-related and other supporting systems for a detailed review. The selection of these systems was based on their importance to plant safety for fuel reload. These systems are either required by the plant "Technical Specifications" or support the operability of required systems.

<u>System Number</u>	<u>System Description</u>
44, 44.1, 44.2	Control Rod Drive
50, 53, 59, 49	Condensate, Condensate Makeup
40, 81	Core Spray
70	RBCLC
72	Service Water
57	Condensate Storage and Transfer
36	Reactor Instrumentation
79	Diesel Generator Cooling
210	Control Room Ventilation



The following systems need to be operable for fuel reload but are not required by Technical Specifications:

<u>System Number</u>	<u>System Description</u>
94, 113	Instrument Air
54	Fuel Pool
38	Shutdown Cooling
37	Reactor Head Vent and Drain (Drain Portion Only)
63	Reactor Cleanup Discharge

Several NCR's associated with structural integrity of supports on the systems showing above were reviewed by the inspectors in terms of adequacy of disposition, and bases for the disposition; these NCRs are listed on Attachment A of this report. The inspectors also selected a number of NCRs and reviewed all the QC/QA mechanisms involved in the closing of the documents. Attachment B shows these NCRs. Additionally, the inspectors reviewed the licensee's computer based system for tracking the current status of pipe supports in safety-related systems.

### Findings

Based on the review of these NCRs, the inspectors determined that the deficiencies identified were related largely to original design and construction of the supports. The types of deficiencies identified included:

- (1) excessive torsion on open sections,
- (2) lack of required stiffeners,
- (3) an unintended load path within the support,
- (4) unstable support configurations,
- (5) gross misuse of standard components, and
- (6) excessive support gaps.

The licensee identified almost all of the deficiencies by reviewing the general support configuration and calculations.

These corrective actions taken by the licensee included dispositions such as: "use as is", repair, scrap and replace. The licensee also has performed new seismic analysis to define loads for supports where either the original design load was not traceable or the "as-built" condition of the system indicated a new load definition was necessary due to support or system configuration.

The inspectors determined that the licensee's task force for resolution of the pipe support concerns was well coordinated; adequately staffed and managed, and was effective in identifying and resolving deficiencies. The licensee stated that prior to fuel load, any support in the systems needed to support fuel reload will be evaluated, repaired and modified, as necessary, to meet the original design margin as stated in the FSAR, and that all other safety-related supports required by plant T.S. will be evaluated, repaired and modified, as necessary, to assure they meet the design safety margin before plant start-up. The balance of the supports will be addressed on an "as-needed" basis.



The computer based tracking system developed by the licensee was found to be adequately detailed and up-to-date and QA involvement in the disposition of the NCRs was appropriate.

### Conclusion

The licensee responded appropriately to findings of the ISI program for pipe supports and is effectively implementing a program to resolve the structural integrity concerns in the large bore pipe supports. No violation or deficiencies were identified

### 3.0 Management Meetings (30703)

Licensee management was informed of the scope and purpose of the inspection at the entrance meeting on July 24, 1989. The findings of the inspection were discussed with the licensee representatives during the course of the inspection and presented to licensee management at the exit interview on July 28, 1989. (see paragraph 1.0 for attendees).

At no time during the inspection was written material provided to the licensee by the inspector. The licensee did not indicate that proprietary information was involved within the scope of this inspection.



ATTACHMENT A

NCR'S Reviewed for Adequacy of Disposition

1. NCR 1-88-0849 support 72-H28
2. NCR 1-88-607 support 38-SC-1
3. NCR 1-88-611 support 38-SC-1A
4. NCR 1-88-0428 support 40-H19
5. NCR 1-88-0678 support 38-HS-8
6. NCR 1-88-0387 support 40-HS-3
7. NCR 1-88-393 support 38-HS-10
8. NCR 1-88-329 support 44.2-HS-1
9. NCR 1-88-398 support 40-HS-7, 8, 9



ATTACHMENT B

NCR's Reviewed for QC/QA Mechanisms

1. NCR 1-88-1077 support 38-HS-6
2. NCR 1-88-0624 support 38-H-16
3. NCR 1-88-0738 support 38-SC-6
4. NCR 1-88-0934 support 38-HS-5
5. NCR 1-88-0335 support 70-SCX-4 (A,B,C,D,E,F)
6. NCR 1-88-0365 support 72-SC-3
7. NCR 1-88-0437 support 44.2-H6
8. NCR 1-88-0858 support 38-SC-11A
9. NCR 1-88-1111 support 40-HS-8
10. NCR 1-88-1076 support 38-HS-4
11. NCR 1-88-1077 support 38-HS-6
12. NCR 1-88-0303 support 38-SC-12A
13. NCR 1-89-0419 support 70-SC-30
14. NCR 1-88-0811 support 38-HS-5
15. NCR 1-88-0351 support 38-HS-5
16. NCR 1-88-0612 support 38-H-27
17. NCR 1-88-0624 support 38-H-16



ATTACHMENT C

DOCUMENTS REVIEWED

1. Structural Integrity Investigation of the 1988 ISI pipe support deficiencies for Nine Mile Point Nuclear Station No. 1 Report No. 02-1120-1453, Revision 0, dated June 9, 1989.
  2. NRC Inspection Report 50-220/89-04, dated April 25, 1989.
  3. Visual examination acceptance criteria related to in-service inspection (ISI) of component supports. Engineering Specification No. ISI-004, Revision 1, dated August 25, 1988.
  4. Visual examination acceptance criteria related to in-service inspection (ISI) of component supports and determination of longitudinal seam weld. Engineering Specification No. ISI-004, Revision 2, dated July 14, 1989.
  5. Nine Mile .. Pipe Support Walkdown Guideline and Preventive Maintenance Procedure, Rev. 0, dated 10/7/88.
  6. S&L Project Instructions: PI-NM-301, Rev. 1, 302, 303, 304, 305, 306, 307, Rev. 0.
    - 301 - Review of NMPC Calculations (4/5/88) Rev. 1
    - 302 - Calculations Prepared on NMPC Standard Calc. Sheets (3/22/88), Rev. 0
    - 303 - Control and Distribution of NMPC Calcs. (3/22/88), Rev. 0
    - 304 - Processing NMPC (3/22/88), Rev. 0
    - 305 - Processing NMPC DCRs (3/22/88), Rev. 0
    - 306 - Evaluating Results of ASME, Section X, Exams (3/22/88), Rev. 0
    - 307 - Field Walkdown Activities (3/22/88, Rev. 0
  7. Piping Analysis; Core Spray: Calc. #SI4-81-P03, Rev. 0  
Rx Core Spray (West Side): Calc. #S14-40-P003,  
Rev. 1  
Calc. #S14-40-P004,  
Rev. 0
- N-1-88-611 - ISI for Reload  
N-1-88-6.13 - Reload for Large Bore Pipe

