February 8, 1989

Docket No. 50-220

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Mr. Lawrence Burkhardt III
Executive Vice President, Nuclear Operations
Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Dear Mr. Burkhardt:

SUBJECT: INSERVICE TESTING PROGRAM FOR NINE MILE POINT, UNIT 1

The NRC staff and its consultants from Idaho National Engineering Laboratory (INEL) have completed a preliminary review of the second ten year Inservice Testing (IST) Program for Nine Mile Point, Unit 1 submitted January 18, 1989. Enclosed is a set of questions and comments developed as a result of that review. The staff and its consultants would like to meet with you at the plant site on February 22 and 23, 1989, to resolve these concerns. The enclosed list will be used as an agenda for discussions at that meeting. Formal responses to the enclosure are not required prior to the meeting. However, draft responses for each of the questions should be prepared prior to the meeting and be available for the meeting discussion.

Sincerely,

Original signed by

Mary F. Haughey, Project Manager
Project Directorate I-1
Division of Reactor Projects I/II

Enclosure:
NMP-1 ITP Questions
and Comments

cc: See next page

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ENCLOSURE

NINE MILE POINT NUCLEAR STATION, UNIT 1
PUMP AND VALVE INSERVICE TESTING PROGRAM
QUESTIONS AND COMMENTS

1. VALVE TESTING PROGRAM

A. General Questions and Comments

1. Revision 0 of the second ten year IST program for Nine Mile Point Nuclear Station, Unit 1, (NMP1) states on page I-4 that Section XI requires quarterly testing of components unless it is impractical to do so. In Revision 1, the word "impractical" in that statement was replaced with "a burden." Section XI permits deferral of valve testing to cold shutdowns if quarterly testing is impractical and 10CFR50.55a(g)(6)(i) authorizes the NRC to grant relief from the Code requirements if conformance is impractical. Use of "a burden" in the identified statement may impart the erroneous idea that inconvenience is a justification for not performing Section XI testing at the Code required frequency. What was the purpose for this program change?

2. General Relief Request VG-3 proposes an audible indication and a drain pipe temperature measurement as means to detect the proper operation of excess flow check valves at NMP1. The NRC has concluded that the use of audible indication does not provide an acceptable positive means of verifying that a check valve has moved to its safety function position as required by IWV-3522(b). The temperature measurement method may be acceptable. Provide a more detailed description of this testing and the acceptance criteria that is utilized.

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frequent testing per IWV-3417(a). This amount of allowed variance should more than compensate for stroke time deviations due to operator response times and normal data scatter due to changes in system conditions.

4. General Relief Request VG-4 proposes to use the control room indicating lights to verify the proper fail-safe actuation of valves equipped with remote position indication. This testing is in accordance with the Code and relief is not necessary as long as the applicable valves remote position indication is verified in accordance with IWV-3300.

5. Control valves that do not have <u>required</u> fail-safe positions (i.e., credit not taken in any SAR analysis for the valve failing to a specified position), are exempted from Section XI testing by IWV-1200. However, if credit is taken for the fail-safe function of a control valve, it is an active power operated valve that must be tested to all of the applicable requirements of IWV-3400 and not just to the requirements of IWV-3415. General Relief Request VG-5 is in conflict with this position.

6. The NRC staff position is that as soon as test data is recognized as being within the required action range from Section XI, the associated component must be declared inoperable and the Technical Specification Action time must be started. The "Analysis of Data - Time Frame" paragraph on page II-3 of Revision 1 is in conflict with this staff position.

7. The relief request and cold shutdown justification bases should specifically indicate the negative consequences that make testing at the Code required frequency impractical such as endangering personnel, damaging equipment, or resulting in a plant shutdown.

8. The "Corrective Action - Time Frame" paragraph on page III-3 of the IST program does not agree with the current staff position as expressed in Item 6 above. What is the basis for the position stated in this paragraph?

B. Main Steam System

1. Does motor operated valve 34-01 have remote position indication? If so, why was the remote position verification test deleted for this valve?

2. What alternate test methods have been evaluated to assure that the force applied to open the ADS line vacuum relief check valves is equivalent to the desired functional pressure differential force for the valves (refer to Relief Request MS-RR-2)?

C. Control Rod Drive System

1. Note No. 5 states that proper operation of the control rod during rod insertion time testing verifies proper reverse flow closure of the hydraulic control unit charging water isolation check valves. The recent discovery of failed charging water isolation check valves at an operating BWR indicate that this statement may not be true unless the charging water header is depressurized prior to the performance of the test. Is the charging water header depressurized during rod insertion time testing at NMP1?

2. Stroke time measurements of valves 44.2-15 and -18 in the test mode may not detect degradation of the normal valve control elements (refer to Relief Request CRD-RR-2), however, they would provide repeatable data that could detect degradation of the valves themselves. Would the burden of performing this testing outweigh the possible increase in the level of quality and safety?

3. Provide a more detailed technical justification for not verifying the reverse flow closure of valves 301-112 and -113 quarterly or during cold shutdowns (refer to Relief Request CRD-RR-3).

D. High Pressure Coolant Injection System

1. Cold Shutdown Test Justifications FW/HPCI-CS-1 and -2 state that exercising valve 31-07 or 31-08 closed during power operations would constitute entering an LCO on HPCI since it would be removing one train of two redundant trains. However, in the Pump and Valve Inservice Testing Program Plan, Exclusion/Justification Document, Section II. 5.4 Attachment 4, it is stated that no credit is taken for the HPCI system to mitigate the consequences of a LOCA and that the HPCI components outside the second isolation valve are not safety related. Clarify the apparent conflict between these two statements in the IST program.

E. Reactor Core Spray System

1. What is the purpose of performing a "LA" leak rate test on valves 40-01, -09, -10, or -11? Since these valves serve as a boundary between the RCS and the low pressure core spray piping, should they receive a "LK" leak rate test to verify their pressure boundary isolation function?

2. Provide the technical justification for not individually verifying the reverse flow closure of check valves 40-20, -21, -22, and -23 during each cold shutdown not to exceed once every 3 months (refer to Relief Request CS-RR-1). How are these valves individually verified in the closed position?

3. Are the differential pressures being measured across each of the following valves during quarterly testing to verify that they are open sufficiently to allow passage of the maximum analyzed flow rate (refer to Relief Request CS-RR-2)? If not, the quarterly testing is only a part-stroke exercise of these valves and they are only full-stroke exercised during refueling outages. Provide a technical justification for not performing a full-stroke of these valves during cold shutdowns.

40-03	81-07	81-27
40-13	81-08	81-28

4. Relief Request CS-RR-3 states that the check valves that provide core spray topping pump seal cooling and lubrication are tested and observed at design flow rate and determined operable during pump testing. However, Relief Request CS-RR-2 indicates that the core spray topping pumps are tested at a flow rate of 2200 gpm compared to the required system flow rate of 3400 gpm. Since pump testing is at a reduced flow rate, explain how the proposed alternate testing assures that degradation of these valves will not go undetected.

5. Provide the P&ID that shows valves CRS-10 and CS-C-3 for our review. What testing methods have been evaluated for testing these valves other than disassembly and inspection (refer to Relief Request CS-RR-4)?

6. What is the purpose of performing a "LA" leak rate test on valves 81-01, -02, -21, or -22?

7. Why are valves 40-05 and -06 "LK" (pressure boundary isolation) leak rate tested? These valves are in lines that connect to the torus air space.

F. Emergency Cooling System

1. Provide the technical justification for not closing manual isolation valves 39-01 and -02 to permit exercising valves 39-05 and -06 quarterly during power operations (refer to Cold Shutdown Test Justification EC-CS-1).

2. Relief Request EC-RR-1 alternate testing states that valves 39-03 and -04 will be tested by disassembly and inspection starting with the next refueling outage. When was the last time that the full-stroke capability of these valves was verified?

G. Containment Spray System

1. Relief Request CTS-RR-2 states that approximately 2900 gpm is passed through valves 80-05, -06, -25, and -26 during quarterly valve testing and that the required system flow rate is 3000 gpm. Can the required

system flow rate be established through these valves during any plant operating mode to verify their full-stroke capability? Provide the measured flow rates through these valves for the tests performed during the past year for our review.

2. Is credit taken for the fail-safe operation of valves 80-15, -16, -35, and -36 in any Nine Mile Point Nuclear Station safety analysis? Explain how these valves have a safety related fail-safe function upon loss of electrical power but not upon loss of control air?

3. The NRC staff position is that the full-stroke capability of safety related check valves must be verified on at least a refueling outage frequency. Will modifications be made to allow full-stroke exercising the valves identified in Relief Request CTS-RR-1 prior to the startup from the next refueling outage?

H. Reactor Cleanup System

1. Provide a more detailed technical justification for not verifying the reverse flow closure of valve 33-03 during cold shutdowns (refer to Relief Request RCU-RR-1).

I. Nitrogen Supply System

1. Do valves 201.9-16, 201.9-35, 201.9-38, and 201.9-48 have required fail-safe positions? If so, in addition to testing their fail-safe function, these valves must be exercised and have their full-stroke times measured in accordance with the Code.

J. Reactor Liquid Poison System

1. Provide a more detailed technical justification for not exercising valves 42-19 and -20 during cold shutdowns (refer to Relief Request LP-RR-3)?

K. Spent Fuel Storage Pool Filtering & Cooling System

1. What alternate test methods have been evaluated to determine if the force delivered to the disk of vacuum breaker valves FP-308, -310, -312, and -314 is equivalent to the desired functional pressure differential force for these valves as required by IWV-3522(b) (refer to Relief Request SFSPFC-RR-2)?

2. What is the safety related function of valve 85-160? Does valve 49-53 perform the same function?

3. Relief Request SFSPFC-RR-1 does not provide an adequate technical justification for not testing valve 54-49 quarterly during power operations or during cold shutdowns. If this valve and the associated flow path do not perform a safety function during power operations or cold shutdowns, it could be declared out of service until needed for reactor refueling activities and be tested in accordance with IWV-3416.

L. Reactor Building Closed Loop Cooling Water System

1. Provide a more detailed technical justification for not full-stroke exercising valves 70-04, -05, and -06 quarterly during power operations (refer to Cold Shutdown Test Justification RBCLCW-CS-2).

2. Is the maximum safety analysis flow rate verified through valves 70-272 and -274 during quarterly valve testing? If not, how are these valves full-stroke exercised?

3. Provide a more detailed technical justification for not full-stroke exercising valves 70-MU-07 and 70-257 quarterly during power operations and during cold shutdowns (refer to Relief Request RBCLCW-RR-2).

4. Can the reactor recirculation pumps be shut off during long duration cold shutdowns? If so, why can't valves 70-92, 70-93, and -95 be exercised to the closed position during those cold shutdowns when the recirculation pumps are stopped (refer to Relief Requests RBCLCW-RR-1 and -3)?

M. Condensate Transfer System

1. Is the maximum safety analysis flow rate verified through valves CT-9 and CT-10 during quarterly valve testing? If not, how are these valves full-stroke exercised?

N. Emergency Service Water System

1. What portions of the internals of valves 72-11 and -12 are visible when the inspection covers are removed for valve testing (refer to Relief Request ESW-RR-1)? Is the force or torque applied to the external exercising arm measured when these valves are exercised as required by IWV-3522(b)?

2. Provide a more detailed technical justification for not verifying the reverse flow closure of valves 72-21 and 72-22 quarterly during power operations and during cold shutdowns (refer to Relief Request ESW-RR-2). What test methods other than valve disassembly have been evaluated to verify the reverse flow closure capability of these valves.

O. Emergency Diesel Generator Starting Air & Cooling Water System

1. Review the safety-related function of the emergency diesel generator air start relay valves and pinion drive solenoid valves (DGA-SOV-1 and -2) to determine if they should be included in the IST program.

P. Instrument Air System

1. Valve 94-19 appears to be an active power operated valve and should be exercised to its safety position in accordance with IWV-3412 and have its full-stroke time measured per IWV-3413(b) to detect degradation.

Q. Emergency Diesel Generator Fuel Oil Handling System

1. Is the maximum safety analysis flow rate verified through the diesel fuel oil storage tank foot valves (82-03 and 82-04) during the monthly Technical Specification emergency diesel generator test? If not, how are these valves full-stroke exercised?

2. PUMP TESTING PROGRAM

1. General relief from the instrument accuracy requirements of IWP-4110 and Table IWP-4110-1 for all pressure instrumentation used for pump testing, cannot be granted as requested in General Relief Request PG-5. The Code instrument accuracy requirements have been the same since the Code was originally published and instruments that meet these requirements have been commercially available.

   Identify the specific cases where the Code required instrument accuracies cannot be met for individual pumps or groups of pumps. Also, identify the actual accuracy values encountered for these cases and indicate if portable instruments that meet the Code requirements can be utilized. Provide more specific information on when the necessary modifications will be made.

2. The NRC staff position is that pump vibration measurements may be made in velocity units in lieu of displacement units. However, to utilize a vibration velocity program for pumps requires the approval of a relief request that describes in detail <u>all</u> aspects of the proposed program (e.g., instrument accuracies, measurement directions, measurement locations, acceptance criteria).

   Relief Request PG-1 alternate testing proposes to use the allowable ranges of ANSI/ASME OM-6, however, no reference is made to any other aspect of the proposed vibration monitoring program. The NRC has determined that the OM-6 vibration allowable ranges are acceptable, however, in order to use these limits the licensee must use all of the pump vibration velocity criteria of ANSI/ASME OM-6.

3. The proposed alternate testing of Relief Request PG-2 states that the pump suction pressure for the listed pumps will be calculated from the level of the suction supply. Will these pressures be determined to the accuracy requirements of IWP-4110 to assure the ability to detect pump hydraulic degradation?

4. Pump Relief Request PR-1 for the emergency diesel generator cooling water and the condensate transfer pumps is too vague to be evaluated for granting relief. More specific information should be provided concerning the flow rate measurements made for testing and evaluating these pumps.

5. Since the core spray and the core spray topping pumps are installed in series, the flow rate through both pumps would be the same, therefore, only one measurement need be made (refer to Pump Relief Request PR-2). This test method is not seen as a deviation from the Code requirements and relief is not necessary. Are the flow rate and differential pressures for each of these pumps being evaluated in accordance with IWP-3200?

6. Pump Relief Request PR-5 for the emergency service water pumps is too vague to be evaluated for granting relief in regards to the temporary test equipment to be used for pump flow rate measurements. More specific information should be provided concerning the flow rate measurement accuracies and further actions planned to correct this situation.

7. Are the flow rate measurements for the emergency diesel generator fuel oil transfer pumps sufficiently accurate to allow the detection of pump hydraulic degradation (refer to Pump Relief Request PR-8)? Are the Code allowable ranges of Table IWP-3100-2 utilized to evaluate these pumps?

8. Are the pump bearing housings of the core spray and containment spray pumps totally submerged and inaccessible for vibration measurements (refer to Pump Relief Request PR-6)? What locations on the pump drivers are being used to measure vibration for the pumps identified in this relief request? How was it determined that these locations provide vibration data that is most representative of pump bearing condition?

9. Provide a more detailed technical justification demonstrating why the emergency diesel generator fuel oil transfer pumps cannot be tested during the Technical Specification emergency diesel generator operability tests (refer to Pump Relief Request PR-9).

10. Pump Relief Request PR-10 for the control room chilled water pumps is too vague to be evaluated for granting relief in regards to the temporary test equipment to be used for pump flow rate measurements. More specific information should be provided concerning the flow rate measurement accuracies and further actions planned to correct this situation.

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ENCLOSURE

NINE MILE POINT NUCLEAR STATION, UNIT 1
PUMP AND VALVE INSERVICE TESTING PROGRAM
QUESTIONS AND COMMENTS

1. VALVE TESTING PROGRAM

A. General Questions and Comments

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1. Do valves 201.9-16, 201.9-35, 201.9-38, and 201.9-48 have required fail-safe positions? If so, in addition to testing their fail-safe function, these valves must be exercised and have their full-stroke times measured in accordance with the Code.

J. Reactor Liquid Poison System

1. Provide a more detailed technical justification for not exercising valves 42-19 and -20 during cold shutdowns (refer to Relief Request LP-RR-3)?

K. Spent Fuel Storage Pool Filtering & Cooling System

1. What alternate test methods have been evaluated to determine if the force delivered to the disk of vacuum breaker valves FP-308, -310, -312, and -314 is equivalent to the desired functional pressure differential force for these valves as required by IWV-3522(b) (refer to Relief Request SFSPFC-RR-2)?

2. What is the safety related function of valve 85-160? Does valve 49-53 perform the same function?

3. Relief Request SFSPFC-RR-1 does not provide an adequate technical justification for not testing valve 54-49 quarterly during power operations or during cold shutdowns. If this valve and the associated flow path do not perform a safety function during power operations or cold shutdowns, it could be declared out of service until needed for reactor refueling activities and be tested in accordance with IWV-3416.

L. Reactor Building Closed Loop Cooling Water System

1. Provide a more detailed technical justification for not full-stroke exercising valves 70-04, -05, and -06 quarterly during power operations (refer to Cold Shutdown Test Justification RBCLCW-CS-2).

2. Is the maximum safety analysis flow rate verified through valves 70-272 and -274 during quarterly valve testing? If not, how are these valves full-stroke exercised?

3. Provide a more detailed technical justification for not full-stroke exercising valves 70-MU-07 and 70-257 quarterly during power operations and during cold shutdowns (refer to Relief Request RBCLCW-RR-2).

4. Can the reactor recirculation pumps be shut off during long duration cold shutdowns? If so, why can't valves 70-92, 70-93, and -95 be exercised to the closed position during those cold shutdowns when the recirculation pumps are stopped (refer to Relief Requests RBCLCW-RR-1 and -3)?

M. Condensate Transfer System

1. Is the maximum safety analysis flow rate verified through valves CT-9 and CT-10 during quarterly valve testing? If not, how are these valves full-stroke exercised?

N. Emergency Service Water System

1. What portions of the internals of valves 72-11 and -12 are visible when the inspection covers are removed for valve testing (refer to Relief Request ESW-RR-1)? Is the force or torque applied to the external exercising arm measured when these valves are exercised as required by IWV-3522(b)?

2. Provide a more detailed technical justification for not verifying the reverse flow closure of valves 72-21 and 72-22 quarterly during power operations and during cold shutdowns (refer to Relief Request ESW-RR-2). What test methods other than valve disassembly have been evaluated to verify the reverse flow closure capability of these valves.

O. Emergency Diesel Generator Starting Air & Cooling Water System

1. Review the safety-related function of the emergency diesel generator air start relay valves and pinion drive solenoid valves (DGA-SOV-1 and -2) to determine if they should be included in the IST program.

P. Instrument Air System

1. Valve 94-19 appears to be an active power operated valve and should be exercised to its safety position in accordance with IWV-3412 and have its full-stroke time measured per IWV-3413(b) to detect degradation.

Q. Emergency Diesel Generator Fuel Oil Handling System

1. Is the maximum safety analysis flow rate verified through the diesel fuel oil storage tank foot valves (82-03 and 82-04) during the monthly Technical Specification emergency diesel generator test? If not, how are these valves full-stroke exercised?

2. PUMP TESTING PROGRAM

1. General relief from the instrument accuracy requirements of IWP-4110 and Table IWP-4110-1 for all pressure instrumentation used for pump testing, cannot be granted as requested in General Relief Request PG-5. The Code instrument accuracy requirements have been the same since the Code was originally published and instruments that meet these requirements have been commercially available.

   Identify the specific cases where the Code required instrument accuracies cannot be met for individual pumps or groups of pumps. Also, identify the actual accuracy values encountered for these cases and indicate if portable instruments that meet the Code requirements can be utilized. Provide more specific information on when the necessary modifications will be made.

2. The NRC staff position is that pump vibration measurements may be made in velocity units in lieu of displacement units. However, to utilize a vibration velocity program for pumps requires the approval of a relief request that describes in detail <u>all</u> aspects of the proposed program (e.g., instrument accuracies, measurement directions, measurement locations, acceptance criteria).

   Relief Request PG-1 alternate testing proposes to use the allowable ranges of ANSI/ASME OM-6, however, no reference is made to any other aspect of the proposed vibration monitoring program. The NRC has determined that the OM-6 vibration allowable ranges are acceptable, however, in order to use these limits the licensee must use all of the pump vibration velocity criteria of ANSI/ASME OM-6.

3. The proposed alternate testing of Relief Request PG-2 states that the pump suction pressure for the listed pumps will be calculated from the level of the suction supply. Will these pressures be determined to the accuracy requirements of IWP-4110 to assure the ability to detect pump hydraulic degradation?

4. Pump Relief Request PR-1 for the emergency diesel generator cooling water and the condensate transfer pumps is too vague to be evaluated for granting relief. More specific information should be provided concerning the flow rate measurements made for testing and evaluating these pumps.

5. Since the core spray and the core spray topping pumps are installed in series, the flow rate through both pumps would be the same, therefore, only one measurement need be made (refer to Pump Relief Request PR-2). This test method is not seen as a deviation from the Code requirements and relief is not necessary. Are the flow rate and differential pressures for each of these pumps being evaluated in accordance with IWP-3200?

6. Pump Relief Request PR-5 for the emergency service water pumps is too vague to be evaluated for granting relief in regards to the temporary test equipment to be used for pump flow rate measurements. More specific information should be provided concerning the flow rate measurement accuracies and further actions planned to correct this situation.

7. Are the flow rate measurements for the emergency diesel generator fuel oil transfer pumps sufficiently accurate to allow the detection of pump hydraulic degradation (refer to Pump Relief Request PR-8)? Are the Code allowable ranges of Table IWP-3100-2 utilized to evaluate these pumps?

8. Are the pump bearing housings of the core spray and containment spray pumps totally submerged and inaccessible for vibration measurements (refer to Pump Relief Request PR-6)? What locations on the pump drivers are being used to measure vibration for the pumps identified in this relief request? How was it determined that these locations provide vibration data that is most representative of pump bearing condition?

9. Provide a more detailed technical justification demonstrating why the emergency diesel generator fuel oil transfer pumps cannot be tested during the Technical Specification emergency diesel generator operability tests (refer to Pump Relief Request PR-9).

10. Pump Relief Request PR-10 for the control room chilled water pumps is too vague to be evaluated for granting relief in regards to the temporary test equipment to be used for pump flow rate measurements. More specific information should be provided concerning the flow rate measurement accuracies and further actions planned to correct this situation.