June 30, 1987

Docket No. 50-220

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Dear Mr. Mangan:

SUBJECT: NINE MILE POINT UNIT 1 INSERVICE TESTING PROGRAM

Our Mechanical Engineering Branch and its contractor have completed a preliminary review of your proposed Inservice Testing Program for Unit 1. As a result of this review, we have prepared the enclosed set of questions and comments for which we need your responses. Formal response to the questions and comments is not needed now, but we would like to discuss them in a meeting to be held at the plant site.

When you have had a chance to review the questions and comments, I suggest that Mr. Francisco call me to arrange a mutually acceptable meeting date.

Sincerely,

Robert A. Benedict, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects, I/II

Enclosure:
As stated

cc: See next page

PDI-1
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6/29/87

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/ /87

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Nine Mile Point Nuclear Station,
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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. If a manual operator is used to full-stroke exercise check valves that cannot be full-stroke exercised with flow, is the force or torque that is applied to the mechanical exerciser measured to assure compliance with IWV-3522(b)?

2. The NRC has concluded that the applicable leak test procedures and requirements for containment isolation valves are determined by 10CFR50, Appendix J. Relief from paragraphs IWV-3421 through 3425 for containment isolation valves presents no safety problem since the intent of IWV-3421 through 3425 is met by Appendix J requirements, however, the licensee shall comply with Paragraphs IWV-3426 and 3427. General Relief Request VG-2 is at variance with this staff position.

3. The Nine Mile Point Nuclear Station, Unit 1, IST program definition of cold shutdown states that no cold shutdown testing will be performed on any components tested less than 92 days prior to achieving cold shutdown. The Code does not require cold shutdown testing more frequently than once every three months, however, the Code does require components to be tested if it has been three months or greater since they were last tested regardless of how long it has been between the previous testing and when cold shutdown is achieved.

4. The NRC staff has identified rapid-acting power operated valves as those which stroke in 2 seconds or less. Relief may be obtained from the trending requirements of Section XI, Paragraph

IWV-3417(a), however, in order to obtain this Code relief the staff does require that the licensee assign a maximum limiting stroke time of 2 seconds to these valves and comply with the requirements of IWV-3417(b) when the 2 second limit is exceeded. General Relief Request VG-1 does not comply with this staff position.

5. Provide the limiting values of full-stroke times for the power operated valves in the Nine Mile Point Nuclear Station, Unit 1, IST program for our review. What are the bases used to assign the limiting values of full-stroke time for these valves?

6. When flow through a check valve is used to indicate a full-stroke exercise of the valve disk, the NRC staff position is that verification of the maximum flow rate identified in any of the plant's safety analyses through the valve would be an adequate demonstration of the full-stroke requirement. Any flow rate less than this will be considered partial-stroke exercising unless it can be shown (by some means such as measurement of the differential pressure across the valve), that the check valve's disk position at the lower flow rate would permit maximum required flow through the valve. Does the Nine Mile Point Nuclear Station, Unit 1, IST program conform to this staff position?

7. The relief request and cold shutdown justification bases should 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. Which valves at Nine Mile Point Nuclear Station, Unit 1, are currently leak rate tested to verify a pressure boundary isolation function?

9. Provide a more detailed technical justification for not testing the excess flow check valves quarterly during power operations

and during cold shutdowns (refer to General Relief Request VG-3). These valves should be included in the IST program.

10. If failure of a pump discharge check valve to close on reverse flow could prevent the associated system from performing its safety function, then the pump discharge check valve does perform a safety function in the closed position and must be verified in that position during quarterly valve testing. Does the Nine Mile Point Nuclear Station, Unit 1, IST program conform to this staff position (refer to the discussion on pump discharge check valves on page III-6)?

11. The NRC staff position is that the emergency diesel generators perform a safety-related function and that the appropriate valves in the emergency diesel air start, cooling water, and fuel oil transfer systems should be included in the IST program and be tested in accordance with the Code. Engine driven pumps are considered to be part of the diesel and need not be tested separately. Provide the P&IDs that show these emergency diesel generator subsystems for our review.

12. If failure of a system piping keep fill check valve to close on reverse flow could prevent the associated system from performing its safety function, then the system piping keep fill check valve does perform a safety function in the closed position and must be verified in that position during quarterly valve testing. Does the Nine Mile Point Nuclear Station, Unit 1, IST program conform to this staff position (refer to the discussion on system piping keep fill check valves on page III-6)?

13. Are all safety-related valves in the Nine Mile Point Nuclear Station, Unit 1, IST program with fail-safe actuators tested in accordance with the requirements of Section XI, IWV-3415?

14. Are remote position indicators being verified in accordance with the requirements of Section XI, IWV-3300 for all applicable valves in the Nine Mile Point Nuclear Station, Unit 1, IST

program (the comment on page III-8 of the IST program indicates that it is your "intent" that this testing be performed)?

B. Main Steam System

1. Provide a more detailed technical justification that explains why repeatable test conditions cannot be established when testing the ADS valves during reactor refueling outages to allow measurement of meaningful valve stroke times in order to provide a means to detect valve degradation (refer to Relief Request RR-1).

2. Provide a more detailed technical justification that explains why it is not possible to enter the drywell during normal operation or cold shutdowns to exercise the ADS line vacuum relief check valves (refer to Relief Request RR-2). Is the torque required to actuate these valves measured when the valves are manually exercised?

3. Provide the P&ID that shows ADS line vacuum relief check valves 66-25 through -29 and 66-31 through -36 for our review.

C. Feedwater System

1. Provide Note 1 that is referenced for valve 30-32 on page III-2-2 of the valve test table for our review.

2. P&ID C-18005-C Sh.2 identifies the feedwater inlet isolation valves as 31-03 and -04 while the valve test table lists them as 31-07 and -08. What are the correct numbers for these valves?

D. Reactor Recirculation System

1. Provide the P&ID (Drawing No. C-18020-C) that shows reactor recirculation valves 110-127 and -128 for our review.

E. Control Rod Drive System

1. Provide a detailed discussion that explains how it was determined that the technical specification control rod scram insertion testing meets the intent of Section XI testing requirements (refer to Relief Request RR-1).

2. Section XI, IWV-3412, permits exercising valves during cold shutdowns when it is impractical to exercise them quarterly during power operations; what is the basis for only exercising 8 out of 129 control rod drive valve sets (108, 126, 127, and 138) during each cold shutdown?

3. Provide a detailed discussion that explains how it was determined that the technical specification control rod scram insertion testing meets the intent of Section XI testing requirements (refer to Relief Request RR-2).

4. Does the alternate testing specified for control rod drive valves 138 verify the reverse flow closure of these valves during rod scram testing (refer to Relief Request RR-2)?

5. Review the safety-related function of valves 301-3A and -3B (P&ID C-18016-C Sh.1 coordinates B-7 and C-7) to determine if they should be included in the IST program.

6. Is valve 301-113 Appendix J, Type C, leak rate tested to verify its ability to perform a containment isolation function?

7. Provide the P&ID (Drawing No. C-18016-C Sh.2) that shows scram discharge volume vent and drain valves 44.2-15, -16, -17, and -18 for our review.

8. Provide a more detailed technical justification for not measuring the stroke times of valves 44.2-15 and -18 when testing these

valves quarterly during power operations in order to provide a means to detect valve degradation (refer to Relief Request RR-3).

9. Review the safety-related function of valves CV-NC-11 and BV-NC-12 (Drawing No. C-18016-C Sh.1) to determine if they should be included in the IST program.

F. High Pressure Coolant Injection System

1. Provide the following P&IDs for our review.

C-18005-C Sh.1 C-18003-C C-18033-C

2. Do the following valves 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.

29-51	51-59	51.1-03	51.1-13
29-52	51-60	51.1-08	51.1-18
51-58	ID-12A	ID-12B	

3. Do valves 50-15, 50-20, 59-07, and 59-08 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.

G. Reactor Core Spray System

1. Provide the P&ID that shows the following core spray system valves for our review.

40-20	40-30	93-58
40-21	40-31	93-64
40-22	40-32	93-71
40-23	40-33	93-74

2. If opening valve 40-01, -09, -10, or -11 results in the downstream check valve becoming the single boundary between the RCS and the low pressure core spray piping as stated in Cold Shutdown Test Justification CS-1; are these motor operated isolation valves leak rate tested to verify a pressure boundary isolation function?

3. Is design accident flow verified through valves 40-03 and -13 during quarterly valve testing? If not, how are these valves full-stroke exercised (refer to the comment in Item A.6)?

4. Are valves 40-05 and -06 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

5. How is the reverse flow closure individually verified for check valves 40-20, -21, -22, and -23?

6. Is design accident flow verified through valves 81-07, -08, -27, and -28 during quarterly valve testing? If not, how are these valves full-stroke exercised (refer to the comment in Item A.6)?

7. Review the safety-related function of valves 93-51 and 93-52 (Drawing No. C-18007-C) to determine if they should be included in the IST program.

8. Is valve 58.1-01 Appendix J, Type C, leak rate tested to verify its ability to perform a containment isolation function?

9. What is the function of the 3/4 inch check valves on the discharge of relief valves 81-11 and -31?

H. Emergency Cooling System

1. Provide a more detailed technical justification for not exercising valves 39-05 and -06 when testing valves 39-07, -08,

-09, and -10 quarterly during power operations (refer to Cold Shutdown Test Justification CS-2).

2. Do valves 60-17 and -18 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.

3. NUREG-0800, Acceptance Criterion #9, states that the reactor coolant system high point vent valves should be tested to the requirements of subsection IWV of Section XI of the ASME Code for Category B valves. The Code requires quarterly valve testing unless it is shown that quarterly testing is impractical, then the testing can be performed during cold shutdowns. Provide the justification that demonstrates that it is impractical to test valves 05-01, -02, -03, and -04 quarterly during power operations (refer to Cold Shutdown Test Justification CS-3).

4. Review the safety-related function of the check valves downstream of the emergency cooling system steam line vent valves (Drawing No. C-18017-C) to determine if they should be included in the IST program.

5. Provide the P&ID that shows emergency cooling system valves 05-05, -07, -11, and -12 for our review.

6. Are valves 39-03, -04, -05, and -06 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

I. Reactor Shutdown Cooling System

1. Are valves 38-01, -02, -12, and -13 leak rate tested to verify their ability to perform a containment isolation and/or a pressure boundary isolation function?

2. Do the following valves have required fail-safe positions? If so, they should be exercised, fail-safe tested, and have their full-stroke times measured in accordance with the Code.

NU-03A	NU-03C	38-10
NU-03B	38-09	38-11

J. Containment Spray System

1. Are valves 80-01, -02, -21, and -22 ever required to change position to accomplish a specific function?

2. Is design accident flow verified through valves 80-05, -06, -25, and -26 during quarterly valve testing? If not, how are these valves full-stroke exercised (refer to the comment in Item A.6)?

3. How is the full-stroke capability of the valves addressed in Relief Request RR-1 verified during the air test performed on these valves during refueling outages? Provide the justification for not performing this testing quarterly during power operations and during cold shutdowns.

4. Are valves 80-15, -16, -35, and -36 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

5. Are valves 80-43 and CS-C-4 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

6. Note 1 indicates that 93-10 and -11 are series check valves, however, the P&ID does not show them as such; what is the true configuration of these valves? If a series check valve performs a safety function in the closed position, it must be individually verified in that position.

7. Review the safety-related function of valves 93-49 and 93-50 (Drawing No. C-18012-C) to determine if they should be included in the IST program.

8. The NRC staff has concluded that a valve sample disassembly and inspection utilizing a manual full-stroke exercise of the valve disk is an acceptable method to verify a check valve's full-stroke capability. This program involves grouping similar valves together and testing one valve in each group during each refueling outage. The sampling technique requires that each valve in the group be of the same design (manufacturer, size, model number and materials of construction) and have the same service conditions. Additionally, at each disassembly it must be verified that the disassembled valve is capable of full-stroking and that its internals are structurally sound (no loose or corroded parts).

   A different valve of each group is required to be disassembled, inspected and manually full-stroke exercised at each refueling outage, until the entire group has been tested. If it is found that the disassembled valve's full-stroke capability is in question, the remainder of the valves in that group must also be disassembled, inspected and manually full-stroke exercised during the same outage.

   Does the Nine Mile Point Nuclear Station, Unit 1, disassembly and inspection program for valves 93-60 and -62 conform to this staff position (refer to Relief Request RR-2)?

9. Provide the P&ID that shows the following containment spray system valves for our review.

80-114	93-57	93-63
80-115	93-60	93-72
80-118	93-62	93-73

K. Reactor Cleanup System

1. Provide the P&ID that shows reactor cleanup system valves 63-04, 63-05, 63.2-01, and 63.2-02 for our review.

L. Inert Gas Purge and Fill System

1. Provide the P&ID that shows valves 201.1-09, -11, -14, and -16 for our review.

2. Is valve 201-21 ever required to change position to accomplish a specific function? If so, review the safety-related function of valve 201-22 to determine if it should be included in the IST program.

3. Are valves 70-94 and -95 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

M. Hydrogen-Oxygen Monitor System

1. Provide the P&IDs (Drawing Nos. C-26939-C and C-26949-C) that show various hydrogen-oxygen monitor system valves for our review.

2. Do the solenoid operated valves in the hydrogen-oxygen monitor system have fail-safe actuators? If so, is the fail-safe operation of these actuators tested in accordance with the requirements of IWV-3415? How is the remote position indication of these valves verified?

3. Are valves 201.7-08 and -09 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

4. Are the valves in the lines from the drywell and the torus to the ILRT system (Drawing No. C-18014-C Sh.2) Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

N. Traversing In-Core Probe System

1. Provide a drawing that shows the TIP system valves for our review.

2. Provide a more detailed technical justification for not exercising ball valves TIP-1, -2, -3, and -4 quarterly during power operations or during cold shutdowns (refer to Relief Request RR-2).

3. Are the explosive squibs for the TIP shear valves tested in accordance with the requirements of IWV-3610? Are these valves Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

O. Nitrogen Supply System

1. Provide the P&IDs (Drawing Nos. C-18014-C Sh. 3 and Sh. 4) that show the nitrogen supply system valves for our review.

2. Do valves 201.8-02 and 201.9-49 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.

P. Reactor Building HVAC System

1. Provide the P&ID (Drawing No. C-18013-C) that shows the reactor building HVAC system valves for our review.

Q. Control Room HVAC System

1. Provide the P&ID (Drawing No. C-18047-C) that shows any the control room HVAC system pumps and valves for our review.

R. Reactor Liquid Poison System

1. Has the plant modification identified in Relief Request RR-2 which will allow testing of valves 42-19 and -20 been performed? If not, what alternate testing can be performed to verify the reverse flow closure of these valves?

2. Provide a more detailed technical justification for not exercising valves 42.1-02 and -03 during cold shutdowns (refer to Relief Request RR-1).

3. Are valves 42.1-02 and -03 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

S. Spent Fuel Storage Pool Filtering & Cooling System

1. Provide the P&ID (Drawing No. C-18008-C) that shows the spent fuel pool filtering and cooling system valves for our review.

2. Are valves 54-16, -17, and -18 ever required to change position to accomplish a specific function?

T. Sample System

1. Provide the P&ID (Drawing No. C-18041-C Sh. 7) that shows valve 122-03 for our review.

2. Are valves 110-127 and -128 (Drawing No. C-18041-C Sh. 2) Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

U. Reactor Building Closed Loop Cooling Water System

1. Provide the P&IDs (Drawing Nos. C-18022-C Shs. 2, 3, and 4, and Drawing No. C-18034-C Sh. 1) that show the reactor building closed loop cooling water valves for our review.

2. Do valves 70-212 and -222 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.

3. What is the safety-related function of valve 70-257? How is a full-stroke exercise of this valve verified?

4. Are valves 70-92, -93, -94, and -95 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

V. Condensate Transfer System

1. Provide the P&IDs (Drawing Nos. C-18009-C Sh. 2, C-18035-C, C-18043-C Sh. 2, C-18045-C Sh. 5, and C-18048-C) which show the condensate transfer system valves for our review.

2. Does valve 57.1-72 have a required fail-safe position? If so, in addition to testing its fail-safe function, this valve must be exercised and have its full-stroke times measured in accordance with the Code.

W. Torus Vacuum Relief System

1. Do valves 68-01, -02, -03, and -04 perform a safety function in the closed position? If so, how are they verified in the closed position during quarterly valve testing?

2. Are cleanup system valves 63.1-01 and -02 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

X. Emergency Service Water System

1. Provide the P&ID (Drawing No. C-18027-C Sh. 2) that shows the emergency service water system valves for our review.

Y. 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.

Z. Waste Disposal System

1. Provide the P&IDs (Drawing Nos. C-18045-C Sh. 7 and Sh. 9) that show the waste disposal system valves for our review.

2. Is the fail-safe actuator of valve 83.1-10 tested in accordance with the requirements of Section XI, IWV-3415?

AA. Instrument Air System

1. Provide the P&ID (Drawing No. C-18011-C Sh. 2) that shows the instrument air system valves for our review.

BB. Emergency Diesel Generator Fuel Oil Handling System

1. Provide the P&ID (Drawing No. C-18040-C Sh. 1) that shows the emergency diesel generator fuel oil handling system valves for our review.

CC. Breathing Air To Drywell System

1. Provide the P&ID (Drawing No. C-18578-C) that shows the breathing air to drywell system valves for our review.

2. Are valves 114-BA1 and -BA2 Appendix J, Type C, leak rate tested to verify their ability to perform a containment isolation function?

DD. Chilled Water System

1. Is the chilled water system utilized to meet the post accident control room habitability requirements? If so, all active system pumps and valves used for this function should be included in the IST program and be tested to the Code requirements unless specific relief is requested and granted.

2. PUMP TESTING PROGRAM

1. A general relief from the allowable ranges of a test quantity, as listed in Table IWP-3100-2, cannot be granted as requested in General Relief Request PG-1. If specific cases are identified where the Code specified allowable ranges cannot be met for individual pumps or groups of pumps, then the licensee should submit a specific request for relief providing sufficient technical data for an evaluation by the NRC staff.

2. What is the basis for selecting the lower driver bearing as the alternate location for measuring the pump vibration for the emergency service water pumps (refer to Pump Relief Request PR-11)?

3. Lack of installed instrumentation is not an acceptable justification for not measuring the pump flowrate for the emergency diesel generator cooling water pumps during pump quarterly testing (refer to Pump Relief Request PR-1).

4. Provide a more detailed technical justification for not making independent pump differential pressure measurements for the core spray and the core spray topping pumps (refer to Pump Relief Request PR-2).

5. What alternate testing has been considered to provide information to determine the hydraulic condition of the condensate transfer pumps and to detect pump hydraulic degradation (refer to Pump Relief Request PR-3)? Provide the P&ID that shows these pumps.

6. Lack of installed instrumentation is not an acceptable justification for not measuring the pump inlet and differential pressures for the diesel fuel oil handling pumps during pump quarterly testing (refer to Pump Relief Request PR-4).

7. Are the flowrate measurements for the diesel fuel oil handling pumps sufficiently accurate to allow the detection of pump

hydraulic degradation? Since the Code allowable ranges of Table IWP-3100-2 cannot be met (refer to Pump Relief Request PR-5), what are the allowable ranges of pump flowrates that are being used for these pumps?

8. Lack of adequate instrumentation is not an acceptable justification for not measuring the pump inlet and differential pressures, and flowrates for the condensate, the feedwater booster, and the feedwater pumps during pump quarterly testing (refer to Pump Relief Request PR-7). What alternate testing has been considered to provide information to determine the hydraulic condition of these pumps and to detect pump hydraulic degradation?

9. Why is one of the safety-related feedwater pumps not in the same flow train as the safety-related feedwater booster pumps?

10. Provide a more detailed technical justification why the shutdown cooling pumps cannot be tested quarterly in the minimum flow recirculation flow path without resulting in extensive pump damage.

11. Provide a more detailed technical justification for not measuring pump inlet pressure for the reactor liquid poison pumps. What variation would be seen in the pump inlet pressure from the start to the finish of the pump test? Provide more detailed information that justifies the relaxation of the allowable ranges for the pump flowrate and discharge pressure for these pumps.

12. Lack of installed instrumentation is not an acceptable justification for not measuring the pump flowrate for the emergency service water pumps during pump quarterly testing (refer to Pump Relief Request PR-10).

13. Lack of installed instrumentation is not an acceptable justification for not measuring the pump flowrate for the reactor building closed cooling water pumps during pump quarterly testing (refer to Pump Relief Request PR-12).

14. Calculation of pump inlet pressure may be an acceptable alternate test method, however, detailed requests for relief should be submitted for the pumps that utilize pump test table notes 2 and 9.