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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ACTION
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December 31, 1990

MEMORANDUM FOR: Edward L. Jordan, Chairman
Committee to Review Generic Requirements

FROM: Frank J. Miraglia, Deputy Director
Office of Nuclear Reactor Regulation

I have a copy DPP

SUBJECT: WAIVER OF CRGR REVIEW OF A PROPOSED GENERIC LETTER ON THE MODIFICATION OF THE SURVEILLANCE INTERVAL REQUIREMENTS FOR THE TECHNICAL SPECIFICATION ON ELECTRICAL PROTECTIVE ASSEMBLIES

The NRC has issued technical specifications (TS) for 9 of the last 14 boiling water reactors (BWRs) to receive an operating license with an alternative to the guidance of the BWR Standard Technical Specifications (STS) on channel functional tests of electrical protective assemblies (EPAs). This alternative relaxes the 6-month surveillance interval specified in the BWR STS, to allow these tests to be performed each time the plant is in cold shutdown for a period of more than 24 hours, unless the test was performed in the previous 6 months.

Recently, the staff approved a request by the Commonwealth Edison Company to incorporate this alternative in the TS for the Dresden Nuclear Power Station, Units 2 and 3. During this review, we found that the Niagara Mohawk Power Company performed a quantitative analysis of the effect of this alternative when it was proposed as a TS change for Nine Mile Point (NMP) Unit 2. This analysis provided a strong justification for the acceptance of this alternative and its benefit for safety which is applicable on a generic basis. We concluded that this alternative should be offered as a line-item TS improvement for other BWR plants that test EPAs during plant operation.

Enclosure 1 is a proposed generic letter to provide guidance on a license amendment request to implement this alternative for the surveillance interval of EPA channel functional tests. Enclosure 2 is a proposed memorandum to project managers with a model safety evaluation report (SER) for this TS change.

The proposed action is subject to CRGR approval because it involves a generic action on TS changes and it will be implemented through the issuance of a generic letter. However, we recommend that CRGR review be waived for the following reasons:

1. The implementation of this alternative to the BWR STS requirements is responsive to the Commission Paper, SECY-88-304, on staff actions to reduce testing when operating at power.

2. This change has a strong technical justification as noted by the quantitative risk assessment performed for NMP-2 that demonstrated a net safety benefit. Enclosure 3 is a copy of the NMP-2 proposal.

Contact: T. Dunning, OTSB/DOEA
49-21189

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3. This action is consistent with current practice for BWR TS issued with operating licenses in the past 10 years and does not represent a new staff position. Also, this change is consistent with the proposals for the new STS that the industry has developed in response to the Commission Policy Statement on TS Improvements.

4. Any licensee proposal to implement this TS change is voluntary.

We request that you respond to our recommendation for waiving CRGR review at your earliest convenience. We will prepare a package for CRGR review if you find that a formal CRGR review of this action is necessary. This action is sponsored by Charles E. Rossi, Director, Division of Operational Events Assessment.

Frank J. Miraglia

Frank J. Miraglia, Deputy Director
Office of Nuclear Reactor Regulation

Enclosure:
As stated

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Enclosure 1

TO: All HOLDERS OF OPERATING LICENSES FOR BOILING WATER REACTORS

SUBJECT: MODIFICATION OF SURVEILLANCE INTERVAL FOR THE ELECTRICAL PROTECTIVE ASSEMBLIES IN REACTOR PROTECTION SYSTEM POWER SUPPLIES (Generic Letter 91-)

This generic letter provides guidance for requesting a license amendment to modify the surveillance interval for electrical protective assemblies (EPAs) used in power supplies for the reactor protection system (RPS). The current standard technical specifications (STS) for boiling water reactors (BWRs) require the licensee to perform channel functional tests of EPAs at a 6-month interval. The modification of EPA test interval provided by this generic letter is to change the TS to state that the test shall be performed each time the plant is in cold shutdown for a period of more than 24 hours, unless the test was performed in the previous 6 months.

In a proposal on December 15, 1988, for Nine Mile Point (NMP) Unit 2, the Niagara Mohawk Power Corporation provided a strong justification that this TS change results in a net benefit for plant safety. During the recent review of this TS change for Dresden Nuclear Power Station, Units 2 and 3, the U.S. Nuclear Regulatory Commission (NRC) staff noted that this change from the guidance of the BWR STS had been implemented in the TS issued with 9 of the last 14 BWR operating licenses. Based on these reviews, the staff concludes that the TS change is generically acceptable for BWRs as a line-item TS improvement. The enclosure provides guidance for the preparation of a license amendment request to implement this line-item TS improvement.

Licensees are encouraged to propose TS changes for BWR facilities that are consistent with the guidance provided in the enclosure. The NRC project manager for the facility will review amendment requests conforming to this guidance. Please contact the NRC project manager or the contact identified below if you have questions on this matter.

This letter does not require any licensee to propose changes to their plant TS. Therefore, any action taken in response to the guidance provided in this generic letter is voluntary and is not a backfit under 10 CFR 50.109.

Sincerely,

James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosure: As stated

Contact: Tom Dunning, NRR/OTSB
(301) 492-1189

MODIFICATION OF THE SURVEILLANCE INTERVAL REQUIREMENTS FOR ELECTRICAL PROTECTION ASSEMBLIES IN REACTOR PROTECTION POWER SUPPLIES

Introduction

This enclosure provides guidance for the preparation of a request for a license amendment to modify the technical specifications (TS) surveillance interval requirements for the electrical protection assemblies (EPAs) used in reactor protection system (RPS) power supplies for boiling water reactors (BWRs). This change reduces the possibility for inadvertent reactor trips caused by testing of EPAs during power operation.

Discussion

To protect RPS equipment from abnormal operating voltage or frequency produced by RPS motor generator (MG) sets or an alternate power supply, EPAs will trip a breaker between the MG sets and the RPS. TS 4.8.3.4 in the standard technical specifications for BWRs addresses the surveillance requirements for EPAs. This TS specifies that licensees perform a channel functional test every 6 months.

To functionally test an EPA channel, the power for the RPS is transferred from the associated MG set to the alternate power supply. Because the transfer of RPS power involves a dead-bus transfer, power is momentarily interrupted which causes a half scram or group isolation. Alternatively, licensees could perform tests without a bus transfer, but this procedure also results in a momentary interruption of power to the RPS when each EPA channel is tripped during the channel functional test. At many BWR plants, licensees have encountered problems with the reset of the half-trip conditions, following testing of EPAs during power operation, resulting in inadvertent scrams and group isolations that presented a challenge to safety systems.

An alternative to testing the EPAs every 6 months during power operation has been to test them each time the plant is in cold shutdown for a period of more than 24 hours if this test has not been performed within the previous 6 months. This alternative eliminates the need to test the EPAs during power operation and, thereby, reduces the possibility of inadvertent challenges to the protection systems. However, this alternative retains testing within the existing 6-month interval when the unit is shutdown for more than 24 hours during an operating cycle.

If the licensee does not encounter a cold shutdown of 24 hours or more during a fuel cycle, the effect of not testing EPAs during this interval is a small risk to safety. This alternative provides a benefit to safety by reducing the possibility for inadvertent trips and challenges to safety systems. The staff concludes that the benefit to safety of reducing the frequency of testing during power operation more than offsets the risk to safety from relaxing the surveillance requirement to test EPAs during power operation.

The following guidance provides an acceptable alternative in the format of the current BWR STS for these surveillance requirements:

4.8.2.4 The above specified RPS electrical power monitoring assemblies shall be determined OPERABLE:

a. By performance of a CHANNEL FUNCTIONAL TEST each time the plant is in COLD SHUTDOWN for a period of more than 24 hours, unless performed in the previous 6 months.

Summary

The modification of the surveillance interval for performing channel functional tests for EPAs in accordance with this guidance will eliminate the requirement to test EPAs during power operation. The elimination of this testing during power operation will reduce the possibility for inadvertent trips and challenges to safety systems. The implementation of this line-item TS improvement will produce a net benefit for safety.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Enclosure 2

MEMORANDUM FOR: All NRR Project Managers

FROM: James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

SUBJECT: GENERIC LETTER 910-

Enclosure 1 is Generic Letter 910- , that provides guidance to licensees for a license amendment request to modify the surveillance interval for channel functional tests in the technical specifications (TS) for electrical protective assemblies. Any proposal for this line-item TS improvement is voluntary.

Project managers should review and process proposed license amendments conforming to the guidance of the generic letter. Generally, it should not be necessary to consult or to obtain review assistance from a technical review branch unless the proposed amendment deviates from the generic letter guidance.

Enclosure 2 is a model safety evaluation report (SER) that was prepared by the Technical Specifications Branch. The model SER will facilitate your preparation of a license amendment to implement this line-item TS improvement. _____ _____ is the lead project manager for this task and should be included on distribution for the license amendment package. _____ will assist you in the preparation of no significant hazards consideration pre-notice for a proposed amendment conforming to the generic letter.

James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosures:
Generic Letter 91-
Model SER

cc w/enclosures:
J. Sniezek
F. Miraglia
Division Directors, NRR
Associate Directors, NRR
Project Directors, NRR
Regional Administrators
J. Conran, CRGR
C. Berlinger, DOEA
S. Treby, OGC

CONTACT:
T. Dunning, OTSB, NRR
492-1189

MODEL SER

Underscored blank spaces are to be filled in with the applicable information. The information identified in brackets should be used as applicable on a plant-specific basis.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO.__ TO FACILITY OPERATING LICENSE NFP-__
AND AMENDMENT NO.__ TO FACILITY OPERATING LICENSE NFP-__
[UTILITY NAME]
DOCKET NOS. 50-__ AND 50-__
[PLANT NAME], UNITS 1 AND 2

Introduction

By letter of _____ __, 199_, [utility name] (the licensee) proposed a change to the technical specifications (TS) for [plant name]. The proposed change modifies the requirements for performing a channel functional test of electrical protective assemblies (EPAs) that are currently specified with a 6-month surveillance interval. Guidance on this proposed change was provided to all holders of operating licenses and construction permits for boiling water reactors (BWRs) by Generic Letter 91-__, of _____ __, 1991.

Evaluation

The licensee has proposed to modify the 6-month surveillance interval for performing channel functional tests of EPAs as specified in TS [4.8.4.3 a.] to state that they are to be performed ". . . when the plant is in COLD SHUTDOWN for a period of more than 24 hours, unless performed within the previous 6 months." This change is consistent with the guidance provided in Generic Letter 91-__.

The U.S. Nuclear Regulatory Commission (NRC) staff has previously evaluated the effect of this change on safety based on a quantitative analysis of the risks and benefits that were quantified in a proposal submitted by Niagara Mowhawk Power Corporation by letter of December 15, 1988. The NRC shaff has concurred with the conclusions of this analysis that this TS change will produce a net safety benefit. Therefore, the staff finds that the licensee's proposed TS change is acceptable.

Environmental Consideration

This amendment involves changes to the use of the facility components located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment will result in no significant increase in the amounts and no significant changes in the types of any effluents that may be released offsite. In addition, the staff determined that this amendment will produce no significant increase in individual or cumulative occupational exposure. The basis for this finding is that Niagara Mohawk Power Corporation, as noted in Generic Letter 91-__, performed a quantitative analysis of the effect on safety of the increased surveillance interval. This analysis demonstrated that the proposed TS change will produce an overall benefit to safety. This analysis is

valid for all BWRs with electrical protective assemblies. The staff has determined that the amendment involves no significant-hazards consideration, and the NRC has received no public comment on this finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

Conclusion

The Commission made a proposed determination that the amendment involves no significant-hazards consideration, which was published in the Federal Register (5_ FR _____) on _____ __, 199_. The Commission consulted with the State of _____. No public comments were received, and the State of _____ did not have any comments.

On the basis of the considerations discussed herein, the staff concludes that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Thomas G. Dunning, OTSB/DOEA
(Project Manager), PD__/DRP__

Dated: _____ __, 199_

(NOTE TO PMs: A 5520 copy of this model SER may be obtained by contacting Pat Coates, X21183 and requesting that 5520 document "EPA GL MODEL SER" be transmitted to your secretary or licensing assistant.)

ENCLOSURE 3

NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/ 301 PLAINFIELD ROAD, SYRACUSE, N.Y. 13212/ TELEPHONE (315) 474-1511

December 15, 1988
NMP2L 1184

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Gentlemen:

Niagara Mohawk Power Corporation hereby transmits an Application for Amendment to Nine Mile Point Unit 2 Operating License NPF-69. Also enclosed are the proposed changes to the Technical Specifications contained in Appendix A of the above mentioned license. Supporting information and analysis demonstrating that the proposed changes involve no significant hazards consideration pursuant to 10 CFR 50.92 are included as Attachment B. Pursuant to 10 CFR 170.12, a one hundred fifty dollar ($150.00) application fee is enclosed.

The proposed Technical Specification changes contained herein represent revisions to Sections 4.8.4.4, Reactor Protection System Electric Power Monitoring (RPS Logic), and 4.8.4.5, Reactor Protection System Electric Power Monitoring (Scram Solenoids). These sections provide the Surveillance Requirements for determining the operability of the Electrical Protection Assemblies. This revision is required to change the Surveillance Frequency. Niagara Mohawk requests approval of this Application by May 31, 1989, to minimize the impact on plant operations.

Pursuant to 10 CFR 50.91(b)(1), Niagara Mohawk has provided a copy of this license amendment request and the associated analysis regarding no significant hazards consideration to the appropriate state representative.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

C. D. Terry
Vice President
Nuclear Engineering and Licensing

TDF/pns/5604G
Enclosure
xc: Regional Administrator, Region I
Mr. R. A. Capra, Director
Ms. M. F. Haughey, Project Manager
Mr. W. A. Cook, Resident Inspector
Records Management

Ms. Donna Ross
Division of Policy Analysis and Planning
New York State Energy Office
Agency Building 2
Empire State Plaza
Albany, NY 12223

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UNITED STATES

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
NIAGARA MOHAWK POWER CORPORATION	)	Docket No. 50-410
	)	
(Nine Mile Point Nuclear Station Unit No. 2)		

APPLICATION FOR AMENDMENT

TO

OPERATING LICENSE

Pursuant to Section 50.90 of the Regulations of the Nuclear Regulatory Commission, Niagara Mohawk Power Corporation, holder of Facility Operating License No. NPF-69, hereby requests that Sections 4.8.4.4 and 4.8.4.5 of the Technical Specifications set forth in Appendix A to that License be amended. The proposed changes have been reviewed in accordance with Section 6.5 of the Technical Specifications.

The proposed changes to the Technical Specifications are set forth in Attachment A to this Application. Sections 4.8.4.4 and 4.8.4.5 have been proposed for amendment in order to revise the Surveillance Frequency for performance of Channel Functional Tests on the Reactor Protection System Electrical Protection Assemblies. The proposed changes would not authorize any change in the types of effluents or in the authorized power level of the facility. Supporting information and analyses which demonstrate that the proposed changes involve no significant hazards considerations pursuant to 10 CFR 50.92 are included as Attachment B

5604G

WHEREFORE, Applicant respectfully requests that Appendix A to Facility Operating License No. NPF-69 be amended in the form attached hereto as Attachment A.

NIAGARA MOHAWK POWER CORPORATION

By _____
Vice President
Nuclear Engineering and Licensing

Subscribed and sworn to before me
on this 15th day of December 1988.

_____
NOTARY PUBLIC

DIANE R. KIMBALL
Notary Public in the State of New York
Qualified in Onondaga County No. 4933503
My Commission Expires May 31, 19[illegible]

5604G

ATTACHMENT A

NIAGARA MOHAWK POWER CORPORATION

LICENSE NO. NPF-69

DOCKET NO. 50-410

Proposed Changes to Technical Specifications

Replace existing pages 3/4 8-32 and 3/4 8-33 with the attached revised pages 3/4 8-32 and 3/4 8-33. These pages have been retyped in their entirety with marginal markings to indicate the changes.

ELECTRICAL POWER SYSTEMS

ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

REACTOR PROTECTION SYSTEM ELECTRIC POWER MONITORING (RPS LOGIC)

LIMITING CONDITIONS FOR OPERATION

3.8.4.4 Two RPS UPS electrical protection assemblies for each inservice UPS set or alternate source shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

a. With one RPS electrical protection assembly for an inservice RPS UPS inoperable, restore the inoperable electrical protection assembly to OPERABLE status within 72 hours or remove the associated RPS UPS from service.

b. With both RPS electrical protection assemblies for an inservice RPS UPS inoperable, restore at least one electrical protection assembly to OPERABLE status within 30 minutes or remove the associated RPS UPS from service.

SURVEILLANCE REQUIREMENTS

4.8.4.4 The above specified RPS electrical protection assemblies instrumentation shall be determined OPERABLE:

a. By performance of a CHANNEL FUNCTIONAL TEST each time the plant is in COLD SHUTDOWN for a period of more than 24 hours, unless performed within the previous 6 months.

b. At least once per 18 months by demonstrating the OPERABILITY of overvoltage, undervoltage and underfrequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic and output circuit breakers and verifying the following setpoints.

   1. Overvoltage Bus A: $\leq$ 132 volts AC
      Bus B: $\leq$ 132 volts AC

   2. Undervoltage Bus A: $\geq$ 117.1 volts AC
      Bus B: $\geq$ 115.75 volts AC

   3. Underfrequency $\geq$ 57 Hz

ELECTRICAL POWER SYSTEMS

ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

REACTOR PROTECTION SYSTEM ELECTRIC POWER MONITORING (SCRAM SOLENOIDS)

LIMITING CONDITIONS FOR OPERATION

3.8.4.5 Two RPS electrical protection assemblies (EPAs) for each inservice RPS MG set or alternate source shall be OPERABLE.

APPLICABILITY: At all times.

ACTION:

a. With one RPS electrical protection assembly for an inservice RPS MG set or alternate power supply inoperable, restore the inoperable EPA to OPERABLE status within 72 hours or remove the associated RPS MG set or alternate power supply from service.

b. With both RPS electrical protection assemblies for an inservice RPS MG set or alternate power supply inoperable, restore at least one EPA to OPERABLE status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

SURVEILLANCE REQUIREMENTS

4.8.4.5 The above specified RPS electrical protection assemblies shall be determined OPERABLE:

a. By performance of a CHANNEL FUNCTIONAL TEST each time the plant is in COLD SHUTDOWN for a period of more than 24 hours unless performed within the previous 6 months.

b. At least once per 18 months by demonstrating the OPERABILITY of overvoltage, undervoltage and underfrequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic and output circuit breakers and verifying the following setpoints.

   1. Overvoltage Bus A: $\leq$ 128.8 volts AC
      Bus B: $\leq$ 130.0 volts AC

   2. Undervoltage Bus A: $\geq$ 114.5 volts AC
      Bus B: $\geq$ 115.1 volts AC

   3. Underfrequency $\geq$ 57 Hz

ATTACHMENT B

NIAGARA MOHAWK POWER CORPORATION

LICENSE NO. NPF-69

DOCKET NO. 50-410

REFERENCES

1) "Technical Specifications - Enhancing the Safety Impact," NUREG-1024, November 1983.

2) "Technical Specification Improvement Analyses for BWR Reactor Protection System," NEDC-30581P, May 1985.

3) "Safety Evaluation by the Office of Nuclear Reactor Regulation, Review of BWR Owners Group Reports NEDC-30844 and 30851P on Justification for and Extension of on-line Test Intervals and Allowable Out-of-Service Times for BWR Reactor Protection Systems," forwarded to BWROG Chairman T. A. Pickens on July 15, 1987.

INTRODUCTION

Current surveillance tests for the Electrical Protection Assemblies (EPA's) in the Reactor Protection System (RPS) require the performance of Channel Functional Tests at least once per 6 months. Performance of these tests places the plant in a half-scram condition with partial reactor vessel isolation for approximately 20 hours per year. This test configuration makes the plant more vulnerable to potential inadvertent plant scrams. The limitations and restrictions associated with a half-scram condition in the RPS logic (powered from the Uninterruptible Power Supply EPA's) make testing during operation very difficult. The impact on operations is so severe that the reactor must be shut down prior to performing the surveillance.

The purpose of this analysis is to increase the surveillance test interval of the EPA's in order to reduce the potential for inadvertent plant scrams. Although testing is currently performed at cold shutdown, the margin of safety provided by the Technical Specifications is based on performing the surveillance while at power. Therefore, the analysis in this Application for Amendment assumes testing is performed during power operation.

The performance of technical specification improvement analyses is supported by recent staff findings (Reference 1) relating to identified problems in testing intervals given in current technical specifications. One of the Reference 1 findings concluded that frequent testing of certain components can potentially lead to undesirable challenges to plant shutdown systems. These challenges to plant shutdown systems have the potential of negating the benefits related to increased surveillance tests of components. The analysis presented in this submittal is responsive to the Reference 1 recommendations.

The methodology employed in this analysis has also been approved by the Commission (Reference 3) in the BWR Owner's Group submittal relating to RPS channel functional tests (Reference 2). This submittal demonstrated that a net improvement to plant safety can be realized with implementation of reduced frequency of RPS channel functional tests. The evaluation of the EPA technical specification surveillance tests is a direct application of the approved Reference 2 analysis methodology.

The analysis provides the technical basis for changing the surveillance test interval from the current 6 months to a maximum of 18 months. The surveillance will require testing at each cold shutdown of greater than 24 hours if the functional test has not been performed within the previous 6 months. As a minimum, testing would be performed at least once per 18 months during refueling. The recommended technical specification change results in a net improvement to plant safety by reducing the potential of unnecessary challenges to plant shutdown systems. This change has been incorporated at several other BWR operating plants. This change is also consistent with the safety enhancements recommended in Reference 2 and accepted by the NRC in Reference 3.

DISCUSSION

Each of the two RPS Motor/Generator (M/G) sets supplying power to the scram solenoids, and each of the two RPS Uninterruptible Power Supplies (UPS) supplying power to the RPS/Nuclear Steam Supply Shutoff System logic, have two EPA's which provide redundant protection for essential circuits against over-voltage, under-voltage, and under-frequency. In addition, each M/G set and each UPS has its own protective circuit with the same function as the EPA's. The EPA's are designed and fully qualified as Class 1E electrical components. While neither the M/G set nor the UPS protective circuit is qualified as Class 1E, they are located in protected environments and operate in static conditions, without frequent cycling and without any mechanical, electrical or thermal stresses.

The current Nine Mile Point Unit 2 technical specifications require a channel functional test to be performed on the EPA's at least once every six months. Performance of this test during operation requires the plant to be placed in a half-scram condition for approximately 10 hours/test (20 hours/year). In addition, for the EPA's powering the RPS/Nuclear Steam Supply Shutoff System logic, numerous other restrictions and limitations make testing very difficult. The reactor water cleanup system and cooling water to the recirculation pump motor windings are both isolated along with the main steam line drains. In addition, the Main Steam Isolation Valves receive a half closure signal. The potential for an inadvertent Main Steam Isolation Valve closure or plant scram during this test condition is increased based on the loss of redundancy (i.e., loss of a single channel or component will cause an isolation or a scram).

Industry-wide BWR operation experience indicates there are approximately 0.56 inadvertent scrams/reactor-year due to instrumentation testing in the RPS (Reference 2). Therefore, there is a strong incentive to minimize instrumentation testing in order to reduce the total time the plant is vulnerable to unnecessary challenges to the plant shutdown systems. The NRC approved methodology from Reference 2 was used to evaluate the adequacy of the

current EPA surveillance test interval. The first step in the analysis process is to calculate the change in reactor shutdown reliability when the EPA surveillance test intervals are extended. This incremental decrease in reliability is then compared to the calculated reduction in inadvertent scram frequency and associated core damage frequency from decreased testing (i.e., benefits from reduced potential of inadvertent scrams, equipment actuations, potential form test errors, and diversion of plant operating personnel). The improved EPA surveillance test interval is the interval which is determined to have a net improvement to plant safety.

ANALYSIS MODEL

The change in reactor shutdown reliability when EPA surveillance test intervals are extended was calculated using the failure model given in Figure 1 and failure probabilities from industry operating experience. For the RPS Scram Solenoids, the following conditions are required for a reactor shutdown failure in a single M/G set circuit:

- Failure of M/G set regulator causing under/over voltage or under frequency
- Failure of M/G set protective circuit
- EPA #1 fails to trip
- EPA #2 fails to trip
- Under/over voltage or under frequency condition not detected over an extended time period
- Sufficient number of logic relays or scram solenoids fail so as to prevent scram
- Alternate Rod Insertion fails to insert control rods
- Failure to inject liquid poison from Standby Liquid Control System

The last two failure conditions (Alternate Rod Insertion and Standby Liquid Control System failures) are completely independent of failures in the M/G set and EPA's. The logic relays in the Alternate Rod Insertion system are not energized during reactor operation and do not rely on the M/G set power or normal scram solenoids for inserting control rods. The Standby Liquid Control System can be manually initiated and does not rely on insertion of control rod for reactor shutdown. Therefore, in the very unlikely event of failure of several scram logic relays or scram solenoids due to M/G set and EPA failures, two additional independent and diverse systems exist for reactor shutdown.

RISK INCREASE

The incremental change in the failure probability of the RPS Scram Solenoid primary scram system when the EPA surveillance test intervals are extended from 6 to the proposed maximum of 18 months was calculated to be 4.7E-08 failures per reactor-year. The incremental change in core damage frequency due to the 18-month extension includes coincident failure of the Alternate Rod Insertion system and Standby Liquid Control System (required for reactor

shutdown failure), in addition to the failure of the primary scram system. When credit for these two systems is included in the calculation, the incremental change in core damage frequency resulting from extending the Scram Solenoid EPA test intervals to 18 months is 6.2E-12/reactor-year. This incremental change in core damage frequency when the EPA surveillance test intervals are extended from 6 to 18 months is a negligible contributor to overall plant safety risks.

The Uninterruptible Power Supplies (UPS) supplying power to the RPS/Nuclear Steam Supply Shutoff System logic have protective circuits similar to the RPS M/G sets. Under-voltage, under and over-frequency, and overload are all annunciated in the control room. In addition, the UPS's were purchased to safety-related requirements and are located in an environmentally controlled area. They also operate in a static condition without any mechanical, electrical or thermal stresses, or frequent cycling. Therefore, the failure model for reactor shutdown reliability in the RPS/Nuclear Steam Supply Shutoff System logic system is similar to that for the RPS Scram Solenoids.

The resulting risk increase associated with the RPS/Nuclear Steam Supply Shutoff System Logic system due to the proposed maximum 18-month surveillance interval is on the same order of magnitude as that associated with the RPS Scram Solenoids.

RISK DECREASE

During EPA testing, the plant is placed in a half-scram and, for the RPS/Nuclear Steam Supply Shutoff System circuit, partial Main Steam Isolation Valve isolation condition. During normal plant operation, trip of both RPS Divisions is required to initiate a scram. In the half-scram condition only one RPS Division is required for scram initiation (the remaining RPS Division being tested is in a tripped condition). Therefore, the potential for an inadvertent scram during an EPA surveillance test is increased. The increase in inadvertent scrams causes an associated increase in shutdown system challenges which lead to increased plant safety risks.

For the UPS EPA's in the RPS/Nuclear Steam Supply Shutoff System logic power circuit, the potential for an inadvertent scram is even greater due to the half Main Steam Isolation Valve closure signal present during testing. This increase in shutdown system challenges is compounded by a corresponding decrease in the reliability of the shutdown systems. Testing of the UPS EPA's results in complete isolation of the shutdown cooling system and numerous other containment isolation valves as well as loss of off-normal status lights for the Main Steam Isolation Valves.

The frequency of inadvertent scrams for RPS instrumentation testing calculated from BWR Operation experience (Reference 2) is 0.56 scrams per reactor-year. An EPA is in a half-scram condition during test for approximately 10 hours. For a 6-month surveillance test interval, this represents 20 hours/reactor-year. For the proposed cold shutdown EPA surveillance test interval, the test would be performed during reactor shutdown when inadvertent scram is not a factor. The time the reactor is in a half-scram condition during plant operation was used to calculate the proportion of total instrumentation inadvertent scrams caused by EPA testing for a 6- and maximum 18-month test interval. The incremental reduction in scram frequency when the EPA

surveillance test interval is extended from 6 to 18 months is 1.8E-03 scrams/reactor-year. This reduction in scram frequency represents an associated reduction in core damage frequency of approximately 1.0E-10/reactor-year. Although this decrease in core damage frequency is very small, it nevertheless more than offsets the increase in core damage frequency (6.2E-12/reactor-year) from decreased scram system reliability calculated above.

CONCLUSION

Nine Mile Point Unit 2 can be safely operated with the incorporation of the changes in this proposed amendment. It can be concluded from this analysis that the extension of the current 6-month test interval to maximum of 18 months is justified as an overall net improvement to plant safety.

10 CFR 50.91 requires that at the time a licensee requests an amendment, it must provide to the Commission its analysis using the standards in 10 CFR 50.92 concerning the issue of no significant hazards consideration. Therefore, in accordance with 10 CFR 50.91, the following analysis has been performed:

The operation of Nine Mile Point Unit 2, in accordance with the proposed amendment, will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment involves increasing the surveillance frequency for performing the Channel Functional Tests on the Reactor Protection System electrical protection assemblies from 6 months to a maximum of 18 months. The proposed amendment will have no adverse affect on the ability of the Reactor Protection System and Nuclear Steam Supply Shutoff System to perform their intended safety functions. The proposed surveillance frequency will reduce the amount of time the plant is in a half-scram condition and vulnerable to challenges to the plant shutdown systems. Further, the proposed change does not adversely affect the environmental qualification of any plant equipment. The equipment vendor has reviewed the proposed change and concurs with the revised surveillance interval. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The operation of Nine Mile Point Unit 2, in accordance with the proposed amendment, will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Increasing the Channel Functional Test surveillance requirement frequency for the Reactor Protection System electrical protection assemblies from 6 months to a maximum of 18 months will not adversely affect the Reactor Protection System and Nuclear Steam Supply Shutoff System responses to previously evaluated accidents. Thus, the Reactor Protection System and Nuclear Steam Supply Shutoff System responses remain within previously assessed limits.

Further, all safety-related systems and components remain within their applicable design limits. In addition, the environmental qualification of plant equipment is not adversely affected by this proposed amendment. Thus, system and component performance is not adversely affected by this change,

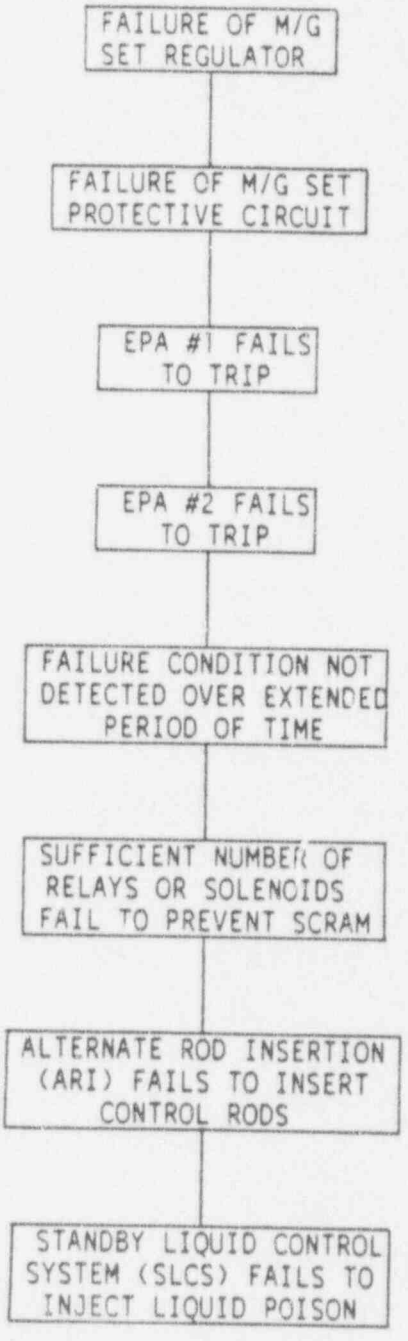
thereby assuring that the design capabilities of those systems and components are not challenged in a manner not previously assessed so as to create the possibility of a new or different kind of accident from any previously evaluated.

The operation of Nine Mile Point Unit 2, in accordance with the proposed amendment, will not involve a significant reduction in a margin of safety.

The proposed change increases the existing Technical Specification surveillance frequency from 6 months to a maximum of 18 months, but will not cause system performance criteria to be exceeded. As calculated in the above supporting information, the proposed change provides an overall net improvement to plant safety and a corresponding increase in the margin of safety. Therefore, the proposed change does not result in a significant reduction in a margin of safety.

FIGURE 1

FAILURE SEQUENCE REQUIRED FOR CORE DAMAGE
DUE TO FAILURE OF RPS M/G SET
PROTECTIVE CIRCUITRY



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