



Northern States Power Company

414 Nicollet Mall
Minneapolis, Minnesota 55401
Telephone (612) 330-5500

August 10, 1983

Director
Office of Nuclear Reactor Regulation
U S Nuclear Regulatory Commission
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Safety Evaluation for Environmental Qualification of
Safety-Related Electrical Equipment; Additional Information

The purpose of this report is to provide resolution of equipment qualification open items cited in the Safety Evaluation and Technical Evaluation Report on Environmental Qualification of Electrical Equipment (TER) prepared by the Franklin Research Center. This report was received on April 25, 1983, allowing insufficient time for inclusion of this information in our May 19, 1983 report required by 10 CFR Part 50, Section 50.49.

Resolution of the equipment qualification open items identified in the TER has been established via one or more of the following methods:

1. Equipment modification or replacement -- In some cases, unqualified equipment was replaced or modifications were performed to establish qualification. Qualified equipment was used for equipment replacement.
2. Additional clarification of qualification provided -- In many cases, equipment qualification open items were the result of lack of clarity in the qualification document. The open items were resolved by providing a more detailed description of the test and/or analyses on which the qualification was based.
3. Additional equipment qualification analyses performed -- Equipment qualification open items for some equipment items required that additional analyses be performed. These analyses are documented in calculation files and are being incorporated into the Prairie Island Equipment Qualification Central File.

The specific details of resolution for each equipment item is contained in the attached TER Response.

8308240200 830810
PDR ADOCK 05000282
P PDR

A048
1/40

NORTHERN STATES POWER COMPANY

Director of NRR

August 10, 1983

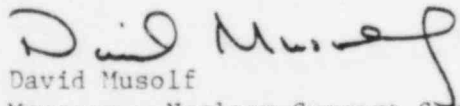
Page 2

As of this date, all equipment items on the Prairie Island harsh environment safety-related equipment masterlist are fully qualified with the exception of those items listed below:

1. Equipment qualification open items noted in our May 19, 1983 response to 10 CFR 50.49.
2. Limitorque Valve Controllers -- A project has been initiated to re-evaluate the environmental qualification of all safety-related Limitorque valve controllers as a result of the equipment qualification open items cited in the TER. The project will include contacting the equipment vendor to obtain the applicable qualification documents and then evaluating the environmental qualification. All open items cited in the TER will be addressed. This qualification evaluation is expected to be completed by January 1, 1984.
3. Westinghouse Safety Injection and Residual Heat Removal Motors -- A project has been initiated to re-evaluate the environmental qualification of these motors as a result of the equipment qualification open items cited in the TER. The project will include contacting the equipment vendor to obtain the applicable qualification documents and then evaluating the environmental qualification. All open items cited in the TER will be addressed. This qualification evaluation is expected to be completed by January 1, 1984.
4. Rosemount 1153 Series A Transmitters -- These transmitters were included in Category II.b in the TER, equipment not qualified. A technical response for this equipment item was transmitted to the NRC on May 5, 1983. By NRC letter dated June 3, 1983 from R A Clark to D M Musolf (NSP) this equipment item was reclassified into Category II.C. As a result, a project has been initiated to re-evaluate the aging qualification of Rosemount Series A transmitters. This evaluation is expected to be completed by January 1, 1984.

As stated in our May 19, 1983 letter all remaining deficiencies will be resolved by November 30, 1985.

Please contact us if you have any questions related to the information we have provided.



David Musolf

Manager - Nuclear Support Services

DMM/dab

cc: Regional Administrator-III
Resident Inspector, NRC
NRR Project Manager, NRC
G Charnoff

Attachment

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

ENCLOSURE ONE

Response to Franklin Research Center
Technical Evaluation Report dated March 29, 1983 -
"Review of Licensees' Resolution of Outstanding Issues
From NRC Equipment Environmental Qualification Safety Evaluation Reports"

Northern States Power Company
Prairie Island Nuclear Generating Plant Units 1 and 2

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
2.0 RESOLUTION OF DEFICIENCIES IDENTIFIED IN THE TECHNICAL EVALUATION REPORT	2-1
2.1 Resolution for Unit 1	2.1-1
2.2 Resolution for Unit 2	2.2-1
3.0 GENERAL REFERENCES	3-1

1.0 INTRODUCTION

This document addresses each of the environmental qualification deficiencies identified by the Franklin Research Center (FRC) in their Technical Evaluation Report (TER) [1] for the Prairie Island Nuclear Generating Plant. The intent of this document is to finalize equipment qualification documentation for most equipment items and provide plans for the finalization of all equipment items not presently qualified.

Since documentation of the environmental qualification of safety-related electrical equipment was initiated in 1980, there have been several submittals to the Nuclear Regulatory Commission (NRC) describing the qualification status of safety-related electrical equipment at Prairie Island. The initial equipment environmental qualification submittal was made on March 13, 1980 [2], and was updated on October 31, 1980 [3], and January 22, 1981 [4]. The NRC issued a Safety Evaluation Report (SER) to Northern States Power for the equipment qualification submittals on May 12, 1981 [5]. A response to the NRC SER was submitted by NSP on August 26, 1981, [6] and was updated on April 30, 1982 [7]. On May 19, 1983, a response to the Equipment Qualification Rule, 10CFR50.49, Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants [8] was submitted to the NRC by NSP.

The resolution of deficiencies identified in the TER will be addressed on an item-by-item basis following the numbering scheme presented in the TER for each unit. In many cases, the equipment identification numbers listed by the FRC for each unit are incorrect. These will be corrected in this document. Resolution of deficiencies is accomplished by clarifying the qualification efforts previously performed; by summarizing qualification efforts performed since the FRC review was initiated and, thus, not reviewed by the FRC; or by identification of qualified replacement equipment.

In cases where complete resolution of all deficiencies identified in the TER has not been accomplished as of the issuance of this document, a plan for the resolution of these items is presented.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2-1

2.0 RESOLUTION OF DEFICIENCIES IDENTIFIED IN THE TECHNICAL EVALUATION REPORT

Each of the deficiencies identified in the TER will be discussed and resolved in this section. In cases where resolution has not already taken place, a plan for resolution will be presented. This section is organized by Equipment Item number as identified in the TER, and will be differentiated by Prairie Island unit number.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-1

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 1
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32199, MV-32210
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32199

Note: Valve actuator MV-32210 is used in Unit 2 functions and is included in Equipment Item 1 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-2

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 2
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-1
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: III.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32071, MV-32072
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32071, MV-32072

ITEMIZED DEFICIENCIES AND RESPONSES:

These valve actuators are in a locked-open position with power removed and cannot, therefore, change position. This equipment item is exempt from qualification and has been removed from the safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-3

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 3
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-00
and SMB-000
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32132, MV-32135, MV-32138, MV-32141,
MV-32043, MV-32040, MV-32046, MV-32049
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32132, MV-32135, MV-32138,
MV-32141, MV-32043, MV-32040

Note: Valve actuators MV-32046 and MV-32049 are used in Unit 2 functions and
are included in Equipment Item 3 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-4

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 4
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-1
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32167, MV-32168, MV-32064, MV-32065
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32064, MV-32065

Note: Valve actuators MV-32167 and MV-32168 are used in Unit 2 functions and are included in Equipment Item 4 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-5

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 5
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32170, MV-32067
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32067

Note: Valve actuator MV-32170 is used in Unit 2 functions and is included in Equipment Item 5 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-6

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 6
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-00 and SMB-000
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32069, MV-32271, MV-32273, MV-32290, MV-32292
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32069, MV-32271, MV-32273

Note: Valve actuators MV-32290 and MV-32292 are used in Unit 2 functions and are included in Equipment Item 6 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-7

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 7
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32195, MV-32196, MV-32197, MV-32198
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32195, MV-32196

Note: Valve actuators MV-32197 and MV-32198 are used in Unit 2 functions and are included in Equipment Item 7 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-8

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 8
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: III.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32171, MV-32173, MV-32070, MV-32068,
MV-32172
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32070, MV-32068

Note: Valve actuators MV-32171, MV-32173, and MV-32172 are used in Unit 2 functions and are included in Equipment Item 8 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

These valve actuators are in a locked-open position with power removed and cannot, therefore, change position. This equipment item is exempt from qualification and has been removed from the safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-9

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 9
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuators Model SMB-0, SMB-1
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32064, MV-32193, MV-32165, MV-32231,
MV-32233, MV-32066, MV-32169, MV-32192, MV-32164, MV-32230, MV-32232
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32064, MV-32165, MV-32231,
MV-32066, MV-32164, and MV-32230,

Note: Valve actuators MV-32193, MV-32233, MV-32169, MV-32192, and MV-32232
are used in Unit 2 functions and are included in Equipment Item 9 for
Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

All valve actuators in this equipment item with the exception of MV-32064 were included in the NSP cold shutdown response, Response to IE Bulletin 79-01B, Supplement 3, January 22, 1980, and have therefore been removed from the IE Bulletin 79-01B safety-related equipment masterlist.

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Valve actuator MV-32064 will be included in this evaluation. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-10

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 10
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: III.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32242, MV-32243, MV-32248, MV-32249
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32242, MV-32243

Note: Valve actuators MV-32248 and MV-32249 are used in Unit 2 functions and are included in Equipment Item 10 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

These valve actuators are in a locked-open position with power removed and cannot, therefore, change position. This equipment item is exempt from qualification and has been removed from the safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-11

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 11
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-3
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32023, MV-32024, MV-32028, MV-32029
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32023, MV-32024

Note: Valve actuators MV-32028 and MV-32029 are used in Unit 2 functions and are included in Equipment Item 11 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-12

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 12
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32166, MV-32194
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32166

Note: Valve actuator MV-32194 is used in Unit 2 functions and is included in Equipment Item 12 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-13

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 13
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-0,
SMB-00, SMB-1
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32206, MV-32207, MV-32208, MV-32209,
MV-32163, MV-32162, MV-32190, MV-32191, MV-32077, MV-32078, MV-32178,
MV-32179, MV-32180, MV-32181, MV-32075, MV-32076, MV-32084, MV-32085,
MV-32187, MV-32188, MV-32184, MV-32185, MV-32186, MV-32081, MV-32082,
MV-32083, MV-32096, MV-32097, MV-32108, MV-32109, MV-32103, MV-32105,
MV-32114, MV-32116
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32206, MV-32207, MV-32163,
MV-32162, MV-32077, MV-32078, MV-32075, MV-32076, MV-32084, MV-32085,
MV-32184, MV-32185, MV-32186, MV-32096, MV-32097, MV-32103, MV-32105,
MV-32114, MV-32116

Note: Valve actuators MV-32208, MV-32209, MV-32190, MV-32191, MV-32178,
MV-32179, MV-32180, MV-32181, MV-32187, MV-32188, MV-32081, MV-32082,
MV-32083, MV-32108, MV-32109, MV-32114, and MV-32116 are used in Unit
2 functions and included in Equipment Item 13 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-14

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 14
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-000
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32293, MV-32295, MV-32274, MV-32276
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32274, MV-32276

Note: Valve actuators MV-32293 and MV-32295 are used in Unit 2 functions and included in Equipment Item 14 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-15

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 15
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32177, MV-32073, MV-32176, MV-32074
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32073, MV-32074

Note: Valve actuators MV-32177 and MV-32176 are used in Unit 2 functions and included in Equipment Item 15 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-16

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 16
EQUIPMENT DESCRIPTION: Target Rock Solenoid Valve Model 80B-001
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: IV
TER-IDENTIFIED PLANT ID NUMBERS: SV-37035, SV-37037, SV-37039, SV-37036,
SV-37038, SV-37040, SV-37091, SV-37093, SV-37095, SV-37092, SV-37094,
SV-37096
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-37035, SV-37037, SV-37039,
SV-37036, SV-37038, SV-37040

Note: Solenoid Valves SV-37091, SV-37093, SV-37095, SV-37092, SV-37094, and
SV-37096 are all used in Unit 2 functions and are included in Equipment
Item 16 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Documentation not made available to FRC for review.

RESPONSE:

Documentation was not provided to FRC because it was not included in the Request for Information submitted to NSP. However, this component is fully qualified for the installed environment and application at Prairie Island based on environmental qualification testing [1] and component-specific analyses [2]. This qualification data is available for inspection upon NRC request. This equipment item is therefore categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC RESPONSES:

1. Target Rock Corporation Environmental Test Report #2804B.
2. EDS Report 04-0910-21, Revision 1, "Beta Radiation Evaluation of Safety-Related Electrical Equipment at Prairie Island Units 1 and 2," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-17

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 17
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-831655E
EQUIPMENT LOCATION: Shield Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33440, SV-33441
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33440, SV-33441

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-18

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 18
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8320A194E
EQUIPMENT LOCATION: Shield Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33990, SV-33991
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33990, SV-33991

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-19

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 19
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model 8316C44/8211B35
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33199, SV-33204, SV-33254
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33199, SV-33200, SV-33204, SV-33254

Note: Four solenoid valves are used in steam generator isolation functions for Unit 1. Solenoid valve SV-33200 was omitted from this equipment item.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

A. Documented evidence of qualification is inadequate.

RESPONSE:

Failure of these solenoid valves will not adversely affect the closing of MSIVs and will not mislead the reactor operator. Solenoid valves SV-33199, SV-33200, SV-33204, and SV-33254 have therefore been removed from the safety-related equipment masterlist and environmental qualification is not required.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-20

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 20
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8321A1E
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33281
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33281

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-21

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 21
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8316E35E
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33201, SV-33202, SV-33255, SV-33256
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33201, SV-33202, SV-33255, SV-33256

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-22

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 22
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8321A1E
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33371, SV-33372, SV-33373, SV-33374,
SV-33375, SV-33376, SV-33377, SV-33378
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33371, SV-33372, SV-33373,
SV-33374, SV-33375, SV-33376, SV-33377, SV-33378

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-23

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 23
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Models NP-831654E, NP-8320A182E,
and NP-8321A1E
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33761, SV-33762, SV-33738, SV-33739,
SV-33655, SV-33282
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33761, SV-33762, SV-33738,
SV-33739, SV-33282

Note: SV-33655 is a Valcor solenoid valve used in the Reactor Hot Sampling
System and should not be included with this equipment item.

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of
this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-24

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 24
EQUIPMENT DESCRIPTION: Micro Switch Limit Switch Model BZ2RW899A2
EQUIPMENT LOCATION: Shield Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: CV-31625, CV-31630, CV-31631, CV-31624
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31624, CV-31625

Note: Limit Switches CV-31630 and CV-31631 are used in Unit 2 functions and are included in Equipment Item 24 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding steam exposure is inadequate. "The unit is exposed to steam as shown on the profiles provided by the licensee." The note for steam qualification on the SCEW from the August 26, 1981, NSP IEB79-01B SER submittal states, "The qualification documentation pertaining to these components is currently being evaluated for inclusion in the bulletin."

RESPONSE:

The April 30, 1982, IEB79-01B SER response updated the aforementioned statement to resolve all open items in the environmental qualification of this equipment item. An evaluation was performed to document the environmental qualification of Micro Switch limit switches for Prairie Island shield building applications [1]. On the basis of this evaluation, it was concluded that these limit switches will not be exposed to a steam environment for the accident which requires their operation. HELBs are not postulated for the shield building, due to encapsulation of piping in piping penetrations. The limiting accident for this component (LOCA) does not yield steam conditions in the shield building. Because there is no potential for steam or significant accumulation of condensate, switch degradation due to steam/relative humidity conditions will not occur. Therefore, there are no outstanding items in the environmental qualification of this equipment item and it is now classified in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-EQ-01, Revision 0, "Environmental Qualification of Micro Switch Limit Switches," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-25

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 25
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: CD-34072, CD-34074, CD-34076, CD-34078,
CD-34080, CD-34082, CD-34084, CD-34086
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CD-34072, CD-34074, CD-34076,
CD-34078

Note: Limit Switches CD-34080, CD-34082, CD-34084, and CD-34086 are all used in Unit 2 functions and are included in Equipment Item 25 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Documented evidence of qualification is inadequate. "The licensee has cited as evidence of qualification a test plan for the NAMCO EA-180 and EA-740 Limit Switches. The referenced document is a test plan and not a test report. Furthermore, the SCEW does not identify the model number. Accordingly, qualification has not been established."

RESPONSE:

The limit switches included in this equipment item are identical to those included with Equipment Item 30. Equipment Item 30 was considered to be qualified providing a Conax Conductor Seal Assembly was installed (which has been done).

System Component Evaluation Worksheets (SCEWs) for all NAMCO limit switches have been revised to reference the NAMCO qualification test report for EA-180 limit switches rather than the test plan. In addition, a thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities. On the basis of testing and analysis, we have concluded that this equipment item is fully qualified and is categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-26

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 26
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model D2400X
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: CV-31296, CV-31298, CV-31300, CV-31303,
CV-31305, CV-31307
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33651, SV-33653, SV-33655

Note: Solenoid valves with integral indication features have been installed.
Solenoid valve ID numbers have replaced the limit switch ID numbers.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

NAMCO D2400X Limit Switches have been replaced with qualified Valcor Solenoid Valves with integral indication features. The valves used in Unit 1 applications are identified with ID numbers SV-33651, SV-33653, and SV-33655. Limit switch equipment ID numbers have been removed from the safety-related equipment masterlist and solenoid valve ID numbers have been added. Because replacement with qualified equipment has already taken place, this equipment item is now classified in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-27

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 27
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-170
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: CV-31235, CV-31236, CV-31237, CV-31238,
CV-31239, CV-31240
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31235, CV-31236, CV-31237

Note: Limit switches CV-31238, CV-31239, and CV-31240 are all used in Unit 2 functions and are included in Equipment Item 27 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-28a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 28
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-170
EQUIPMENT LOCATION: Shield Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: CV-31310, CV-31312, CV-31569, CV-31621,
CV-31622, CV-31633
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31621, CV-31622

Note: Limit switches CV-31310, CV-31312, CV-31569, and CV-31633 have all been removed from the safety-related equipment masterlist because of modifications to the Containment Purge System.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Aging degradation not evaluated adequately.
 - B. Qualified life or replacement schedule not established. The licensee stated in the August 26, 1981, SER Response, "The qualification documentation for aging pertaining to these components is currently being evaluated for inclusion in this bulletin."
 - C. Peak pressure qualification inadequate.
 - D. Required profile not enveloped adequately. "The testing envelopes the Annulus temperature profile but not the pressure profile."
 - E. Steam exposure qualification inadequate. "In addition, the licensee has not addressed the sealing method used to preclude entry of moisture."

RESPONSE:

A thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. Depending upon the material of the particular component within the limit switch, replacement is required in the range of 7 to 40 years. The results of this evaluation are being incorporated into plant maintenance activities. Therefore, aging degradation and qualified life/replacement schedule have been adequately addressed.

The peak pressure postulated for the installed location (shield building) is 3 inches water (0.11 psi) and going to a vacuum of approximately 3-1/2 inches water (0.13 psi). The pressure will remain at this level for the duration of

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

the 2-hour operating time. Pressures of this magnitude for a 2-hour duration will not impose stresses on the limit switches in excess of those occurring during pressure variations in normal operation and will not lead to switch failure.

These limit switches will not be exposed to a steam environment for the accident which requires their operation. HELBs are not postulated for the shield building due to encapsulation in piping penetrations. The limiting accident for this component (LOCA) does not yield steam conditions in the shield building. Because there is no potential for steam or significant accumulation of condensate, switch degradation due to steam/relative humidity conditions will not occur. In addition, RTV is applied to the conduit entry of all NAMCO EA-170 limit switches to further protect against intrusion of moisture into the limit switch.

On the basis of the discussion provided above, we conclude that all deficiencies have been resolved and this component is fully qualified. Equipment Item 28 is therefore categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-29

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 29
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: CV-31231, CV-31232
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31231, CV-31232

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

A Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. Categorization in Category I.A., Equipment Qualified, was not established because of the absence of a Conax ECSA. Since the ECSA has been installed, this equipment item is now categorized in Category I.A and is fully qualified.

In addition, a thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-30

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 30
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: CD-34072, CD-34074, CD-34076, CD-34078
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CD-34072, CD-34074, CD-34076, CD-34078

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

A Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. Categorization in Category I.A, Equipment Qualified, was not established because of the absence of a Conax ECSA. Since the ECSA has been installed, this equipment item is now categorized in Category I.A and is fully qualified.

In addition, a thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-31

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 31
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: CV-31098, CV-31099, CV-31116, CV-31117,
CV-31084, CV-31102, CV-31089
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31098, CV-31099, CV-31084, CV-31089

Note: Limit switches CV-31116, CV-31117, and CV-31102 are all used in Unit 2 functions and are included in Equipment Item 31 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

A Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. Categorization in Category I.A, Equipment Qualified, was not established because of the absence of a Conax ECSA. Since the ECSA has been installed, this equipment item is now categorized in Category I.A and is fully qualified.

In addition, a thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-32

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 32
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: CV-31325, CV-31326, CV-31327, CV-31313,
CV-31570, CV-31311, CV-31634, CV-31019, CV-31092, CV-31296, CV-31298,
CV-31300, CV-31303, CV-31305, CV-31307, CV-31637, CV-31638, CV-31741,
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31325, CV-31326, CV-31327,
CV-31019, CV-31092, CV-31637, CV-31638, CV-31741

Note: Limit switches CV-31313, CV-31570, CV-31311 and CV-31634 have been removed from the safety-related equipment master list because of modification to the Containment Purge System. Limit switches CV-31296, CV-31298, CV-31300, CV-31303, CV-31305, and CV-31307 are identical to Equipment Item 26 and are addressed with that equipment item.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

A Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. Categorization in Category I.A, Equipment Qualified, was not established because of the absence of a Conax ECSA. Since the ECSA has been installed, this equipment item is now categorized in Category I.A and is fully qualified.

In addition, a thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-33a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 33
EQUIPMENT DESCRIPTION: Electric Machinery Manufacturing Co. Electric Motors
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15-9, 16-01, 26-01, 25-9
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15-9, 16-01

Note: Electric Motors 26-01 and 25-9 are used in Unit 2 functions and are included in Equipment Item 33 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Qualified life or replacement schedule not identified.
- B. Program established to identify aging degradation.
- C. Criteria regarding radiation not satisfied. "...The licensee has not established the qualification of a lubricant for use.... In addition, the radiation evaluation states that the only material that will not withstand the radiation environment is the motor winding RTD cable.... The failure analysis does not indicate if the operator could be misled by the failure of this device and could possibly shut off the motor.... The analysis concludes that the motors should withstand an accident dose of 2.8×10^6 Rads, not the 1.0×10^8 Rads level shown on the licensee's SCEW sheets."

RESPONSE:

An evaluation has been performed to determine the thermal aging characteristics of this motor [1]. The evaluation was based on the motor materials of construction, material testing, ambient and motor operating temperatures, and the operating requirements of the motor. On the basis of this evaluation, it is concluded that the Electric Machinery Manufacturing Company motors used as containment spray pump motors at Prairie Island are qualified for 40 years of operation.

There are no equipment ;qualification maintenance or replacement requirements, outside of normal preventative maintenance. Preventative maintenance includes general inspection of the motor and periodic replacement of the motor lubricant, Chevron SRI-2. This lubricant has been environmentally qualified (see Equipment Item 62) and was therefore not specifically addressed in this evaluation.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-33b

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

The radiation evaluation of these motors states that the only material potentially unqualified to the required dose of 2.8×10^6 rads is the motor winding RTD extension cable. The temperature signal is used for indication purposes only and is not used as an automatic shut-down mechanism. Failure of the RTD extension cable resulting in erroneous motor winding temperature data will not mislead the plant operator. The SCEW for this equipment item has been revised to include the results of the analyses performed on these motors.

On the basis of the evaluations performed, and summarized herein, all concerns raised in the TER have been adequately resolved. This equipment item is therefore categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCE:

1. EDS/Impell Calculation File 0910-200-RA-01, Revision 2, "Radiation and Thermal Aging Analysis of Containment Spray Pump Motors," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-34a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 34
EQUIPMENT DESCRIPTION: Joy/Reliance Electric Motor Model 60027769
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 116-18, 126-18, 116-19, 126-32, 216-18,
226-18, 216-19, 226-32
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 116-18, 126-18, 116-19, 126-32

Note: Electric motors 216-18, 226-18, 216-19, and 226-32 are used in Unit 2 functions and are included in Equipment Item 34 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "...The licensee does not, however, provide evidence from the manufacturer that the report is applicable to the installed motors and that they are from the 'line' of motors referenced in the report."
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established. "The approach used by Joy to develop an accelerated aging program for the Reliance motors is based on the assumption that the insulation system is the limiting component. In many instances this would be correct; however, a material evaluation should be undertaken to substantiate this hypothesis. The lead cable insulation degraded to the point of failure (embrittlement) before the motor insulation failed during the post-event testing. Joy stated the following with respect to the anomaly: 'This separation of leads was caused by a combination of lead wire embrittlement due to the temperature and chemicals and vibration in the leads because of the manner in which the leads were connected. The problem occurred outside the conduit pipe where the leads were bent to allow for connection to the terminal plate before it was bolted down. In an actual installation, this severe bend does not exist and, therefore, the problem should not occur....'
 - a. the licensee has not presented a maintenance/surveillance program for the motor-insulation-to-lead splice, lead cable, or bearing system that could preclude age-related failure of these components.
 - b. the licensee did not present the data that the 'life characteristics plot of the motor insulation' was based on.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

- c. a materials evaluation program was not performed to establish the basis of the thermal aging program."
- D. Criteria regarding radiation not satisfied. "Although a separate effects radiation analysis was performed, the materials discussed were identified by Reliance specification number and not by chemical composition so that the radiation damage threshold values could be verified. The licensee has provided an engineering analysis of the shielding provided by the motor housing against the effects of beta radiation. The licensee has not verified that the motor housing completely encases the materials susceptible to beta exposure."

RESPONSE:

The environmental qualification of this equipment item was completely re-evaluated. Correspondence with the motor vendor, Reliance, indicates that the qualification report previously used was not applicable to the installed motor; however, applicable reports were identified. Utilizing the applicable qualification reports, environmental qualification including a 40 year qualified life and six months post-accident operation was justified. These results are documented in [1].

Thermal aging qualification is based on motor material degradation characteristics and extrapolates test data to the Prairie Island specific parameters using the Arrhenius method. This qualification is based on test data from the motor vendor on insulation identical to that installed. A maintenance/surveillance program does exist for these motors that includes periodic inspection of the motor-to-lead splice, lead cable, bearings, and motor lubricants.

On the basis of the evaluation performed in [1] and summarized above, all concerns raised have been adequately addressed and these motors are fully qualified for their intended service at Prairie Island. This equipment item is now categorized in Category I.A. and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Impell Calculation File 0910-200-Joy-01, "Environmental Evaluation of Joy/Reliance Fan Motors," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-35a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 35
EQUIPMENT DESCRIPTION: Westinghouse Electric Motor Model L1054-1760/875
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 117-2, 127-2, 117-3, 127-3, 217-2, 227-2,
217-3, 227-3
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 117-2, 127-2, 117-3, 127-3

Note: Electric motors 217-2, 227-2, 217-3, and 227-3 are used in Unit 2 functions and are included in Equipment Item 35 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated that the installed motors have an integral air-to-water heat exchanger, ..., has not established the bearing lubricant currently used in the motor, ..., has not established the similarity of the motor-to-lead splice in the installed motor to the tested device, ..., has not provided any documentation that indicates that the insulation system in the installed device is the same as that tested."
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established. "Although the test report states that aging was performed to simulate 40 years in service, the licensee has not provided any analysis to show that the simulation applies to the plant-specific conditions.... The licensee has not provided a replacement/maintenance schedule for subcomponents."
 - D. Criteria regarding temperature/pressure exposure duration not adequate. "The licensee has not provided any basis for the 2-month operating time."

In addition, the following comment was provided. "The licensee has not indicated if the motor is equipped with an air-to-water heat exchanger. If it is, the licensee has not evaluated the effect of beta entering through the air intake of the heat exchanger."

RESPONSE:

The Westinghouse fan cooler motors installed at Prairie Island are mounted vertically and are equipped with an integral air-to-water heat exchanger. The

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

motor, heat exchanger, and fans are totally enclosed. Chevron SRI-2 lubricating grease is used for bearing lubrication. This lubricant has been environmentally qualified with no identified deficiencies (see Equipment Item 62). All field splices are installed following NSP Work Instruction 000-03-001 for cable splicing and terminations. Each of the splices and terminations used in safety-related applications have been environmentally qualified. The installed motor insulation system is thermalastic epoxy identical to that tested in WCAP 7829. Correspondence with the equipment vendor, Westinghouse, indicates that qualification testing documented in WCAP 7829 is directly applicable to the RCFC motors installed at Prairie Island [1].

An aging evaluation has been performed to correlate the simulated aging in the test program to the in-service conditions at Prairie Island [2]. The results of this evaluation show that a qualified life in excess of 40 years has been simulated by the test, using the Arrhenius methodology. There are no requirements for subcomponent replacement in the 40-year qualified life of the motors. Although there are no specific equipment qualification maintenance requirements, these motors are on a preventative maintenance program that periodically inspects the motors.

WCAP 7829 documents the qualification to long term (up to one year) post accident operating requirements based on testing and analysis. In essence, the motor heat exchanger maintains bearing and insulation temperatures low enough during post accident conditions to preclude adverse degradation.

As noted above, these motors are totally enclosed with an integral air-to-water heat exchanger. There are no vent openings on the motor and no potential for intrusion of beta radiation through the water intake. Thus, the motor enclosure does provide sufficient shielding against beta radiation.

On the basis of the evaluations performed and the discussion provided above, all identified deficiencies in the environmental qualification of this equipment item have been adequately resolved. Westinghouse fan cooler motors are therefore classified in Category 1.A and are fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Westinghouse Electric Company, Water Reactor Divisions letter from P. Van Teslaar to K. Becker of EDS Nuclear, February 1, 1982.
2. Impell Calculation File 0910-200-WES-01, Revision 0, "Thermal Aging Analysis of Westinghouse Motors," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-36

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 36
EQUIPMENT DESCRIPTION: Westinghouse Electric Motor Model HSDP
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15-1, 16-5, 26-3, 25-5
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15-1, 16-5

Note: Electric motors 26-3 and 25-5 are used in Unit 2 functions and are included in Equipment Item 36 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not established the applicability of the referenced report to the installed device. WCAP-8754 states that the device tested was a formette made of Class B thermalastic epoxy stator insulation. WCAP-7829 relates to testing of windings of the same type for radiation tolerance and testing of Westinghouse S#723A773-G05 lubricant for radiation resistance. The licensee's SCEW states: 'Motor, Westinghouse, HSD-P'. No attempt has been made by the licensee to establish that the installed motor and subcomponents are the same as those tested."

RESPONSE:

A project has been initiated to re-evaluate the environmental qualification of Westinghouse motors. The motor vendor has been contacted to identify the applicable qualification test report, based on motor materials of construction. Once this identification has been made, a complete qualification evaluation will be performed for all environmental parameters. We expect that this evaluation will be completed by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-37

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 37
EQUIPMENT DESCRIPTION: Westinghouse Electric Motor Model HSDP
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15-4, 16-4, 25-4, 26-4
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15-4, 16-4

Note: Electric motors 25-4 and 26-4 are used in Unit 2 functions and are included in Equipment Item 37 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not established the applicability of the referenced report to the installed device. WCAP-8754 states that the device tested was a formette made of Class B thermalastic epoxy stator insulation. WCAP-7829 relates to testing of windings of the same type for radiation tolerance and testing of Westinghouse S#723A773-G05 lubricant for radiation resistance. The licensee's SCEW states: 'Motor, Westinghouse, HSD-P'. No attempt has been made by the licensee to establish that the installed motor and subcomponents are the same as those tested."

RESPONSE:

A project has been initiated to re-evaluate the environmental qualification of Westinghouse motors. The motor vendor has been contacted to identify the applicable qualification test report, based on motor materials of construction. Once this identification has been made, a complete qualification evaluation will be performed for all environmental parameters. We expect that this evaluation will be completed by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-38

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 38
EQUIPMENT DESCRIPTION: Barton Flow Transmitter Model 332
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 23073, 23074, 23075, 23076
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 23073, 23074

Note: Flow transmitters 23075 and 23076 are used in Unit 2 functions and are included in Equipment Item 38 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

These transmitters were originally identified for relocation to a mild environment. However, for maintenance reasons, they will be replaced with qualified transmitters. Rosemount 1153 Series B transmitters have been ordered and will be installed during Unit 1 Cycle 9 and prior to November 30, 1985. Once this replacement has taken place, this equipment item will be classified in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-39

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 39
EQUIPMENT DESCRIPTION: Foxboro Flow Transmitter Model E13DH(MCA)
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 23021, 23022, 23023, 23024, 23025, 23026,
23027, 23028
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 23021, 23022, 23023, 23024

Note: Flow transmitters 23025, 23026, 23027, and 23028 are used in Unit 2 functions and are included in Equipment Item 39 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated the output current range of their Foxboro transmitters. (The tables of note 1 differentiate between 4-20 and 10-50 ma models.) Therefore, accuracy tolerances of -12% for the E11GM and -9% for the E13DH must be assumed. Since the licensee has failed to specify the required accuracy for these transmitters, compliance with accuracy criteria is suspect."

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-40

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 40
EQUIPMENT DESCRIPTION: Barton Flow Transmitter Model 384
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 23013, 23014, 23015, 23016
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 23013, 23014, 23015, 23016

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Barton model 384 flow transmitters have been replaced with Rosemount 1153 Series D transmitters. The 1153 Series D transmitter series have recently completed a qualification test program and are fully qualified for the installed application. Because replacement with a qualified transmitter has already taken place, this equipment item is now classified in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-41

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 41
EQUIPMENT DESCRIPTION: Magnetrol Level Transmitter Model A153FEP/VPXYTD
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 16796, 16811, 16909, 16910
CORRECT PLANT ID NUMBERS FOR THIS UNIT: ILT-725, ILT-726, ILT-727A, ILT-727B,
ILT-728A, ILT-728B

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Magnetrol level transmitters have been replaced with qualified containment sump water level transmitters. Delaval level transmitters model XM-54854-323 were installed and have recently completed a qualification test program which fully qualifies the level transmitters for the environmental conditions associated with the installed location. Because replacement with a qualified transmitter has already taken place, this equipment item is now classified in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-42

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 42
EQUIPMENT DESCRIPTION: Barton Level Transmitter Model P386-351
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 24041, 24042, 24043, 24046, 24047, 24048
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 24041, 24042, 24043

Note: Level transmitters 24046, 24047, and 24048 are all used in Unit 2 functions and are included in Equipment Item 42 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Qualified replacement transmitters have been ordered and will be installed during Unit 1, Cycle 8/9 and prior to the end of the second refueling outage after March 31, 1982. Barton model 764-351 level transmitters, which have successfully completed qualification testing, will be installed, and will then be classified in Category I.A and be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-43

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 43
EQUIPMENT DESCRIPTION: Foxboro Level Transmitter Model E13DHSAM1
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 24080, 24081, 24082, 24083, 24084, 24085,
24086, 24087
CORRECT PLANT ID NUMBERS FOR THIS UNIT: ILT-487, ILT-488

Note: Qualified transmitters with Plant ID numbers ILT-487 and ILT-488 for Unit 1 and 2LT-487 and 2LT-488 for Unit 2 were installed. Unit 2 transmitters are included in Equipment Item 43 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Qualified level transmitters have been installed and are designated with Plant ID numbers ILT-487 and ILT-488 for Unit 1. Foxboro N-E13DH-IIAF level transmitters, which have successfully completed qualification testing, were installed. Because installation of qualified transmitters has already taken place, this equipment item is now classified as Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-44

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 44
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GH
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 21101, 21152
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 1PT-709, 1PT-710

Note: Qualified transmitters with Plant ID numbers 1PT-709 and 1PT-710 were installed for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Qualified pressure transmitters have been installed and are designated with Plant ID numbers 1PT-709 and 1PT-710. It was previously identified that Rosemount 1153GD9 transmitters were installed; however, the correct model number of the transmitter installed in Unit 1 is Rosemount 1153GA9. 1153GA9 transmitters were evaluated by FRC and classified in TER Category II.b, equipment not qualified. A separate evaluation was transmitted to the NRC by NSP which addressed the qualification deficiencies cited for the 1153GA9 transmitters and concluded that the correct qualification category is II.C [1]. An evaluation will be performed to determine the required maintenance and replacement intervals. Following the completion of this evaluation, this equipment item will be categorized in Category I.A and will be fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. NRC letter from Robert Clark to D. M. Musolf (NSP) dated June 3, 1983, and attached Safety Evaluation Concerning Justification for Continued Operation for Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, as Related to Environmental Qualification of Safety-Related Electrical Equipment Classified as Not Qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-45

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 45
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GMSAD1
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: PT-21164, PT-21165, PT-21166, PT-21167
PT-21168, PT-21169, PT-21170, PT-21171
CORRECT PLANT ID NUMBERS FOR THIS UNIT: PT-21164, PT-21165, PT-21166, PT-21167

Note: Pressure transmitters PT-21168, PT-21169, PT-21170, and PT-21171 are all used in Unit 2 functions and are included in Equipment Item 45 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Foxboro Model N-E11GM-H101-AE pressure transmitters, which have successfully passed qualification testing, have been installed. Because replacement has already taken place, this equipment item is now classified as Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-46

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 46
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GM-SAE1 (MCA)
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 21146, 21147, 21148, 21150, 21154, 21155
21156, 21157
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 21146, 21147, 21148, 21150

Note: Pressure transmitters 21154, 21155, 21156, and 21157 are all used in Unit 2 functions and are included in Equipment Item 46 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-47

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 47
EQUIPMENT DESCRIPTION: Rosemount Pressure Transmitter 1153GA9
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.B
TER-IDENTIFIED PLANT ID NUMBERS: 1-PT-729, 2-PT-729
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 1-PT-729

Note: Pressure Transmitter 2-PT-729 is used in Unit 2 functions and is included in Equipment Item 47 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment not qualified.

"We note the following information abstracted from applicable and available qualification documentation associated with the overall NRC equipment environmental qualification review program:

"Rosemount testing to qualify a transmitter to meet IEEE 323-1974 requirements has resulted in failure. A combination of thermal aging, irradiation, and chemical spray test specification parameters has resulted in failed components. The initial failed element was an O-ring comprised of sulphur-cured polyethylene rubber. This allowed steam/chemical spray to affect electronic components. The O-ring mode of failure is attributed to high temperature vs. time necessary for the Arrhenius curve time compression to satisfy aging test requirements."

"Based on the above considerations, this equipment item is placed in NRC qualification Category II.B because applicable and available qualification information abstracted from documentation presented to NRC as a result of the overall NRC equipment environmental qualification program reports current Rosemont testing to IEEE-323(74) criteria which resulted in failure of the test specimen."

RESPONSE:

This equipment item has been deleted from the safety-related equipment masterlist and no longer requires environmental qualification.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-48

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 48
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GM(MCA)
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 21203, 21204, 21205, 21209, 21210, 21211
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 21203, 21204, 21205

Note: Pressure transmitters 21209, 21210, and 21211 are used in Unit 2 functions and are included in Equipment Item 48 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated the output current range of their Foxboro transmitters. (The tables of note 1 differentiate between 4-20 and 10-50 ma models.) Therefore, accuracy tolerances of -12% for the E11GM and -9% for the E13DH must be assumed. Since the licensee has failed to specify the required accuracy for these transmitters, compliance with accuracy criteria is suspect."

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-49

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 49
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GM(MCA)
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 21200, 21201, 21202
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 21200, 21201, 21202

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated the output current range of their Foxboro transmitters. (The tables of note 1 differentiate between 4-20 and 10-50 ma models.) Therefore, accuracy tolerances of -12% for the E11GM and -9% for the E13DH must be assumed. Since the licensee has failed to specify the required accuracy for these transmitters, compliance with accuracy criteria is suspect."

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-50

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 50
EQUIPMENT DESCRIPTION: Endevco Accelerometer Model 2273AM20
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: IEQ-443, IEQ-444, IEQ-445

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

The testing on this component is nearly complete. If, as a result of testing, modifications to the installed equipment are required, the modifications will be performed during Unit 1 refueling cycle 9/10 and prior to November 30, 1985. Once the qualification testing is complete and all necessary modifications have been made, this equipment item will be categorized in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-51

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 51
EQUIPMENT DESCRIPTION: Unholtz-Dickey Amplifier Model 22CA-2TR
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: IEE-443, IEE-444, IEE-445

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

The testing on this component is nearly complete. If, as a result of testing, modifications to the installed equipment are required, the modifications will be performed during Unit 1 refueling cycle 9/10 and prior to November 30, 1985. Once the qualification testing is complete and all necessary modifications have been made, this equipment item will be categorized in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-52

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 52
EQUIPMENT DESCRIPTION: Fisher Controls Signal Converter Model 546
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: SC-35085, SC-35028
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SC-35085, SC-35028

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment Qualification Not Established.

- A. Documented evidence of qualification not adequate. "In reviewing the licensee's introductory letter to this response dated August 26, 1981, no specific information with respect to this equipment could be located."

RESPONSE:

The safety function of this equipment item has been reviewed, and it is concluded that it should be removed from the safety-related equipment masterlist. The April 30, 1982, SER response provided this information.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-53

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 53
EQUIPMENT DESCRIPTION: Trinity Electric Thermometer Model K81
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 15456, 15457, 15458, 15459, 15610, 15611
15612, 15613
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15456, 15457, 15458, 15459

Note: Thermometers 15610, 15611, 15612, and 15613 are used in Unit 2 functions and are included in equipment item 53 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Incore thermocouple reference junction boxes have been deleted from the harsh environment safety-related equipment masterlist. A new system utilizing qualified incore thermocouple cable exiting containment through qualified containment penetrations has been installed.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-54

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 54
EQUIPMENT DESCRIPTION: Rosemount RTD Model 176KS
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15314
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

Note: RTD 15314 is used in Unit 2 functions and is included in Equipment Item 54 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

Because this equipment item is only used in Unit 2 functions, all identified deficiencies and responses are provided in Equipment Item 54 for Unit 2.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-55

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 55
EQUIPMENT DESCRIPTION: Sostman RTD Model 11901B
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15331, 15332, 15333, 15334, 15315, 15322,
15323
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15331, 15332, 15333, 15334

Note: RTDs 15315, 15322, and 15323 are used in Unit 2 functions and are included in Equipment Item 55 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Documented evidence of qualification not adequate.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.
- D. Required profile not enveloped adequately.
- E. Criteria regarding spray not adequate.
- F. Criteria regarding functional testing not satisfied.
- G. Criteria regarding instrument accuracy not satisfied.

The detailed evaluation and comments resulting in the identification of these deficiencies was not provided due to the proprietary nature of the information.

RESPONSE:

A detailed evaluation was not provided in the TER due to the proprietary nature of the information, thus a detailed technical response cannot be provided. Environmental qualification is based on testing described in WCAP 9157. In essence, environmental qualification is limited by the radiation resistance of the RTD. Based on the functional requirements and radiation exposure at the installed location, RCS wide range RTDs are qualified for 12 years of normal operation and two weeks of monitoring following a secondary system line break. Replacement of these RTDs is currently scheduled in 1985 for Unit 1. On the basis of the testing described above, these RTDs are fully qualified for their intended use until replacement occurs at the end of the 12-year qualified life.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-56

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 56
EQUIPMENT DESCRIPTION: Boston Insulated Wire Electrical Control Cable Model
Bostrad 7
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Documented evidence of qualification not established.
 - B. Criteria regarding submergence not satisfied. "The licensee SCEW sheet indicates that the cables can become submerged and states that an accelerated water absorption test qualifies the cable for submergence. The water absorption tests demonstrate suitability for demineralized water at atmospheric pressure, but do not simulate the pressure, temperature, chemistry, and radiation conditions of the liquid in the containment sump after LOCA."

RESPONSE:

Several tests have been performed on BIW cables to evaluate their ability to operate in a submerged condition. The tests follow the outline of IEEE 383-1974 which specifically states that voltage withstand tests be performed on cables submerged in tap water. BIW cable was immersed in tap water at 75°C (167°F) for 14 days with no deleterious effects. In addition to water absorption tests, the cables were exposed to oil immersion aging at 121°C (250°F) and boric acid aging of irradiated samples in varying pH solutions was performed with no noted anomalies. Cable samples were also exposed to a 7 day LOCA test with high temperatures, high pressures, 100% RH, and a boric acid/sodium hydroxide chemical solution. The combination of these tests far exceeds the tests necessary to show submergence qualification. In general, the combination of LOCA testing and water absorption testing of immersed samples adequately simulates the postulated accident environment to document submergence qualification in accordance with IEEE 383-1974.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-57a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 57
EQUIPMENT DESCRIPTION: Kerite Electrical Control Cable Models FR/FR and HTK/FR
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.
- D. Criteria regarding spray satisfied.

The detailed evaluation and comments resulting in the identification of these deficiencies was not provided due to the proprietary nature of the information.

RESPONSE:

Because a detailed evaluation was not provided in the TER due to the proprietary nature of the information, a detailed technical response cannot be provided.

Three types of Kerite cable are used in safety-related applications at Prairie Island: HT-Kerite/FR, FR/FR, and HT-Kerite/HTNS. Each of these cables have been evaluated and their environmental qualification is documented in [1]. Correspondence with the equipment vendor, Kerite, has resulted in obtaining the applicable qualification reports for each cable type [2]. Aging qualification is based on aging tests performed on cable samples correlated to the Prairie Island environment using the Arrhenius methodology. The results of this evaluation show that the cables are qualified for greater than 40 years of service with no replacement required. Chemical spray qualification has been established based on type testing to chemical solutions simulating the Prairie Island containment spray solution.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-57b

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

Based on the environmental evaluation summarized above, all identified deficiencies have been adequately resolved. Kerite electrical cable is therefore categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-205-KER-01, Revision 1, "Environmental Qualification of Kerite Electrical Cables," December 8, 1981.
2. Kerite Company letter from the office of E. N. Sleight to Terry M. Maxey, EDS Nuclear, December 8, 1981.

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 58
EQUIPMENT DESCRIPTION: Okonite Electrical Cable Model Okonite/Neoprene
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding submergence not satisfied. "The licensee has provided documentation which references several Okonite test reports and laboratory test reports for the cable which would establish qualification for the cable in the Auxiliary Building but does not provide qualification for submergence in containment"... "The water absorption tests demonstrate suitability for demineralized water at atmospheric pressure, but do not simulate the pressure, temperature, chemistry, and radiation conditions of the liquid in the containment sump after LOCA.

RESPONSE:

Submergence qualification of Okonite cables is based on sequential-type testing which included high temperature, high pressure, 100% RH, chemical spray simulation, irradiation, and submergence testing. These tests were performed following the guidelines of IEEE 383-1974. While it is true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment. The accelerated water absorption test after the LOCA testing was of sufficient duration, in excess of 18 months at 90°C (194°F), to provide adequate margin for submergence qualification.

On the basis of the environmental evaluation performed and for which the submergence qualification is summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite cables are therefore categorized in Category I.A.

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 59
EQUIPMENT DESCRIPTION: Okonite Electrical Cable Splice Model 604-92-1571
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The letters reproduced on page 5a are not certification that the test report applies."
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.
- D. Criteria regarding submergence not satisfied. "The licensee's SCEW sheet indicates that the cables can become submerged and states that an accelerated water absorption test qualifies the cable for submergence. The water absorption test demonstrates suitability for demineralized water at atmospheric pressure, but does not simulate the pressure, temperature, chemistry, and radiation conditions of the liquid in the containment sump after LOCA."

RESPONSE:

Correspondence with the equipment vendor [1] resulted both in the identification of the materials used in the splice and the procurement of the applicable qualification test [2]. Utilizing this test data, the environmental qualification of the splice was documented [3]. Thermal aging qualification is based on pre-aging performed on the test specimens correlated to the Prairie Island environment utilizing the Arrhenius methodology.

As a result of the thermal aging evaluation, this equipment item is qualified for an excess of 40 years service with no requirements for replacement. Submergence qualification is based on immersion testing in water following accident testing (which included chemical spray exposure). This test sequence and method does follow the qualification requirements outlined in IEEE 383-1974. While it is true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

On the basis of the environmental evaluation performed and summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite splice kit 604-92-1571 is therefore categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Record of conversation between Mr. J. Rodgers (Okonite) and Mr. W. Fargo (EDS) dated August 18, 31, and September 11, 1981.
2. LOCA Qualification Report for Okoguard Insulating Cables and T-95 and T-35 Splicing Tapes, Okonite Report NQRN-3, June 23, 1980.
3. EDS Calculation File 0910-205-OKO-02, Revision 0, "Environmental Qualification of Okonite Splices," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-60

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 60
EQUIPMENT DESCRIPTION: Allen Bradley Terminal Strips Model 1492-CD3
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Environmental qualification testing is still in progress. Assuming successful completion of the testing, this equipment item will be categorized in Category I.A and will be completely qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-61

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 61
EQUIPMENT DESCRIPTION: General Electric Epoxy Model 7010/74010A
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: 1.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

This equipment item is used in conjunction with Equipment Item 60, Allen Bradley terminal strips, for which environmental qualification testing is still in progress. Assuming successful completion of the testing, this equipment item will be categorized in Category 1.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-62

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 62
EQUIPMENT DESCRIPTION: Chevron SRI-2 Lubricant
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-63

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 63
EQUIPMENT DESCRIPTION: Mobile DTE Lubricant
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: 1.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-64

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 64
EQUIPMENT DESCRIPTION: Bussman Fuseholder Model HEBA
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding steam exposure not adequate. "An oven aging test does not provide qualification for steam exposure."

RESPONSE:

Bussman HEB-A fuseholders are waterproof fuseholders which completely encapsulate the fuse and protect it against damage from water, weather, salt spray, corrosive fumes, and the like. Correspondence with the equipment vendor indicates that the HEB-A fuseholders have been qualified for immersion in accordance with military specification MIL-STD-202D, April 14, 1969. More specifically, this test consists of 5 cycles of 60-minute immersions in a hot bath of tap water at 65°C, followed by 60-minute immersions in a saturated solution of sodium chloride and water at 0°C. The test sample successfully passed this immersion testing. The waterproof fuseholders are enclosed in NEMA-4 boxes, which provide further protection against the effects of moisture.

On the basis of the testing performed and installation of NEMA-4 enclosures, there is adequate assurance of qualification to relative humidity conditions. This equipment item is therefore categorized in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-65

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 65
EQUIPMENT DESCRIPTION: General Electric Motor Control Center Model 7700 Series
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 1LA1, 1LA2, 2LA1, 2LA2, 1M1, 1MA2
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 1LA1, 2LA1, 1M1

Note: Motor Control Centers 1LA2, 2LA2 and 1MA2 are all used in Unit 2 functions and are included in Equipment Item 65 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

New motor control centers have been ordered and will be used to relocate ~~required~~ safety-related loads to a mild environment. Installation will be completed during Unit 1 Cycle 9 and prior to November 30, 1985. Once this has occurred, this item will no longer be on the harsh environment safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-66

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 66
EQUIPMENT DESCRIPTION: Creiger Electrical DC Distribution Panel
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: 1.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: Panel 153, 163

Note: All safety-related loads from these panels have been relocated to
Panels 153 and 163.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

All safety-related loads to these panels have been relocated to distribution panels installed in the auxiliary building. Therefore, this equipment item has been deleted from the safety-related equipment masterlist. Distribution panels located in the auxiliary building have been added to the safety-related equipment masterlist, and environmental qualification for these panels is nearing completion.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-67

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 67
EQUIPMENT DESCRIPTION: Barton Flow Switch Model 288A
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.C
TER-IDENTIFIED PLANT ID NUMBERS: 18252, 18253, 18268, 18269
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 18252, 18253

Note: Flow switches 18268 and 18269 are used in Unit 2 functions and are included in Equipment Item 67 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment satisfies all requirements except qualified life or replacement schedule justified.
 - A. Aging degradation not evaluated adequately.
 - B. Qualified life or replacement schedule not established. "The licensee has provided PGR 3252 as evidence of qualification for this equipment item. This test report envelopes the plant-specific conditions for the expected radiation environment. The licensee has not, however, identified the materials of construction or evaluated the effects of aging on the device."

RESPONSE:

A project was initiated to thoroughly evaluate the qualified life of Barton Model 288A flow switches, based on the aging degradation properties of the constituent materials. This evaluation is documented in [1]. The results show that these flow switches have a qualified life in excess of 40 years at the installed location in the Prairie Island auxiliary building. The completion of this thermal aging evaluation addresses the deficiencies cited above. This equipment item is now categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Impell Calculation File 0910-200-BAR-01, "Barton 288A Thermal Aging Evaluation," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-68

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 68
EQUIPMENT DESCRIPTION: D. G. O'Brien Electrical Penetration Model PR-2(TI)
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-69

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 69
EQUIPMENT DESCRIPTION: D. G. O'Brien Electrical Penetration Model PR-12(LVP)
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-70

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 70
EQUIPMENT DESCRIPTION: D. G. O'Brien Electrical Penetration Model PR-110(MVP)
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-71

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 71
EQUIPMENT DESCRIPTION: Kerite Electrical Cable Splice DS1001/DS1002
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "In lieu of the detailed description discussed above it would be acceptable for the licensee to obtain certification from the manufacturer identifying what test report(s) apply to the cables furnished for installation. If applicability is established the splice would be qualified."

RESPONSE:

The equipment manufacturer, Kerite, was contacted prior to initiating the environmental qualification evaluation of Kerite splices DS-1001 and DS-1002. The result of this correspondence [1] was the identification and procurement of the applicable qualification test [2]. This confirmation of test report applicability by the equipment manufacturer satisfies the certification requirement described in the TER deficiency. Therefore, this equipment item is fully qualified and is categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Kerite Company letter from the office of Mr. E. N. Sleight to Mr. T. M. Maxey (EDS Nuclear) dated November 4, 1981.
2. Tests of Electrical Cables Under Simultaneous Exposure to Gamma Radiation, Steam, and Chemical Spray while Electrically Energized," FIRL Final Report F-C4020-2, March 1975.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-72a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 72
EQUIPMENT DESCRIPTION: Okonite Electrical Splicing Tape Model T95
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding submergence not satisfied. "The test report also contains a description of water absorption tests. However, the accelerated water absorption testing in demineralized water at atmospheric pressure does not simulate or qualify the equipment for the pressure, temperature, radiation and chemistry of the liquid in the containment sump after a LOCA."

RESPONSE:

Okonite electrical cable splicing tapes T-95 and T-35 are integral components in the Okonite splice kit model 604-92-1571 (Equipment Item 59). The environmental qualification testing on the 604-92-1571 splice kit included testing on the T-95 and T-35 splicing tapes [1] and is directly applicable to the installed splices at Prairie Island as documented in [2]. Submergence qualification is based on immersion testing in water following accident testing (which included chemical spray exposure). This test sequence and method does follow the qualification requirements outlined in IEEE 383-1974. While it's true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment.

On the basis of the environmental evaluation performed [3] and summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite splicing tapes T-95 and T-35, contained in splicing kit 604-92-1571, are fully qualified. This equipment item is therefore categorized in Category I.A.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-72b

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. LOCA Qualification Report for Okoguard Insulating Cables and T-95 and T-35 Splicing Tapes, Okonite Report NQRN-3, June 23, 1980.
2. Record of Conversation between Mr. J. Rodgers (Okonite) and Mr. W. Fargo (EDS) dated August 18, 31, and September 11, 1981.
3. EDS Calculation File 0910-205-OKO-2, Revision 0, "Environmental Qualification of Okonite Splices," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-73a

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 73
EQUIPMENT DESCRIPTION: Okonite Electrical Cable Splice Model T35
EQUIPMENT LOCATION: Reactor Building Unit 1 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding submergence not established. "The test report also contains a description of water absorption tests. However, the accelerated water absorption testing in demineralized water at atmospheric pressure does not simulate or qualify the equipment for pressure, temperature, radiation and chemistry of the liquid in the containment sump after LOCA."

RESPONSE:

Okonite electrical cable splicing tapes T-95 and T-35 are integral components in the Okonite splice kit model 604-92-1571 (Equipment Item 59). The environmental qualification testing on the 604-92-1571 splice kit included testing on the T-95 and T-35 splicing tapes [1] and is directly applicable to the installed splices at Prairie Island as documented in [2]. Submergence qualification is based on immersion testing in water following accident testing (which included chemical spray exposure). This test sequence and method does follow the qualification requirements outlined in IEEE 383-1974. While it's true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment.

On the basis of the environmental evaluation performed [3] and summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite splicing tapes T-95 and T-35, contained in splicing kit 604-92-1571, are fully qualified. This equipment item is therefore categorized in Category I.A.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-73b

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. LOCA Qualification Report for Okoguard Insulating Cables and T-95 and T-35 Splicing Tapes, Okonite Report NQRN-3, June 23, 1980.
2. Record of Conversation between Mr. J. Rodgers (Okonite) and Mr. W. Fargo (EDS) dated August 18, 31, and September 11, 1981.
3. EDS Calculation File 0910-205-OKO-2, Revision 0, "Environmental Qualification of Okonite Splices," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.1-74

UNIT NUMBER: 1
TER EQUIPMENT ITEM NUMBER: 74
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32016, MV-32017, MV-32019, MV-32020
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32016, MV-32017

Note: Valve actuators MV-32019 and MV-32020 are used in Unit 2 functions and are included in Equipment Item 74 for Unit 2.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-1

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 1
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32199, MV-32210
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32210

Note: Valve actuator MV-32199 is used in Unit 1 functions and is included in Equipment Item 1 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-2

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 2
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-3
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: III.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32174, MV-32175
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32174, MV-32175

ITEMIZED DEFICIENCIES AND RESPONSES:

These valve actuators are in a locked-open position with power removed and cannot, therefore, change position. This equipment item is exempt from qualification and has been removed from the safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-3

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 3
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32132, MV-32135, MV-32138, MV-32141,
MV-32043, MV-32040, MV-32046, MV-32049
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32046, MV-32049

Note: Valve actuators MV-32132, MV-32135, MV-32138, MV-32141, MV-32043, and MV-32040 are used in Unit 1 functions and are included in Equipment Item 3 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-4

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 4
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-1
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32167, MV-32168, MV-32064, MV-32065
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32167, MV-32168

Note: Valve actuators MV-32064 and MV-32065 are used in Unit 1 functions and are included in Equipment Item 4 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-5

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 5
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32170, MV-32067
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32170

Note: Valve actuator MV-32067 is used in Unit 1 functions and is included in Equipment Item 5 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-6

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 6
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-00
and SMB-000
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32069, MV-32271, MV-32273, MV-32290,
MV-32292
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32290, MV-32292

Note: Valve actuators MV-32069, MV-32271 and MV-32273 are used in Unit 1
functions and are included in Equipment Item 6 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-7

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 7
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32195, MV-32196, MV-32197, MV-32198
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32197, MV-32198

Note: Valve actuators MV-32195 and MV-32196 are used in Unit 1 functions and are included in Equipment Item 7 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-8

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 8
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: III.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32171, MV-32173, MV-32070, MV-32068,
MV-32172
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32171, MV-32173, MV-32172

Note: Valve actuators MV-32070 and MV-32068 are used in Unit 1 functions and are included in Equipment Item 8 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

These valve actuators are in a locked-open position with power removed and cannot, therefore, change position. This equipment item is exempt from qualification and has been removed from the safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-9

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 9
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuators Models SMB-0
and SMB-1
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32064, MV-32193, MV-32165, MV-32231,
MV-32233, MV-32066, MV-32169, MV-32192, MV-32164, MV-32230, MV-32232
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32193, MV-32233, MV-32169,
MV-32192, MV-32232

Note: Valve actuators MV-32064, MV-32165, MV-32231, MV-32066, MV-32164, and
MV-32230 are used in Unit 1 functions and are included in Equipment
item 9 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

All valve actuators in this equipment item with the exception of MV-32064 were included in the NSP cold shutdown response, Response to IE Bulletin 79-01B, Supplement 3, January 22, 1980, and have therefore been removed from the IE Bulletin 79-01B safety-related equipment masterlist.

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Valve actuator MV-32064 will be included in this evaluation. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-10

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 10
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: III.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32242, MV-32243, MV-32248, MV-32249
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32248, MV-32249

Note: Valve actuators MV-32242 and MV-32243 are used in Unit 1 functions and are included in Equipment Item 10 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

These valve actuators are in a locked-open position with power removed and cannot, therefore, change position. This equipment item is exempt from qualification and has been removed from the safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-11

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 11
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-3
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32023, MV-32024, MV-32028, MV-32029

CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32028, MV-32029

Note: Valve actuators MV-32023 and MV-32024 are used in Unit 1 functions and are included in Equipment Item 11 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-12

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 12
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32166, MV-32194
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32194

Note: Valve actuator MV-32166 is used in Unit 1 functions and is included in Equipment Item 12 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-13

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 13
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Models SMB-0,
SMB-00, and SMB-1
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32206, MV-32207, MV-32208, MV-32209,
MV-32163, MV-32162, MV-32190, MV-32191, MV-32077, MV-32078, MV-32178,
MV-32179, MV-32180, MV-32181, MV-32075, MV-32076, MV-32084, MV-32085,
MV-32187, MV-32188, MV-32184, MV-32185, MV-32186, MV-32081, MV-32082,
MV-32083, MV-32096, MV-32097, MV-32108, MV-32109, MV-32103, MV-32105,
MV-32114, MV-32116

CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32208, MV-32209, MV-32190,
MV-32191, MV-32178, MV-32179, MV-32180, MV-32181, MV-32187, MV-32188,
MV-32081, MV-32082, MV-32083, MV-32018, MV-32109, MV-32114, MV-32116

Note: Valve actuators MV-32206, MV-32207, MV-32163, MV-32162, MV-32077,
MV-32078, MV-32075, MV-32076, MV-32084, MV-32085, MV-32184, MV-32185,
MV-32186, MV-32096, MV-32097, MV-32103, and MV-32105 are used in Unit
1 functions and are included in Equipment Item 13 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

I. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-14

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 14
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-000
EQUIPMENT LOCATION: Shield Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32293, MV-32295, MV-32274, MV-32276
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32293, MV-32295

Note: Valve actuators MV-32274 and MV-32276 are used in Unit 1 functions and are included in Equipment Item 14 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-15

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 15
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Shield Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: MV-32177, MV-32073, MV-32176, MV-32074
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32177, MV-32176,

Note: Valve actuators MV-32073 and MV-32074 are used in Unit 1 functions and are included in Equipment Item 15 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-16

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 16
EQUIPMENT DESCRIPTION: Target Rock Solenoid Valve Model 80B-001
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: IV
TER-IDENTIFIED PLANT ID NUMBERS: SV-37035, SV-37037, SV-37039, SV-37036,
SV-37038, SV-37040, SV-37091, SV-37093, SV-37095, SV-37092, SV-37094,
SV-37096

CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-37091, SV-37093, SV-37095,
SV-37092, SV-37094, SV-37096

Note: Solenoid Valves SV-37035, SV-37037, SV-37039, SV-37036, SV-37038, and
SV-37040 are all used in Unit 1 functions and are included in Equipment
Item 16 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Documentation not made available to FRC for review.

RESPONSE:

Documentation was not provided to FRC because it was not included in the Request for Information submitted to NSP. However, this component is fully qualified for the installed environment and application at Prairie Island based on environmental qualification testing [1] and component specific analysis [2]. This qualification data is available for inspection upon NRC request. This equipment item is therefore categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Target Rock Corporation Environmental Test Report #28048.
2. EDS Report 04-0910-21, Revision 1, "Beta Radiation Evaluation of Safety-Related Electrical Equipment at Prairie Island Units 1 and 2," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-17

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 17
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-831654E
EQUIPMENT LOCATION: Shield Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33515, SV-33516
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33515, SV-33516

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-18

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 18
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8320A194E
EQUIPMENT LOCATION: Shield Building Unit 2
TER QUALIFICATION CATEGORY: 1.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33992, SV-33993
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33992, SV-33993

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-19

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 19
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model 8211B35/8316C46
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33258, SV-33262
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33258, SV-33262

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

A. Documented evidence of qualification is inadequate.

RESPONSE:

Failure of these solenoid valves will not adversely affect the closing of MSIVs and will not mislead the reactor operator. Solenoid valves SV-33258 and SV-33262 have therefore been removed from the safety-related equipment master-list, and environmental qualification is not required.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-20

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 20
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8321A1E
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33283
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33283

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-21

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 21
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8316E35E
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33260, SV-33261, SV-33265, SV-33266
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33260, SV-33261, SV-33265, SV-33266

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-22

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 22
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Model NP-8321A1E
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33389, SV-33390, SV-33391, SV-33392,
SV-33393, SV-33394, SV-33395, SV-33396
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33389, SV-33390, SV-33391,
SV-33392, SV-33393, SV-33394, SV-33395, SV-33396

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-23

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 23
EQUIPMENT DESCRIPTION: ASCO Solenoid Valve Models NP-8321A1E, NP-831654E,
and NP-8320A182E
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: SV-33763, SV-33764, SV-33740, SV-33741,
SV-33661, SV-33284

CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33763, SV-33764, SV-33740,
SV-33741, SV-33284

Note: SV-33661 is a Valcor solenoid valve used in the Reactor Hot Sampling
System and should not be included in this equipment item.

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of
this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-24

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 24
EQUIPMENT DESCRIPTION: Micro Switch Limit Switch Model BZ2RW899A2
EQUIPMENT LOCATION: Shield Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: CV-31625, CV-31630, CV-31631, CV-31624
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31630, CV-31631

Note: Limit Switches CV-31624, CV-31625 are used in Unit 1 functions and are included in Equipment Item 24 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding steam exposure is inadequate. "The unit is exposed to steam as shown on the profiles provided by the licensee." The note for steam qualification on the SCEW from the August 26, 1981, NSP IEB79-01B SER submittal states, "The qualification documentation pertaining to these components is currently being evaluated for inclusion in the bulletin."

RESPONSE:

The April 30, 1982, IEB79-01B SER response updated the aforementioned statement to resolve all open items in the environmental qualification of this equipment item. An evaluation was performed to document the environmental qualification of Micro Switch limit switches for Prairie Island shield building applications [1]. On the basis of this evaluation, it was concluded that these limit switches will not be exposed to a steam environment for the accident which requires their operation. HELBs are not postulated for the shield building due to encapsulation of piping in piping penetrations. The limiting accident for this component (LOCA) does not yield steam conditions in the shield building. Because there is no potential for steam or significant accumulation of condensate, switch degradation due to steam/relative humidity conditions will not occur. Therefore, there are no outstanding items in the environmental qualification of this equipment item and it is now classified in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES

1. EDS Calculation File 0910-200-EQ-01, Revision 0, Environmental Qualification of Micro Switch Limit Switches," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-25

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 25
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 1
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: CD-34072, CD-34074, CD-34076, CD-34078,
CD-34080, CD-34082, CD-34084, CD-34086
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CD-34080, CD-34082, CD-34084
CD-34086

Note: Limit Switches CD-34072, CD-34074, CD-34076, and CD-34078 are all used in Unit 1 functions and are included in Equipment Item 25 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Documented evidence of qualification is inadequate. "The licensee has cited as evidence of qualification a test plan for the NAMCO EA-180 and EA-740 Limit Switches. The referenced document is a test plan and not a test report. Furthermore, the SCEW does not identify the model number. Accordingly, qualification has not been established."

RESPONSE:

The limit switches included in this equipment item are identical to those included with Equipment Item 30. Equipment Item 30 was considered to be qualified providing a Conax Conductor Seal Assembly was installed (which has been done).

System Component Evaluation Worksheets (SCEWs) for all NAMCO limit switches have been revised to reference the NAMCO qualification test report for EA-180 limit switches rather than the test plan. In addition, a thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities. On the basis of testing and analysis, we have concluded that this equipment item is fully qualified and is categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-26

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 26
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model D2400X
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: CV-31296, CV-31298, CV-31300, CV-31303,
CV-31305, CV-31307
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SV-33657, SV-33659, SV-33661

Note: Solenoid valves with integral indication features have been installed.
Solenoid valve ID numbers have replaced the limit switch ID numbers.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

NAMCO D2400X Limit Switches have been replaced with qualified Valcor Solenoid Valves with integral indication features. The valves used in Unit 2 applications are identified with ID Numbers SV-33657, SV-33659, and SV-33661. Limit switch equipment ID numbers have been removed from the safety-related equipment masterlist and solenoid valve ID numbers have been added. Because replacement with qualified equipment has already taken place, this equipment item is now classified in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-27

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 27
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-170
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: CV-31235, CV-31236, CV-31237, CV-31238,
CV-31239, CV-31240
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31238, CV-31239, CV-31240

NOTE: Limit Switches CV-31235, CV-31236, and CV-31237 are all used in Unit 1 functions and are included in Equipment Item 27 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-28a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 28
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-170
EQUIPMENT LOCATION: Shield Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: CV-31314, CV-31316, CV-31574, CV-31627,
CV-31628, CV-31635
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31627, CV-31628

Note: Limit switches CV-31314, CV-31316, CV-31574, and CV-31635 have all been removed from the safety-related equipment masterlist because of modifications to the Containment Purge System.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Aging degradation not evaluated adequately.
- B. Qualified life or replacement schedule not established. The licensee stated in the August 26, 1981, SER Response, "The qualification documentation for aging pertaining to these components is currently being evaluated for inclusion in this bulletin."
- C. Peak pressure qualification inadequate.
- D. Required profile not enveloped adequately. "The testing envelopes the Annulus temperature profile but not the pressure profile."
- E. Steam exposure qualification inadequate. "In addition, the licensee has not addressed the sealing method used to preclude entry of moisture."

RESPONSE:

A thermal aging evaluation was performed for NAMCO limit switches to determine component replacement intervals based on installed location in the plant [1]. Depending upon the material of the particular component within the limit switch, replacement is required in the range of 7 to 40 years. The results of this evaluation are being incorporated into plant maintenance activities. Therefore, aging degradation and qualified life/replacement schedule have been adequately addressed.

The peak pressure postulated for the installed location (shield building) is 3 inches water (0.11 psi) and going to a vacuum of approximately 3-1/2 inches water (0.13 psi). The pressure will remain at this level for the duration of

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

the 2-hour operating time. Pressures of this magnitude for a 2-hour duration will not impose stresses on the limit switches in excess of those occurring during pressure variations in normal operation and will not lead to switch failure.

These limit switches will not be exposed to a steam environment for the accident which requires their operation. HELBs are not postulated for the shield building due to encapsulation in piping penetrations. The limiting accident for this component (LOCA) does not yield steam conditions in the shield building. Because there is no potential for steam or significant accumulation of condensate, switch degradation due to steam/relative humidity conditions will not occur. In addition, RTV is applied to the conduit entry of all NAMCO EA-170 limit switches to further protect against intrusion of moisture into the limit switch.

On the basis of the discussion provided above, we conclude that all deficiencies have been resolved and this component is fully qualified. Equipment Item 28 is therefore categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-29

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 29
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.C
TER-IDENTIFIED PLANT ID NUMBERS: CV-31231, CV-31232
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31233, CV-31234

Note: Limit Switches CV-31231 and CV-31232 are used in Unit 1 functions and are included in Equipment Item 29 for Unit 1. The correct Plant ID numbers for this unit are CV-31233 and CV-31234.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment satisfies all requirements except qualified life or replacement schedule justified.
 - A. Qualified life or replacement schedule has not been established. "Heat aging conditions were taken from ANSI Draft Standard N278.2.1 (Draft 3, Rev. 0). The correlation between these conditions and the qualified life is not known."

RESPONSE:

A thermal aging evaluation was performed for NAMCO limit switches which determined component replacement intervals based on location in the plant [1]. The results of this evaluation are being incorporated into plant maintenance activities. In addition, a Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. This component is now classified Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-30

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 30
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.C
TER-IDENTIFIED PLANT ID NUMBERS: CD-34080, CD-34082, CD-34084, CD-34086
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CD-34080, CD-34082, CD-34084, CD-34086

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment satisfies all requirements except qualified life or replacement schedule justified.
 - A. Qualified life or replacement schedule has not been established. "Heat aging conditions were taken from ANSI Draft Standard N278.2.1 (Draft 3, Rev. 0). The correlation between these conditions and the qualified life is not known."

RESPONSE:

A thermal aging evaluation was performed for NAMCO limit switches which determined component replacement intervals based on location in the plant [1]. The results of this activity are being incorporated into plant maintenance activities. In addition, a Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. This component is now classified Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-31

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 31
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.C
TER-IDENTIFIED PLANT ID NUMBERS: CV-31098, CV-31099, CV-31116, CV-31117,
CV-31084, CV-31102, CV-31107
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31116, CV-31117, CV-31102, CV-31107

Note: Limit switches CV-31098, CV-31099, and CV-31084 are all used in Unit 1 functions and are included in Equipment Item 31 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment satisfies all requirements except qualified life or replacement schedule justified.

A. Qualified life or replacement schedule has not been established. "Heat aging conditions were taken from ANSI Draft Standard N278.2.1 (Draft 3, Rev. 0). The correlation between these conditions and the qualified life is not known."

RESPONSE:

A thermal aging evaluation was performed for NAMCO limit switches which determined component replacement intervals based on location in the plant [1]. The results of this activity are being incorporated into plant maintenance activities. In addition, a Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. This component is now classified Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 32
EQUIPMENT DESCRIPTION: NAMCO Limit Switch Model EA-180
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.C
TER-IDENTIFIED PLANT ID NUMBERS: CV-31347, CV-31348, CV-31349, CV-31317,
CV-31575, CV-31315, CV-31636, CV-31643, CV-31129, CV-31296, CV-31298,
CV-31300, CV-31303, CV-31305, CV-31307, CV-31639, CV-31640, CV-31743
CORRECT PLANT ID NUMBERS FOR THIS UNIT: CV-31347, CV-31348, CV-31349,
CV-31643, CV-31129, CV-31639, CV-31640, CV-31743

Note: Limit switches CV-31317, CV-31575, CV-31315, and CV-31636, have been removed from the safety-related masterlist because of modification to the Containment Purge System. Limit Switches CV-31296, CV-31298, CV-31300, CV-31303, CV-31305, and CV-31307 are identical to Equipment Item 26 and are addressed with that equipment item.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment satisfies all requirements except qualified life or replacement schedule justified.
 - A. Qualified life or replacement schedule has not been established. "Heat aging conditions were taken from ANSI Draft Standard N278.2.1 (Draft 3, Rev. 0). The correlation between these conditions and the qualified life is not known."

RESPONSE:

A thermal aging evaluation was performed for NAMCO limit switches which determined component replacement intervals based on location in the plant [1]. The results of this activity are being incorporated into plant maintenance activities. In addition, a Conax Electric Conductor Seal Assembly (ECSA) has been installed to hermetically seal the limit switch enclosure. This component is now classified Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-200-TA-01, Revision 1, "NAMCO Limit Switch Thermal Aging Evaluation," April 1982.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-33a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 33
EQUIPMENT DESCRIPTION: Electric Machinery Manufacturing Company Electric Motor
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15-9, 16-01, 26-01, 25-9
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 26-01, 25-9,

Note: Electric motors 15-9 and 16-01 are used in Unit 1 functions and are included in Equipment Item 33 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Qualified life or replacement schedule not identified.
- B. Program established to identify aging degradation.
- C. Criteria regarding radiation not satisfied. "...The licensee has not established the qualification of a lubricant for use.... In addition, the radiation evaluation states that the only material that will not withstand the radiation environment is the motor winding RTD cable.... The failure analysis does not indicate if the operator could be misled by the failure of this device and could possibly shut off the motor.... The analysis concludes that the motors should withstand an accident dose of 2.8×10^6 Rads, not the 1.0×10^8 Rads level shown on the licensee's SCEW sheets."

RESPONSE:

An evaluation has been performed to determine the thermal aging characteristics of this motor [1]. The evaluation was based on the motor materials of construction, material testing, ambient and motor operating temperatures, and the operating requirements of the motor. On the basis of this evaluation, it is concluded that the Electric Machinery Manufacturing Company motors used as containment spray pump motors at Prairie Island are qualified for 40 years of operation.

There are no equipment qualification maintenance or replacement requirements, outside of normal preventative maintenance. Preventative maintenance includes general inspection of the motor and periodic replacement of the motor lubricant, Chevron SRI-2. This lubricant has been environmentally qualified (see Equipment Item 62) and was therefore not specifically addressed in this evaluation.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

The radiation evaluation of these motors states that the only material potentially unqualified to the required dose of 2.8×10^6 Rads is the motor-winding RTD extension cable. The temperature signal is used for indication purposes only and is not used as an automatic shut-down mechanism. Failure of the RTD extension cable resulting in erroneous motor winding temperature data will not mislead the plant operator. The SCEW for this equipment item has been revised to include the results of the analyses performed on these motors.

On the basis of the evaluations performed, and summarized herein, all concerns raised in the TER have been adequately resolved. This equipment item is therefore categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCE:

1. EDS/Impell Calculation File 0910-200-RA-01, Revision 2, "Radiation and Thermal Aging Analysis of Containment Spray Pump Motors," July 1983.

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 34
EQUIPMENT DESCRIPTION: Joy/Reliance Electric Motor Model 60027769
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 116-18, 126-18, 116-19, 126-32, 216-18,
226-18, 216-19, 226-32
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 216-18, 226-18, 216-19, 226-32

Note: Electric motors 116-18, 126-18, 116-19, and 126-32 are used in Unit 1 functions and are included in Equipment Item 34 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "...The licensee does not, however, provide evidence from the manufacturer that the report is applicable to the installed motors and that they are from the 'line' of motors referenced in the report."
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established. "The approach used by Joy to develop an accelerated aging program for the Reliance motors is based on the assumption that the insulation system is the limiting component. In many instances this would be correct; however, a material evaluation should be undertaken to substantiate this hypothesis. The lead cable insulation degraded to the point of failure (embrittlement) before the motor insulation failed during the post-event testing. Joy stated the following with respect to the anomaly: 'This separation of leads was caused by a combination of lead wire embrittlement due to the temperature and chemicals and vibration in the leads because of the manner in which the leads were connected. The problem occurred outside the conduit pipe where the leads were bent to allow for connection to the terminal plate before it was bolted down. In an actual installation, this severe bend does not exist and, therefore, the problem should not occur....'
 - a. the licensee has not presented a maintenance/surveillance program for the motor-insulation-to-lead splice, lead cable, or bearing system that could preclude age-related failure of these components.
 - b. the licensee did not present the data that the 'life characteristics plot of the motor insulation' was based on.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

- c. a materials evaluation program was not performed to establish the basis of the thermal aging program."
- D. Criteria regarding radiation not satisfied. "Although a separate effects radiation analysis was performed, the materials discussed were identified by Reliance specification number and not by chemical composition so that the radiation damage threshold values could be verified. The licensee has provided an engineering analysis of the shielding provided by the motor housing against the effects of beta radiation. The licensee has not verified that the motor housing completely encases the materials susceptible to beta exposure."

RESPONSE:

The environmental qualification of this equipment item was completely re-evaluated. Correspondence with the motor vendor, Reliance, indicates that the qualification report previously used was not applicable to the installed motor; however, applicable reports were identified. Utilizing the applicable qualification reports, environmental qualification including a 40 year qualified life and six months post-accident operation was justified. These results are documented in [1].

Thermal aging qualification is based on motor material degradation characteristics and extrapolates test data to the Prairie Island specific parameters using the Arrhenius method. This qualification is based on test data from the motor vendor on insulation identical to that installed. A maintenance/surveillance program does exist for these motors that includes periodic inspection of the motor-to-lead splice, lead cable, bearings, and motor lubricants.

On the basis of the evaluation performed in [1] and summarized above, all concerns raised have been adequately addressed and these motors are fully qualified for their intended service at Prairie Island. This equipment item is now categorized in Category I.A. and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Impell Calculation File 0910-200-Joy-01, "Environmental Evaluation of Joy/Reliance Fan Motors," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-35a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 35
EQUIPMENT DESCRIPTION: Westinghouse Electric Motor Model L1054-1760/875
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 117-2, 127-2, 117-3, 127-3, 217-2, 227-2,
217-3, 227-3
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 217-2, 227-2, 217-3, 227-3

Note: Electric motors 117-2, 127-2, 117-3, and 127-3 are used in Unit 1 functions and are included in Equipment Item 35 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated that the installed motors have an integral air-to-water heat exchanger, ..., has not established the bearing lubricant currently used in the motor, ..., has not established the similarity of the motor-to-lead splice in the installed motor to the tested device, ..., has not provided any documentation that indicates that the insulation system in the installed device is the same as that tested."
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established. "Although the test report states that aging was performed to simulate 40 years in service, the licensee has not provided any analysis to show that the simulation applies to the plant-specific conditions.... The licensee has not provided a replacement/maintenance schedule for subcomponents."
- D. Criteria regarding temperature/pressure exposure duration not adequate. "The licensee has not provided any basis for the 2-month operating time."

In addition, the following comment was provided. "The licensee has not indicated if the motor is equipped with an air-to-water heat exchanger. If it is, the licensee has not evaluated the effect of beta entering through the air intake of the heat exchanger."

RESPONSE:

The Westinghouse fan cooler motors installed at Prairie Island are mounted vertically and are equipped with an integral air to water heat exchanger. The

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

motor, heat exchanger, and fans are totally enclosed. Chevron SRI-2 lubricating grease is used for bearing lubrication. This lubricant has been environmentally qualified with no identified deficiencies (see Equipment Item 62). All field splices are installed following NSP Work Instruction 000-03-001 for cable splicing and terminations. Each of the splices and terminations used in safety-related applications have been environmentally qualified. The installed motor insulation system is thermalastic epoxy identical to that tested in WCAP 7829. Correspondence with the equipment vendor, Westinghouse, indicates that qualification testing documented in WCAP 7829 is directly applicable to the RCFC motors installed at Prairie Island [1].

An aging evaluation has been performed to correlate the simulated aging in the test program to the in-service conditions at Prairie Island [2]. The results of this evaluation show that a qualified life in excess of 40 years has been simulated by the test using the Arrhenius methodology. There are no requirements for subcomponent replacement in the 40 year qualified life of the motors. Although there are no specific equipment qualification maintenance requirements, these motors are on a preventative maintenance program that periodically inspects the motors.

WCAP 7829 documents the qualification to long term (up to one year) post accident operating requirements based on testing and analysis. In essence, the motor heat exchanger maintains bearing and insulation temperatures low enough during post accident conditions to preclude adverse degradation.

As noted above, these motors are totally enclosed with an integral air-to-water heat exchanger. There are no vent openings on the motor and no potential for intrusion of beta radiation through the water intake. Thus, the motor enclosure does provide sufficient shielding against beta radiation.

On the basis of the evaluations performed and the discussion provided above, all identified deficiencies in the environmental qualification of this equipment item have been adequately resolved. Westinghouse fan cooler motors are therefore classified in Category I.A and are fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Westinghouse Electric Company, Water Reactor Divisions letter from P. Van Teslaar to K. Becker of EDS Nuclear, February 1, 1982.
2. Impell Calculation File 0910-200-WES-01, Revision 0, "Thermal Aging Analysis of Westinghouse Motors," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-36

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 36
EQUIPMENT DESCRIPTION: Westinghouse Electric Motor Model HSDP
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15-1, 16-5, 26-3, 25-5
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 26-3, 25-5

Note: Electric motors 15-1 and 16-5 are used in Unit 1 functions and are included in Equipment Item 36 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not established the applicability of the referenced report to the installed device. WCAP-8754 states that the device tested was a formette made of Class B thermalastic epoxy stator insulation. WCAP-7829 relates to testing of windings of the same type for radiation tolerance and testing of Westinghouse S#723A773-G05 lubricant for radiation resistance. The licensee's SCEW states: 'Motor, Westinghouse, HSD-P'. No attempt has been made by the licensee to establish that the installed motor and subcomponents are the same as those tested."

RESPONSE:

A project has been initiated to re-evaluate the environmental qualification of Westinghouse motors. The motor vendor has been contacted to identify the applicable qualification test report, based on motor materials of construction. Once this identification has been made, a complete qualification evaluation will be performed for all environmental parameters. We expect that this evaluation will be completed by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-37

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 37
EQUIPMENT DESCRIPTION: Westinghouse Electric Motor Model HSDP
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15-4, 16-4, 25-4, 26-4
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 25-4, 26-4

Note: Electric motors 15-4 and 16-4 are used in Unit 2 functions and are included in Equipment Item 37 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not established the applicability of the referenced report to the installed device. WCAP-8754 states that the device tested was a formette made of Class B thermalastic epoxy stator insulation. WCAP-7829 relates to testing of windings of the same type for radiation tolerance and testing of Westinghouse S#723A773-G05 lubricant for radiation resistance. The licensee's SCEW states: 'Motor, Westinghouse, HSD-P'. No attempt has been made by the licensee to establish that the installed motor and subcomponents are the same as those tested."

RESPONSE:

A project has been initiated to re-evaluate the environmental qualification of Westinghouse motors. The motor vendor has been contacted to identify the applicable qualification test report, based on motor materials of construction. Once this identification has been made, a complete qualification evaluation will be performed for all environmental parameters. We expect that this evaluation will be completed by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-38

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 38
EQUIPMENT DESCRIPTION: Barton Flow Transmitter Model 332
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 23073, 23074, 23075, 23076
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 23075, 23076

Note: Flow transmitters 23073 and 23074 are used in Unit 1 functions and are included in Equipment Item 38 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

These transmitters were originally identified for relocation to a mild environment. However, for maintenance reasons, they will be replaced with qualified transmitters. Rosemount 1153 Series B transmitters have been ordered and will be installed during Unit 2 Cycle 8 and prior to November 30, 1985. Once this replacement has taken place, this equipment item will be classified in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-39

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 39
EQUIPMENT DESCRIPTION: Foxboro Flow Transmitter Model E13DH(MCA)
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 23021, 23022, 23023, 23024, 23025, 23026,
23027, 23028
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 23025, 23026, 23027, 23028

Note: Flow transmitters 23021, 23022, 23023, and 23024 are used in Unit 1 functions and that are included in Equipment Item 39 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated the output current range of their Foxboro transmitters. (The tables of note 1 differentiate between 4-20 and 10-50 ma models.) Therefore, accuracy tolerances of -12% for the E11GM and -9% for the E13DH must be assumed. Since the licensee has failed to specify the required accuracy for these transmitters, compliance with accuracy criteria is suspect."

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-40a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 40
EQUIPMENT DESCRIPTION: Rosemount Flow Transmitter Model 1153HA6
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.B
TER-IDENTIFIED PLANT ID NUMBERS: 23017, 23018, 23019, 23020
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 23017, 23018, 23019, 23020

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment not qualified. "We note the following information abstracted from applicable and available qualification documentation associated with the overall NRC equipment environmental qualification review program:

"Rosemount testing to qualify a transmitter to meet IEEE 323-1974 requirements has resulted in failure. A combination of thermal aging, irradiation, and chemical spray test specification parameters has resulted in failed components. The initial failed element was an O-ring comprised of sulphur cured polyethylene rubber. This allowed steam/chemical spray to affect electronic components. The O-ring mode of failure is attributed to high temperature vs. time necessary for the Arrhenius curve time compression to satisfy aging test requirements."

"Based on the above considerations, this equipment item is placed in NRC qualification category II.B because applicable and available qualification information abstracted from documentation presented to the NRC as a result of the overall NRC equipment environmental qualification program reports current Rosemount testing to IEEE-323(74) criteria which resulted in failure of the test specimen."

RESPONSE:

The TER deficiencies cited above have been addressed in a separate transmittal to the Director of Nuclear Reactor Regulation at the NRC. The evaluation submitted requested that this equipment item be reclassified as Category II.C based on the technical discussion presented. That position was accepted as noted in [1]. The aging qualification of this equipment item is being evaluated based on recently completed testing on the Rosemount 1153 Series B and 1153 Series D transmitters. Once that evaluation is complete, this equipment item will be fully qualified and classified in Category I.A.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-40b

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. NRC letter from Robert Clark to D. M. Musolf (NSP) dated June 3, 1973, and attached safety evaluation concerning justification for continued operation for Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, as Related to Environmental Qualification of Safety-Related Electrical Equipment Classified as Not Qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-41

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 41
EQUIPMENT DESCRIPTION: Magnetrol Level Transmitter Model A153FEP/VPXYTD
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 16796, 16811, 16909, 16910
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 2LT-725, 2LT-726, 2LT-727A, 2LT-727B,
2LT-728A, 2LT-728B

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Magnetrol level transmitters have been replaced with qualified containment sump water level transmitters. Delaval level transmitters model XM-54854-323 were installed and have recently completed a qualification test program which fully qualifies the level transmitter for the environmental conditions associated with the installed location. Because replacement with a qualified transmitter has already taken place, this equipment item is now classified in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-42

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 42
EQUIPMENT DESCRIPTION: Barton Level Transmitter Model P386-351
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 24041, 24042, 24043, 24046, 24047, 24048
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 24046, 24047, 24048

Note: Level transmitters 24041, 24042 and 24043 are all used in Unit 1 functions and are included in Equipment Item 42 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Qualified replacement transmitters have been ordered and will be installed during Unit 2, Cycle 7/8, and prior to the end of the second refueling outage after March 31, 1982. Barton Model 764-351 level transmitters, which have successfully completed qualification testing, will be installed and will then be classified in Category I.A and be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-43

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 43
EQUIPMENT DESCRIPTION: Foxboro Level Transmitter Model E13DHSAM1
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 24080, 24081, 24082, 24083, 24084, 24085,
24086, 24087
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 2LT-487, 2LT-488

Note: Qualified transmitters with Plant ID numbers 1LT-487 and 1LT-488 for Unit 1 and 2LT-487 and 2LT-488 for Unit 2 were installed. Unit 1 transmitters are included as Equipment Item 43 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Qualified level transmitters have been installed and are designated with Plant ID numbers 2LT-487 and 2LT-488 for Unit 2. Foxboro N-E13DH-IIAF level transmitters, which have successfully completed qualification testing, were installed. Because installation of qualified transmitters has already taken place, this equipment item is now classified on Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-44a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 44
EQUIPMENT DESCRIPTION: Rosemount Pressure Transmitter 1153HA6
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.B
TER-IDENTIFIED PLANT ID NUMBERS: 21102, 21159
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 1-PT-709, 1-PT-710

Note: These transmitters are actually installed in Unit 1. A new system was installed to monitor RCS-wide range pressure and plant ID numbers 1-PT-709 and 1-PT-710 have been assigned to these transmitters. The deficiencies identified for this equipment item will be addressed below.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment not qualified. "We note the following information abstracted from applicable and available qualification documentation associated with the overall NRC equipment environmental qualification review program:

"Rosemount testing to qualify a transmitter to meet IEEE 323-1974 requirements has resulted in failure. A combination of thermal aging, irradiation, and chemical spray test specification parameters has resulted in failed components. The initial failed element was an O-ring comprised of sulphur-cured polyethylene rubber. This allowed steam/chemical spray to affect electronic components. The O-ring mode of failure is attributed to high temperature vs. time necessary for the Arrhenius curve time compression to satisfy aging test requirements."

"Based on the above considerations, this equipment item is placed in NRC qualification category II.B because applicable and available qualification information abstracted from documentation presented to the NRC as a result of the overall NRC equipment environmental qualification program reports current Rosemount testing to IEEE-323(74) criteria which resulted in failure of the test specimen."

RESPONSE:

The TER deficiencies cited above have been addressed in a separate transmittal to the Director of Nuclear Reactor Regulation at the NRC. The evaluation submitted requested that this equipment item be reclassified as Category II.C

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-44b

based on the technical discussion presented. That position was accepted as noted in [1]. The aging qualification of this equipment item is being evaluated based on recently completed testing on the Rosemount 1153 Series B and 1153 Series D transmitters. Once that evaluation is complete, this equipment item will be fully qualified and classified in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. NRC letter from Robert Clark to D. M. Musolf (NSP) dated June 3, 1973, and attached safety evaluation concerning justification for continued operation for Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, as Related to Environmental Qualification of Safety-Related Electrical Equipment Classified as Not Qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-45

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 45
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GMSA01
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: PT-21164, PT-21165, PT-21166, PT-21167,
PT-21168, PT-21169, PT-21170, PT-21171
CORRECT PLANT ID NUMBERS FOR THIS UNIT: PT-21168, PT-21169, PT-21170, PT-21171

Note: Pressure transmitters PT-21164, PT-21165, PT-21166, and PT-21167 are all used in Unit 1 functions and are included in Equipment Item 45 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Foxboro model N-E11GM-H101-AE pressure transmitters, which have successfully passed qualification testing, have been installed. Because qualification has already taken place, this equipment item is now classified as Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-46

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 46
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GM-SAE1 (MCA)
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 21146, 21147, 21148, 21150, 21154, 21155,
21156, 21157
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 21154, 21155, 21156, 21157

Note: Pressure transmitters 21146, 21147, 21148, and 21150 are all used in Unit 1 functions and are included in Equipment Item 46 for Unit 1

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-47

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 47
EQUIPMENT DESCRIPTION: Rosemount Pressure Transmitter Model 1153GA9
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.B
TER-IDENTIFIED PLANT ID NUMBERS: 1-PT-729, 2-PT-729
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 2-PT-729

Note: Pressure transmitter 1-PT-729 is used in Unit 1 functions and is included in Equipment Item 47 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment not qualified. "We note the following information abstracted from applicable and available qualification documentation associated with the overall NRC equipment environmental qualification review program:

"Rosemount testing to qualify a transmitter to meet IEEE 323-1974 requirements has resulted in failure. A combination of thermal aging, irradiation, and chemical spray test specification parameters has resulted in failed components. The initial failed element was an O-ring comprised of sulphur-cured polyethylene rubber. This allowed steam/chemical spray to affect electronic components. The O-ring mode of failure is attributed to high temperature vs. time necessary for the Arrhenius curve time compression to satisfy aging test requirements.'

"Based on the above considerations, this equipment item is placed in NRC qualification category II.B because applicable and available qualification information abstracted from documentation presented to the NRC as a result of the overall NRC equipment environmental qualification program reports current Rosemount testing to IEEE-323(74) criteria which resulted in failure of the test specimen."

RESPONSE:

This equipment item has been deleted from the safety-related equipment masterlist and no longer requires environmental qualification.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-48

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 48
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GM(MCA)
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 21203, 21204, 21205, 21209, 21210, 21211
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 21209, 21210, 21211

Note: Pressure transmitters 21203, 21204, and 21205 are used in Unit 1 functions and are included in Equipment Item 48 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated the output current range of their Foxboro transmitters. (The tables of note 1 differentiate between 4-20 and 10-50 ma models.) Therefore, accuracy tolerances of -12% for the E11GM and -9% for the E13DH must be assumed. Since the licensee has failed to specify the required accuracy for these transmitters, compliance with accuracy criteria is suspect."

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-49

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 49
EQUIPMENT DESCRIPTION: Foxboro Pressure Transmitter Model E11GM(MCA)
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 21206, 21207, 21208
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 21206, 21207, 21208

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "The licensee has not stated the output current range of their Foxboro transmitters. (The tables of note 1-differentiate between 4-20 and 10-50 ma models.) Therefore, accuracy tolerances of -12% for the E11GM and -9% for the E13DH must be assumed. Since the licensee has failed to specify the required accuracy for these transmitters, compliance with accuracy criteria is suspect."

RESPONSE:

Safety-related equipment accuracies are currently being reviewed and defined as part of the Prairie Island emergency preparedness program. These instrument accuracies will be plant-specific and based on various postulated accident scenarios. Based on the functional requirements of these transmitters, we expect the instrument accuracies experienced in qualification testing to be acceptable. If it is determined that the accuracies experienced in the qualification testing are unacceptable, accident operating procedures will be modified accordingly.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-50

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 50
EQUIPMENT DESCRIPTION: Endevco Accelerometer Model 2273AM20
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 2EQ-443, 2EQ-444, 2EQ-445

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

The testing on this component is nearly complete. If, as a result of testing, modifications to the installed equipment are required, the modifications will be performed during Unit 2 refueling cycle 8/9 and prior to November 30, 1985. Once the qualification testing is complete and all necessary modifications have been made, this equipment item will be categorized in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-51

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 51
EQUIPMENT DESCRIPTION: Unholtz-Dickey Amplifier Model 22CA-2TR
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 2EE-443, 2EE-444, 2EE-445

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

The testing on this component is nearly complete. If, as a result of testing, modifications to the installed equipment are required, the modifications will be performed during Unit 2 refueling cycle 8/9 and prior to November 30, 1985. Once the qualification testing is complete and all necessary modifications have been made, this equipment item will be categorized in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-52

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 52
EQUIPMENT DESCRIPTION: Fisher Controls Signal Converter Model 546
EQUIPMENT LOCATION: Auxilary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: SC-35084, SC-35029
CORRECT PLANT ID NUMBERS FOR THIS UNIT: SC-35084, SC-35029

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Documented evidence of qualification not adequate. "In reviewing the licensee's introductory letter to this response dated August 26, 1981, no specific information with respect to this equipment could be located."

RESPONSE:

The safety function of this equipment item has been reviewed, and it is concluded that it should be removed from the safety-related equipment masterlist. The April 30, 1982, SER response provided this information.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-53

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 53
EQUIPMENT DESCRIPTION: Trinity Electric Thermometer Model K81
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 15456, 15457, 15458, 15459, 15610, 15611,
15612, 15613
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15610, 15611, 15612, 15613

Note: Thermometers 15456, 15457, 15458, and 15459 are all used in Unit 1 functions and are included in Equipment Item 53 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Incore thermocouple reference junction boxes have been deleted from the harsh environment safety-related equipment masterlist. A new system utilizing qualified incore thermocouple cable exiting containment through qualified containment penetrations has been installed.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-54

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 54
EQUIPMENT DESCRIPTION: Rosemount RTD Model 176KS
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.2
TER-IDENTIFIED PLANT ID NUMBERS: 15314
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15314

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Documented evidence of qualification not adequate.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.
 - D. Required profile not enveloped adequately.
 - E. Criteria regarding spray not satisfied.
 - F. Criteria regarding functional testing not satisfied.
 - G. Criteria regarding instrument accuracy not satisfied.

The detailed evaluation and comments resulting in the identification of these deficiencies was not provided due to the proprietary nature of the information.

RESPONSE:

A detailed evaluation was not provided in the TER due to the proprietary nature of the information, thus, a detailed technical response cannot be provided. Environmental qualification is based on testing described in WCAP-9157. In essence, environmental qualification is limited by the radiation resistance of the RTD. Based on the functional requirements and radiation exposure at the installed location, RCS wide-range RTDs are qualified for 12 years of normal operation and two weeks of monitoring following a secondary system line break. Replacement of these RTDs is currently scheduled in 1986 for Unit 2. On the basis of the testing described above, these RTDs are fully qualified for their intended use until replacement occurs at the end of the 12-year qualified life.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-55

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 55
EQUIPMENT DESCRIPTION: Sostman RTD Model 11901B
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: 15331, 15332, 15333, 15334, 15315, 15322,
15323
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 15315, 15322, 15323

Note: RTDs 15331, 15332, 15333, and 15334 are used in Unit 1 functions and are included in Equipment Item 55 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Documented evidence of qualification not adequate.
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.
 - D. Required profile not enveloped adequately.
 - E. Criteria regarding spray not satisfied.
 - F. Criteria regarding instrument accuracy not satisfied.

The detailed evaluation and comments resulting in the identification of these deficiencies was not provided due to the proprietary nature of the information.

RESPONSE:

A detailed evaluation was not provided in the TER due to the proprietary nature of the information, thus, a detailed technical response cannot be provided. Environmental qualification is based on testing described in WCAP-9157. In essence, environmental qualification is limited by the radiation resistance of the RTD. Based on the functional requirements and radiation exposure at the installed location, RCS wide range RTDs are qualified for 12 years of normal operation and two weeks of monitoring following a secondary system line break. Replacement of these RTDs is currently scheduled in 1986 for Unit 2. On the basis of the testing described above, these RTDs are fully qualified for their intended use until replacement occurs at the end of the 12-year qualified life.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-56

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 56
EQUIPMENT DESCRIPTION: Boston Insulated Wire Electrical Control Cable Model
Bostrad 7
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Documented evidence of qualification not established.
 - B. Criteria regarding submergence not satisfied. "The licensee SCEW sheet indicates that the cables can become submerged and states that an accelerated water absorption test qualifies the cable for submergence. The water absorption tests demonstrate suitability for demineralized water at atmospheric pressure, but do not simulate the pressure, temperature, chemistry, and radiation conditions of the liquid in the containment sump after LOCA."

RESPONSE:

Several tests have been performed on BIW cables to evaluate their ability to operate in a submerged condition. The tests follow the outline of IEEE 383-1974, which specifically states that voltage withstand tests be performed on cables submerged in tap water. BIW cable was immersed in tap water at 75°C (167°F) for 14 days with no deleterious effects. In addition to water absorption tests, the cables were exposed to 0.1 immersion aging at 121°C (250°F) and boric acid aging of irradiated samples in varying pH solutions was performed with no noted anomalies. Cable samples were also exposed to a 7-day LOCA test with high temperatures, high pressures, 100% RH, and a boric acid/sodium hydroxide chemical solution. The combination of these tests far exceeds the test necessary to show submergence qualification. In general, the combination of LOCA testing and water absorption testing of immersed samples adequately simulates the postulated accident environment to document submergence qualification in accordance with IEEE 383-1974.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-57a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 57
EQUIPMENT DESCRIPTION: Kerite Electrical Control Cable Models FR/FR and HTK/FR
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.
- D. Criteria regarding spray satisfied.

The detailed evaluation and comments resulting in the identification of these deficiencies was not provided due to the proprietary nature of the information.

RESPONSE:

Because a detailed evaluation was not provided in the TER due to the proprietary nature of the information, a detailed technical response cannot be provided.

Three types of Kerite cable are used in safety-related applications at Prairie Island: HT-Kerite/FR, FR/FR, and HT-Kerite/HTNS. Each of these cables have been evaluated and their environmental qualification is documented in [1]. Correspondence with the equipment vendor, Kerite, has resulted in obtaining the applicable qualification reports for each cable type [2]. Aging qualification is based on aging tests performed on cable samples correlated to the Prairie Island environment using the Arrhenius methodology. The results of this evaluation show that the cables are qualified for greater than 40 years of service with no replacement required. Chemical spray qualification has been established based on type testing to chemical solutions simulating the Prairie Island containment spray solution.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

Based on the environmental evaluation summarized above, all identified deficiencies have been adequately resolved. Kerite electrical cable is therefore categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. EDS Calculation File 0910-205-KER-01, Revision 1, "Environmental Qualification of Kerite Electrical Cables," December 8, 1981.
2. Kerite Company letter from the office of E. N. Sleight to Terry M. Maxey, EDS Nuclear, December 8, 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-58

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 58
EQUIPMENT DESCRIPTION: Okonite Electrical Cable Model Okonite/Neoprene
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding submergence not satisfied. "The licensee has provided documentation which references several Okonite test reports and laboratory test reports for the cable which would establish qualification for the cable in the auxiliary building but does not provide qualification for submergence in containment" . . . "The water absorption tests demonstrate suitability for demineralized water at atmospheric pressure, but do not simulate the pressure, temperature, chemistry and radiation conditions of the liquid in the containment sump after LOCA.

RESPONSE:

Submergence qualification of Okonite cables is based on sequential type testing which included high temperature, high pressure, 100% RH, chemical spray simulation, irradiation, and submergence testing. These tests were performed following the guidelines of IEEE 383-1974. While it is true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment. The accelerated water absorption test after the LOCA testing was of sufficient duration, in excess of 18 months at 90°C (194°F), to provide adequate margin for submergence qualification.

On the basis of the environmental evaluation performed and for which the submergence qualification is summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite cables are therefore categorized in Category I.A.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-59a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 59
EQUIPMENT DESCRIPTION: Okonite Electrical Cable Splice Model 604-92-1571
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.
 - A. Adequate similarity between equipment and test specimen not established. "The letters reproduced on page 5a are not certification that the test report applies."
 - B. Aging degradation not evaluated adequately.
 - C. Qualified life or replacement schedule not established.
 - D. Criteria regarding submergence not satisfied. "The licensee's SCEW sheet indicates that the cables can become submerged and states that an accelerated water absorption test qualifies the cable for submergence. The water absorption test demonstrates suitability for demineralized water at atmospheric pressure, but does not simulate the pressure, temperature, chemistry, and radiation conditions of the liquid in the containment sump after LOCA."

RESPONSE:

Correspondence with the equipment vendor [1] resulted both in the identification of the materials used in the splice and the procurement of the applicable qualification test [2]. Utilizing this test data, the environmental qualification of the splice was documented [3]. Thermal aging qualification is based on pre-aging performed on the test specimens correlated to the Prairie Island environment utilizing the Arrhenius methodology.

As a result of the thermal aging evaluation, this equipment item is qualified for an excess of 40 years of service with no requirements for replacement. Submergence qualification is based on immersion testing in water following accident testing (which included chemical spray exposure). This test sequence and method does follow the qualification requirements outlined in IEEE 383-1974. While it is true that water absorption testing alone does not simulate

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment.

On the basis of the environmental evaluation performed and summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite splice kit 604-92-1571 is therefore categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Record of conversation between Mr. J. Rodgers (Okonite) and Mr. W. Fargo (EDS) dated August 18, 31, and September 11, 1981.
2. LOCA Qualification Report for Okoguard Insulating Cables and T-95 and T-35 Splicing Tapes, Okonite Report NQRN-3, June 23, 1980.
3. EDS Calculation File 0910-205-OKO-02, Revision 0, "Environmental Qualification of Okonite Splices," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-60

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 60
EQUIPMENT DESCRIPTION: Allen Bradley Terminal Strips Model 1492-CD3
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

Environmental qualification testing is still in progress. Assuming successful completion of the testing, this equipment item will be categorized in Category I.A and will be completely qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-61

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 61
EQUIPMENT DESCRIPTION: General Electric Epoxy Model 7010/74010A
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

This equipment item is used in conjunction with Equipment Item 60, Allen Bradley terminal strips, for which environmental qualification testing is still in progress. Assuming successful completion of the testing, this equipment item will be categorized in Category I.A and will be fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-62

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 62
EQUIPMENT DESCRIPTION: Chevron SRI-2 Lubricant
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-63

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 63
EQUIPMENT DESCRIPTION: Mobil DTE Lubricant
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: 1.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-64

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 64
EQUIPMENT DESCRIPTION: Bussman Fuseholder Model HEBA
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding steam exposure not adequate. "An oven aging test does not provide qualification for steam exposure."

RESPONSE:

Bussman HEB-A fuseholders are waterproof fuseholders which completely encapsulate the fuse and protect it against damage from water, weather, salt spray, corrosive fumes, and the like. Correspondence with the equipment vendor indicates that the HEB-A fuseholders have been qualified for immersion in accordance with military specification MIL-STD-202D, April 14, 1969. More specifically, this test consists of 5 cycles of 60-minute immersions in a hot bath of tap water at 65°C, followed by 60-minute immersions in a saturated solution of sodium chloride and water at 0°C. The test sample successfully passed this immersion testing. The waterproof fuseholders are enclosed in NEMA-4 boxes, which provide further protection against the effects of moisture.

On the basis of the testing performed and installation of NEMA-4 enclosures, there is adequate assurance of qualification to relative humidity conditions. This equipment item is therefore categorized in Category I.A and is fully qualified.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-65

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 65
EQUIPMENT DESCRIPTION: General Electric Motor Control Center Model 7700 Series
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: 1LA1, 1LA2, 2LA1, 2LA2, 1M1, 1MA2
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 1LA2, 2LA2, 1MA2

Note: Motor Control Centers 1LA1, 2LA1, 1M1 are all used in Unit 1 functions and are included in Equipment Item 65 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

New motor control centers have been ordered and will be used to relocate required safety-related loads to a mild environment. Installation will be completed during Unit 2 Cycle 8 and prior to November 30, 1985. Once this has occurred, this item will no longer be on the harsh environment safety-related equipment masterlist.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-66

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 66
EQUIPMENT DESCRIPTION: Creiger Electrical DC Distribution Panel
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.B
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: Panel 253, 263

Note: All safety-related loads from these panels have been relocated to Panels 153 and 163.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment modification required to establish qualification.

RESPONSE:

All safety-related loads to these panels have been relocated to distribution panels installed in the auxiliary building. Therefore, this equipment item has been deleted from the safety-related equipment masterlist. Distribution panels located in the auxiliary building have been added to the safety-related equipment masterlist, and environmental qualification for these panels is nearing completion.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-67

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 67
EQUIPMENT DESCRIPTION: Barton Flow Switch Model 288A
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.C
TER-IDENTIFIED PLANT ID NUMBERS: 18252, 18253, 18268, 18269
CORRECT PLANT ID NUMBERS FOR THIS UNIT: 18268, 18269

No. 1: Flow switches 18252 and 18253 are used in Unit 1 function and are included in Equipment Item 67 for Unit 1.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment satisfies all requirements except qualified life or replacement schedule justified.
 - A. Aging degradation not evaluated adequately.
 - B. Qualified life or replacement schedule not established. "The licensee has provided PGR 3252 as evidence of qualification for this equipment item. This test report envelopes the plant-specific conditions for the expected radiation environment. The licensee has not, however, identified the materials of construction or evaluated the effects of aging on the device."

RESPONSE:

A project was initiated to thoroughly evaluate the qualified life of Barton Model 288A flow switches, based on the aging degradation properties of the constituent materials. This evaluation is documented in [1]. The results show that these flow switches have a qualified life in excess of 40 years at the installed location in the Prairie Island auxiliary building. The completion of this thermal aging evaluation addresses the deficiencies cited above. This equipment item is now categorized in Category I.A and is fully qualified.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Impell Calculation File 0910-200-BAR-01, "Barton 288A Thermal Aging Evaluation," July 1983.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-68

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 68
EQUIPMENT DESCRIPTION: D. G. O'Brien Electrical Penetration Model PR-2 (TI)
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-69

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 69
EQUIPMENT DESCRIPTION: D. G. O'Brien Electrical Penetration Model PR-12 (LVP)
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

/

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-70

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 70
EQUIPMENT DESCRIPTION: D. G. O'Brien Electrical Penetration Model PR-110 (MVP)
EQUIPMENT LOCATION: Reactor Building Unit 2
TER QUALIFICATION CATEGORY: I.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

There are no deficiencies identified in the environmental qualification of this equipment item.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-71

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 71
EQUIPMENT DESCRIPTION: Kerite Electrical Cable Splice DS1001/DS1102
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established. "In lieu of the detailed description discussed above it would be acceptable for the licensee to obtain certification from the manufacturer identifying what test report(s) apply to the cables furnished for installation. If applicability is established the splice would be qualified."

RESPONSE:

The equipment manufacturer, Kerite, was contacted prior to initiating the environmental qualification evaluation of Kerite splices DS-1001 and DS-1002. The result of this correspondence [1] was the identification and procurement of the applicable qualification test [2]. This confirmation of test report applicability by the equipment manufacturer satisfies the certification requirement described in the TER deficiency. Therefore, this equipment item is fully qualified and is categorized in Category I.A.

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. Kerite Company letter from the office of Mr. E. N. Sleight to Mr. T. M. Maxey (EDS Nuclear) dated November 4, 1981.
2. Tests of Electrical Cables Under Simultaneous Exposure to Gamma Radiation, Steam, and Chemical Spray while Electrically Energized," FIRL Final Report F-C4020-2, March 1975.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-72a

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 72
EQUIPMENT DESCRIPTION: Okonite Electrical Splicing Tape Model T95
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding submergence not satisfied. "The test report also contains a description of water absorption tests. However, the accelerated water absorption testing in demineralized water at atmospheric pressure does not simulate or qualify the equipment for the pressure, temperature, radiation and chemistry of the liquid in the containment sump after a LOCA.

RESPONSE:

Okonite electrical cable splicing tapes T-95 and T-35 are integral components in the Okonite splice kit model 604-92-1571 (Equipment Item 59). The environmental qualification testing on the 604-92-1571 splice kit included testing on the T-95 and T-35 splicing tapes [1] and is directly applicable to the installed splices at Prairie Island as documented in [2]. Submergence qualification is based on immersion testing in water following accident testing (which included chemical spray exposure). This test sequence and method does follow the qualification requirements outlined in IEEE 383-1974. While it's true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment.

On the basis of the environmental evaluation performed [3] and summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite splicing tapes T-95 and T-35, contained in splicing kit 604-92-1571, are fully qualified. This equipment item is therefore categorized in Category I.A.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. LOCA Qualification Report for Okoguard Insulating Cables and T-95 and T-35 Splicing Tapes, Okonite Report NQRN-3, June 23, 1980.
2. Record of Conversation between Mr. J. Rodgers (Okonite) and Mr. W. Fargo (EDS) dated August 18, 31, and September 11, 1981.
3. EDS Calculation File 0910-205-OKO-2, Revision 0, "Environmental Qualification of Okonite Splices," December 1981.

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 73
EQUIPMENT DESCRIPTION: Okonite Electrical Cable Splice Model T35
EQUIPMENT LOCATION: Reactor Building Unit 2 and Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: None

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Criteria regarding submergence not established. "The test report also contains a description of water absorption tests. However, the accelerated water absorption testing in demineralized water at atmospheric pressure does not simulate or qualify the equipment for pressure, temperature, radiation and chemistry of the liquid in the containment sump after LOCA."

RESPONSE:

Okonite electrical cable splicing tapes T-95 and T-35 are integral components in the Okonite splice kit model 604-92-1571 (Equipment Item 59). The environmental qualification testing on the 604-92-1571 splice kit included testing on the T-95 and T-35 splicing tapes [1] and is directly applicable to the installed splices at Prairie Island as documented in [2]. Submergence qualification is based on immersion testing in water following accident testing (which included chemical spray exposure). This test sequence and method does follow the qualification requirements outlined in IEEE 383-1974. While it's true that water absorption testing alone does not simulate the post-LOCA environment in the containment sump, the combination of tests described above does simulate this environment.

On the basis of the environmental evaluation performed [3] and summarized above, all deficiencies have been adequately resolved and this equipment item is fully qualified. Okonite splicing tapes T-95 and T-35, contained in splicing kit 604-92-1571, are fully qualified. This equipment item is therefore categorized in Category I.A.

ITEMIZED DEFICIENCIES AND RESPONSES (Cont.):

EQUIPMENT ITEM SPECIFIC REFERENCES:

1. LOCA Qualification Report for Okoguard Insulating Cables and T-95 and T-35 Splicing Tapes, Okonite Report NQRN-3, June 23, 1980.
2. Record of Conversation between Mr. J. Rodgers (Okonite) and Mr. W. Fargo (EDS) dated August 18, 31, and September 11, 1981.
3. EDS Calculation File 0910-205-OKO-2, Revision 0, "Environmental Qualification of Okonite Splices," December 1981.

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

TER Response
July 29, 1983

Page 2.2-74

UNIT NUMBER: 2
TER EQUIPMENT ITEM NUMBER: 74 NOTE: This equipment item number was not
included in the TER
EQUIPMENT DESCRIPTION: Limitorque Motorized Valve Actuator Model SMB-00
EQUIPMENT LOCATION: Auxiliary Building
TER QUALIFICATION CATEGORY: II.A
TER-IDENTIFIED PLANT ID NUMBERS: None
CORRECT PLANT ID NUMBERS FOR THIS UNIT: MV-32019, MV-32020

Note: These actuators were incorrectly included in Equipment Item 74 for
Unit 1. They are actually used in Unit 2 functions and are therefore
included in the Unit 2 TER response.

ITEMIZED DEFICIENCIES AND RESPONSES:

1. Equipment qualification not established.

- A. Adequate similarity between equipment and test specimen not established.
- B. Aging degradation not evaluated adequately.
- C. Qualified life or replacement schedule not established.

Several pages of detailed notes were provided in the TER pertaining to
deficiencies in the environmental qualification of this equipment item.

RESPONSE:

A project has been initiated to thoroughly evaluate and document the environmental qualification of Limitorque valve actuators. Each of the concerns raised in the TER will be addressed in that evaluation. We expect that the evaluation will be finalized by January 1, 1984, and that any necessary modifications or replacements will be performed prior to November 30, 1985.

3.0 GENERAL REFERENCES

1. Technical Evaluation Report, "Review of Licensees' Resolution of Outstanding Issues from NRC Equipment Environmental Qualification Safety Evaluation Reports (F-11 and B-60)", March 29, 1983, Franklin Research Center.
2. D. E. Gibberts (NSP) letter to J.G. Keppler (NRC), March 13, 1980, "Response to IE Bulletin 79-01B"; FRC TER Reference [1].
3. D. E. Gibberts and L. O. Mayer (NSP) letter to J. G. Keppler (NRC), October 31, 1980, "Final Response to IE Bulletin 79-01B, Prairie Island Nuclear Generating Plant"; FRC TER Reference [3].
4. D. E. Gibberts and L. O. Mayer (NSP) letter to J. G. Keppler (NRC), January 22, 1980, "Response to IE Bulletin 79-01B, Supplement 3"; FRC TER Reference [13].
5. U.S. NRC Office of Nuclear Reactor Regulation Safety Evaluation Report for Prairie Island Units 1 and 2, May 12, 1981; FRC TER Reference [14].
6. L. O. Mayer (NSP) Letter to NRC, August 26, 1981, "Prairie Island Nuclear Generating Plant - Response to IE Bulletin 79-01B Safety Evaluation Report"; FRC TER Reference [15].
7. L. O. Mayer (NSP) Letter to NRC, April 30, 1982, "Prairie Island Nuclear Generating Plant - Response to IE Bulletin 79-01B Safety Evaluation Report"; FRC TER Reference [59].
8. D. Musolf (NSP) letter to NRC, May 19, 1983, "Prairie Island Nuclear Generating Plant - Response to 10 CFR 50.49, Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants."