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 50-260 Browns Ferry Nuclear Power Station, Unit 2, Tennessee 05000260
 50-296 Browns Ferry Nuclear Power Station, Unit 3, Tennessee 05000296

AUTH. NAME VASSALLO, D.B. AUTHOR AFFILIATION Operating Reactors Branch 2
 RECIP. NAME PARRIS, H.G. RECIPIENT AFFILIATION Tennessee Valley Authority

SUBJECT: Forwards "Review of Licensees Resolution of Outstanding Issues From NRC Equipment Environ Qualification SERs (F-11 & B-60), vols 1 & 2," technical evaluation rept, proprietary & -proprietary versions.

SEE REPTS. & SEE PROPRIETARY REPTS.

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Docket Nos. 50-259
50-260
and 50-296

JAN 11 1983

Mr. Hugh G. Parris
Manager of Power
Tennessee Valley Authority
500 A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

SUBJECT: SAFETY EVALUATION FOR ENVIRONMENTAL QUALIFICATION OF
SAFETY-RELATED ELECTRICAL EQUIPMENT

Re: Browns Ferry Nuclear Plant, Units 1, 2, and 3

This letter transmits the Safety Evaluation for the Environmental Qualification of Safety-Related Electrical Equipment at your facilities. This evaluation is based on your response to our previous Safety Evaluation Report, which was transmitted by our letter of June 3, 1981, and to your subsequent responses of September 29, 1981, March 4, 1982, April 6, 1982 and September 3, 1982. This Safety Evaluation presents the results of the Environmental Qualification review for safety-related electrical equipment, exposed to a harsh environment, in accordance with NRC requirements. We request that you provide your plans for qualification or replacement of any of the equipment in NRC categories I.b, II.a and II.b (presented in the Technical Evaluation Reports) and the schedule for accomplishing your proposed corrective actions to us within ninety (90) days of the receipt of this letter.

As indicated in the conclusion section of the enclosed Safety Evaluation, we request that you reaffirm the justification for continued operation and within thirty (30) days of receipt of this letter, submit information for any of the items in NRC categories I.b, II.a and II.b (presented in the enclosed Technical Evaluation Reports) for which justification for continued operation was not previously submitted to the NRC. We suggest that the clarification set forth in item 8 of Generic Letter No. 82-09, "Clarification Questions and Answers on Environmental Qualification Requirements," should be considered in your justification for continued operation.

8301190133 830111
PDR ADOCK 05000259
P PDR

*PHOL
Add: NSIC-NP only*

Attachment to ... Field from Public
Disclosures

Please Send Copy of XA to PDR

OFFICE	.....	.....	.....	.....	.....	.....	.....
SURNAME	.....	.....	.....	.....	.....	.....	.....
DATE	.....	.....	.....	.....	.....	.....	.....



The Technical Evaluation Reports contain certain identified information which you or your vendors have previously claimed to be proprietary. We request that you inform us as indicated in the proprietary section of the Safety Evaluation whether any portions of the identified pages still require proprietary protection.

At your option, the staff will be available to discuss the findings in the Safety Evaluation as augmented by the Technical Evaluation Reports. Questions regarding this letter should be directed through the NRC Project Manager for your plant.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by
D. Vassallo

Domenic B. Vassallo, Chief
Operation Reactors Branch #2
Division of Licensing

Enclosures:

- 1. Safety Evaluation
- 2. Technical Evaluation Reports

cc w/o TER, see next page

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J. Heltemes, AEOD

OFFICE	DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:OR		
SURNAME	S. Norris	D. Clark	D. Vassallo	G. Lajinas		
DATE	1/11/83	1/7/83	1/11/83	1/1/83		

Mr. Hugh G. Parris

cc:

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Decatur, Alabama 35602

Mr. Oliver Havens
U.S. Nuclear Regulatory Commission
Reactor Training Center
Osborne Office Center, Suite 200
Chattanooga, Tennessee 37411

TECHNICAL EVALUATION REPORT

REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY EVALUATION REPORTS (F-11 and B-60)

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT UNIT 1

VOL. 2 OF 2

NRC DOCKET NO. 50-259

FRC PROJECT C5257

NRC TAC NO. 42481

FRC ASSIGNMENT 13

NRC CONTRACT NO. NRC-03-79-118

FRC TASK 469

Prepared by

Franklin Research Center
20th and Race Streets
Philadelphia, PA 19103

FRC Group Leader: C. J. Crane

Prepared for

Nuclear Regulatory Commission
Washington, D.C. 20555

Lead NRC Engineer: N. B. Le
P. Shemanski

July 26, 1982

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Reviewed by:

C. J. Crane
Group Leader

Approved by:

C. J. Crane
Project Manager
O. P. Carfagna
Department Director

Control # 8301190133



Franklin Research Center

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The Benjamin Franklin Parkway, Phila., Pa. 19103 (215) 448-1000

REGULATORY DOCKET FILE COPY





EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

Equipment Item No. 96
 Limit Switch Located in the Torus Room
 Micro Model OP-AR
 RHR System Flush Vent Valve Position Indication (FCV-74-102, -103, -119, -120)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 96
 Licensee Submittal: Pages EEB-74-1005 through -1008 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (J), (RT), (P), (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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 1a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

Equipment Item No. 97
 Solenoid Valve Located in the Reactor Building
 Atkomatic Model 15820-WP
 Core Spray Vent Valve (FSV-75-71, -72)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 97
 Licensee Submittal: Pages EEB-75-1005 and -1006 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	X
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	X
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure: _____
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

Licensee Response

Appendix 1, Sheet 1 of 1
EEB-1-1011
Accelerometer

1. The accelerometers are required to operated in the environment as specified on the system component evaluation work sheet.
2. The manufacturer's specifications for the accelerometers are as follows:

Temperature: 700°
Pressure: Atmospheric
Relative Humidity: 100%
Radiation: Gamma Flux 6.2×10^{10}
Neutron Flux 3.7×10^{18}
3. The accelerometer enclosure provides adequate shielding; therefore, beta radiation need not be considered.
4. The accelerometers are being tested to be qualified in accordance with IEEE Standard 323-1974. Documentation should be available by February 1, 1981.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

Equipment Item No. 106
 Pump Motor Located in the NE Corner Room
 General Electric Model 5K Series
 Drives Reactor Building Equipment Drain Pumps (SP-A, B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 106
 Licensee Submittal: Pages MEB-77-01, -03, -04, -06 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o . Peak Temperature Adequate	_____
o . Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



Franklin Research Center
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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

Equipment Item No. 107
 Pressure Switches Located in the NE and NW Corner Rooms
 Mercoïd Model DA-7043-804
 Core Spray Pump A and B Discharge Pressure (PS-75-7, -16, -35, -44)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 107
 Licensee Submittal: Pages NEB-75-216 and -229 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

Equipment Item No. 98
 Level Switch Located in the Torus Room
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25F)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 98
 Licensee Submittal: Page EEB-77-1002 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS) None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	<u>X</u>
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

Equipment Item No. 99
 Level Switch Located in the HPCI Pump Room
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25E)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 99
 Licensee Submittal: Page EEB-77-1003 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (Q1), (RT), (P), (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS) None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Checksheet Page No.

Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

Equipment Item No. 100
 Solenoid Valve Located in the Reactor Building
 Valcor Model 526D
 Drywell H₂ and O₂ Analyzer Valves (FSV-76-52, -50)
 Licensee Reference 4760
 Required Operating Time: 1 year
 TER Checksheet No. 100
 Licensee Submittal: Pages EEB-76-1022 and 1023 [12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (Q) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="radio"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____ X
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

SEE DETAILED REVIEW FOR EQUIPMENT ITEM NO. 13



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FRC Task No. 464/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

Equipment Item No. 101
 Level Switch Located in the NE and NW Corner Rooms
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25A, -25B, -17A, and -17B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 101
 Licensee Submittal: Pages EEB-77-1007, -1001 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1A

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	<u>X</u>
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

Equipment Item No. 102
 Level Switch Located in the SW Corner Room
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25C, -25D)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 102
 Licensee Submittal: Pages EEB-77-1008 and -1009 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (Q1) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1-2

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103

Equipment Item No. 103
 Limit Switch Located in the Reactor Building
 Micro Model EX-AR30
 Actuates Containment Exhaust Valve (FCV-84-19, -20)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 103
 Licensee Submittal: Pages EEB-84-1014 and -1015 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QI), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.
Maintenance and Replacement Schedule Summary	7a, 7b, 7c.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1A3

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

Equipment Item No. 104
 Flow Control Valve Located in the Reactor Building
 RAMCON Model 25B4
 Radiation Monitoring Drywell Leak Detection (FCV-90-254A, B; -257A, B;
 -255)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 104
 Licensee Submittal: Pages EEB-90-1001, -1002, -1003, -1004 and -1005 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	<u>X</u>
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

Equipment Item No. 105
 Acoustic Accelerometer Located in the Drywell
 ENDEVCO Model 2273A
 Safety Relief Valve Position Indication (XT-1-4, -5, -18, -19, -22,
 -23, -30, -31, -34, -41, -42, -179, -180)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 105
 Licensee Submittal: Pages EEB-1-1011 through -1023 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1005

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function~~ when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed ~~a corrective~~ action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (^{has}~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action February 1981.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1071

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	X
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	X
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

Equipment Item No. 108
 Flow Switch Located in the HPCI Room
 Barton Model 289A
 Monitors RHR Flow (FIS-74-50)
 Licensee Reference 4266
 Required Operating Time: 1 year
 TER Checksheet No. 108
 Licensee Submittal: Page NEB-74-188 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	<u>X</u> _____
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u> _____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u>X</u> _____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	<u>X</u> _____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	<u>X</u> _____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	<u>X</u> _____
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____

See equipment item 64 for full evaluation details.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 19

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category 1V (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>		[4266.]	[3252]
Rate of Temp./Press. Increase			
Peak: °F/psig/RH/Time	BF unit 2/3 300°F/131/30 acc.	Test No. 1 156/0/90/1hr	
Decrease To: °F/psig/RH/Time	228°F/0/100 2 min	Test No. 2 212/0/100/1h.	X - see note 8 and 9 item 64
Decrease To: °F/psig/RH/Time	BF unit 1 153/0/100/2 min		
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	dentim not stst		
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	—	—	—
Spray Composition (4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)	—	—	—
Spray Density (gpm/ft ²)	—	—	—
Spray Duration	—	—	—
Submergence Duration (4.1.3/2.2.5/2.2.5)	—	—	—
In-Leakage Considered (5.2.6, 5.3.2/-/-)	—	—	—
Time to Submergence	—	—	—
Dust Environment (-/2.2.11/2.2.11)	—	—	—
Radiation dose (Normal + accident) Rads	5 x 10 ⁴	3 x 10 ⁶	3 x 10 ⁶



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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

Equipment Item No. 109
 Flow Switch Located in the NW Corner Room
 Barton Model 289
 Monitors Core Spray Flow (FIS-75-21)
 Licensee Reference 4266
 Required Operating Time: 1 year
 TER Checksheet No. 109
 Licensee Submittal: Page NEB-75-219 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Checksheet Page No.

Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 109

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

For full evaluation details, see equipment item 6:4. It is concluded that model 289 has not been analyzed or tested and therefore lacks qualification documentation.



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Assignment No. 13
 FRC Task No. 4109

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

Equipment Item No. 110
 Flow Switch Located in the High Pressure Coolant Injection Room
 Barton Model 289
 Monitors High Pressure Coolant Injection Flow (FS-73-33)
 Licensee Reference 4266
 Required Operating Time: 1 year
 TER Checksheet No. 110
 Licensee Submittal: Page NEB-73-164 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o . Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*For full evaluation details, see equipment item
6.4. It is concluded that model 289
has not been analyzed or tested and therefore
lacks qualification documentation.*



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

Equipment Item No. 111
 Solenoid Valve Located in the Reactor Building
 ASCO 8000 Series
 Containment Isolation Valves (FSV-67-53, -50;
 FSV-64-10, -44, -45, -43, -36, -42)
 Licensee reference not cited
 Required Operating Time: 1 hour to 1 year
 TER Checksheet No. 111
 Licensee Submittal: Pages EEB-67-001, -003; EEB-64-1032, -1024, -1030, -1023,
 -1024, -1013 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

Equipment Item No. 112
 Solenoid Valve Located in the Torus Room
 ASCO 8000 Series
 Containment Inerting System Valves (FSV-76-38A, -38B, -43A, -42A, -42B, -41A, -41B, -37A, -37B, -39A, -39B, -40A, and -40B), Main Steam Isolation Valve (Plant I.D. Not Stated), Control Rod Drive System Solenoid Valve (FSV-85-70A, B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 112
 Licensee Submittal: Pages EEB-76-1014, -1015, -1016, -1017, -1018, -1019, 1020, -1026, -1021, -1027, -1028, -1029, -1030; NEB-1-002A; EEB-85-1001, -1002 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS) None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

Equipment Item No. 113
 Solenoid Valve Located in the Reactor Building
 ASCO Model HB830081F
 Containment Isolation Valve Pilot (FSV-64-32)
 Licensee Reference 712
 Required Operating Time: 1 hour
 TER Checksheet No. 113
 Licensee Submittal: Page NEB-64-053A [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a</u> Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

Checksheets 5a thru 5f have been removed due to the
proprietary nature of information contained therein.





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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

Equipment Item No. 114
 Solenoid Valve Located in the Drywell
 ASCO Model X8300B61F
 Sampling System Isolation Valve (FSV-43-13)
 Licensee Reference 806
 Required Operating Time: 1 hour
 TER Checksheet No. 114
 Licensee Submittal: Page NEB-43-030 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).





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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

Checksheets 5A, 5g and 5h have been removed due to the
proprietary nature of information contained therein.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

Equipment Item No. 115
 Solenoid Valve Located in the Reactor Building
 ASCO Model HVA-90-405-2A
 Control Rod Drive System Solenoids (FSV-85-37A, -37B, -39A, -39B)
 Licensee References 4673, 4674
 Required Operating Time: 1 hour
 TER Checksheet No. 115
 Licensee Submittal: Pages NEB-85-268 and -274 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO' 11

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

NOTES:

Reference 4673 (G.E. summary report 097-A-01) documents testing performed on an ASCO solenoid valve (model no. HVA-90-405).

Testing consisted of exposure to 212°F, 100% rh for 6 hours. The valve was also subjected to seismic testing. The test summary does not contain audible data, and information regarding test results. This does not constitute qualification for this equipment.

Reference 4674 (G.E. summary report 097-A-02) is a summary of vendor data and does not provide qualification for this equipment.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 409

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

Equipment Item No. 116
 Solenoid Valve Located in the Reactor Building
 ASCO Model X8300-B61F
 Sampling System Isolation Valves (FSV-43-14)
 Licensee Reference 806
 Required Operating Time: 1 day
 TER Checksheet No. 116
 Licensee Submittal: Page NEB-43-032 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), T, QT, RT, P, H, CS, (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a</u> Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

See review of equipment item 114



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

Equipment Item No. 117
 Solenoid Valve Located in the Torus Room
 ASCO Model 8300C61U
 RHR Vent Valves (FSV-74-119, -120, -102, -103)
 Licensee reference not cited
 Required Operating Time: 1 hour, 1 year
 TER Checksheet No. 117
 Licensee Submittal: Pages EEB-74-1004, -1003, -1002, and -1001 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. //

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

Equipment Item No. 118
 Solenoid Valve Located in the Reactor Building
 ASCO Model No. HT8211C94
 Acuates Drywell or Suppression Chamber Exhaust Valve (FSV-84-20)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 118
 Licensee Submittal: Page EEB-84-1006 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 118

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

Equipment Item No. 119
 Solenoid Valve Located in the Reactor Building
 ASCO Model 8300 Series
 Containment Purge Makeup Isolation Valves (FSV-76-17, -18, -19, -24)
 Licensee Reference 806
 Required Operating Time: 1 day
 TER Checksheet No. 119
 Licensee Submittal: Pages NEB-76-240, -241 and -242 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has~~/~~has not~~), provided a response to the SER concerns.
- The Licensee (~~has~~/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input type="checkbox"/> <u>I.b</u> Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> <u>I.a</u> Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> <u>I.b</u> Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

See review of equipment item 114



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

Equipment Item No. 120
 Solenoid Valve Located in the NE Corner Room
 ASCO Model 8300 Series
 Containment Isolation Reactor Building Sump Pump (FSV-77-17)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 120
 Licensee Submittal: Page EEB-77-1004 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

Equipment Item No. 121
 Solenoid Valve Located in the Reactor Building
 ASCO Model WPLBX831636
 CRD Backup SCRAM Pilot Valve B (FSV-85-35A, -35B))
 Licensee Reference 712
 Required Operating Time: 1 hour
 TER Checksheet No. 121
 Licensee Submittal: Page NEB-85-267 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

SEE DETAILED REVIEW ON EQUIPMENT ITEM 113



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

Equipment Item No. 122
 Solenoid Valve Located in the Reactor Building
 ASCO Model WPHTX 8300B45F
 Containment Isolation (FSV-64-17, -18, -19, -20, -21, -29, -30, -31, -32, -33, -34)
 Licensee Reference 806
 Required Operating Time: 1 hour
 TER Checksheet No. 122
 Licensee Submittal: Pages NEB-64-039, -040, -047, and -053 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), T, (QI), RT, P, H, CS, (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 2b, 3c, 2d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment.
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a</u> Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

See review of equipment item 114



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "x" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

Equipment Item No. 123
 Solenoid Valve Located in the NW Corner Room
 ASCO Model HTX8300C61U
 Core Spray Cooling System Isolation Valve (FSV-75-57)
 Licensee reference not cited
 Required Operating Time: 1 day
 TER Checksheet No. 123
 Licensee Submittal: Page EEB-75-1001 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R, T, Q1, RT, P, H) CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

Equipment Item No. 124
 Solenoid Valve Located in the NW Corner Room
 ASCO Model HTX8300B61U
 RCIC Steam Line Isolation (FSV-71-6A, -6B)
 Licensee reference not cited
 Required Operating Time: 30 days
 TER Checksheet No. 124
 Licensee Submittal: Pages EEB-71-1001 and -1002 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (Q1), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5a, 5b, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 12.4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 124

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

Equipment Item No. 125
 Motorized Valve Actuator Located in the RCIC Pump Room
 Limitorque Model SMB-0, DC Motor, Class B Insulation
 RCIC Steam Supply Valve (FCV-71-8)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 125
 Licensee Submittal: Page NEB-71-100 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 2b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b <u>Modification</u> | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

Equipment Item No. 126
 Motorized Valve Actuators Located in the NE and NW Core Spray Pump Rooms
 Limatorque Model SMB-0
 Core Spray Pumps "A" and "B" Suction Valves (FCV-75-2, -11, -30, -39)
 Licensee References 662, 1620, 2876
 Required Operating Time: 1 year
 TER Checksheet No. 126
 Licensee Submittal: Pages NEB-75-214 and -227 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>II.a Qualification Not Established</u> | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u> X </u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u> X </u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION ON PAGE 5 f



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this MVA incorporates a motor brake.

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

Equipment Item No. 127
 Motorized Valve Actuator Located in the SE Corner Room
 Limitorque Model SMB-0
 RHR Pump B (FCV-74-25); RHR Pump D (FCV-74-36)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 127
 Licensee Submittal: Page MEB-74-01 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 2b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action see section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

Equipment Item No. 128
 Motorized Valve Actuators Located in the SW Corner Room
 Limitorque Model SMB-0
 RHR Pump "A" and "C" Shutdown Cooling (FCV-74-2, -13)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 128
 Licensee Submittal: Page MEB-74-01 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
 - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

Equipment Item No. 129
 Motorized Valve Actuator Located Within the Drywell
 Limitorque Model SMB-0
 Containment Isolation (FCV-69-1)
 Licensee References 1620, 1064
 Required Operating Time: 1 hour
 TER Checksheet No. 129
 Licensee Submittal: Page NEB-69-73A [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

Equipment Item No. 130
 Motorized Valve Actuator Located in the HPCI Pump Room
 Limatorque Model SMB-0, DC Motor, Class B Insulation
 HPCI Suppression Pool Suction (FCV-73-27); HPCI, CST Suction (FCV-73-40);
 HPCI Main Pump (FCV-73-30)
 Licensee References 1620, 2876, 662, 1063, 659
 Required Operating Time: 30 days
 TER Checksheet No. 130
 Licensee Submittal: Pages MEB-73-161, -169; MEB-73-02 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), QT, RT, (P), H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/~~analysis~~)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action see Section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

Equipment Item No. 131
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-0
 Actuates Reactor Water Cleanup Valves (FCV-69-2)
 Licensee References 659, 662, 1063, 1620, 2876
 Required Operating Time: 1 day
 TER Checksheet No. 131
 Licensee Submittal: Page NEB-69-074 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____X
- Aging Degradation Evaluated Adequately _____X
- Qualified Life or Replacement Schedule Established (If Required) _____X
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132

Equipment Item No. 132
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-00
 RHR System Suppression Pool Valve (FCV-74-58, -72); RBCCW Discharge
 Header Outlet Valve (FCV-70-47)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 132
 Licensee Submittal: Pages NEB-70-82 and NEB-74-194 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *Modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

Equipment Item No. 133
 Motorized Valve Actuator Located in the Steam Tunnel
 Limitorque Model SMB-00, Class B Insulation
 RCIC Steam Line Isolation (FCV-71-3)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 133
 Licensee Submittal: Page NEB-71-96 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2; of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

Equipment Item No. 134
 Motorized Valve Actuator Located in the NW Corner Room
 Limatorque Model SMB-00, DC Motor, Class B Insulation
 RCIC Suppression Pool Suction (FCV-71-17, -18); RCIC CST Suction (FCV-71-19)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 134
 Licensee Submittal: Pages NEB-71-107, -108, and -109 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (Q1), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function~~ when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|---------------------------------|
| I.a. Qualified | II.c. Qualified Life Deficiency |
| <u>I.b. Modification</u> | III.a. Exempt |
| II.a. Qualification Not Established | III.b. Not in Scope |
| II.b. Not Qualified | IV. Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

"X" DENOTES APPROPRIATE EVALUATION

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE Tested FOR THIS testing AN EXACT COMPLETION DATE HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

Equipment Item No. 135
 Motorized Valve Actuator Located in the Corner Rooms
 Limitorque Model SMB-00
 Actuates Core Spray and Residual Heat Removal Valves (FCV-74-30, -96,
 -97, -98, -99; FCV-75-9, -37)
 Licensee References 659, 2876, 662
 Required Operating Time: 1 year
 TER Checksheet No. 135
 Licensee Submittal: Pages MEB-74-01; NEB-75-217 and -230 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 3c , 3d
System Consideration Review	4a , 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a , 5b , 5c , 5d , 5e , 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 135

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has~~/~~has not~~) provided a response to the SER concerns.
- The Licensee (~~has~~/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function~~ when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has~~/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has~~/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 135

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

Equipment Item No. 136
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-00
 Actuates Residual Heat Removal Valves (FCV-74-78)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 136
 Licensee Submittal: Page NEB-74-208 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function~~ when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *Modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 137

Equipment Item No. 137
 Motorized Valve Actuator Located Inside the Drywell
 Limitorque Model SMB-00
 Actuates Reactor Core Isolation Cooling Systems Valves (FCV-71-2)
 Licensee References 1620, 1064, 659
 Required Operating Time: 30 days
 TER Checksheet No. 137
 Licensee Submittal: Page NEB-71-85 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified X
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 137

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

Equipment Item No. 138
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB; Sizes 00 and 2
 Actuates Residual Heat Removal System Valves (FCV-74-2, -7, -13, -25, -30, -36, -98, -99, -101; FCV-74-60, -61; FCV-23-34, -40, -46, -52)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 138
 Licensee Submittal: Pages NEB-74-197A, -196; NEB-23-026; NEB-23-024; MEB-74-01) [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u> X </u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u> X </u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE PAGE 5f for EVALUATION



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 430

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BEN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

EVALUATION:

1. The licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The licensee has not identified the motor manufacturer or the class of insulation for these MVA's

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

Equipment Item No. 139
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-000
 Actuates Steam Drain Isolation Valves (FCV-1-55)
 Licensee References 1620, 1064
 Required Operating Time: 1 hour
 TER Checksheet No. 139
 Licensee Submittal: Page NEB-1-012 [14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately X
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *Modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTOFIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

Equipment Item No. 140
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-000
 Actuates Residual Heat Removal System Valves (FCV-74-7)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 140
 Licensee Submittal: Page MEB-74-01 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

Equipment Item No. 141
 Motorized Valve Actuators Located in the NW Corner Room
 Limitorque Model SMB-000
 Actuates Reactor Core Isolation Cooling System Valves (FCV-71-25, -34)
 Licensee Reference 662
 Required Operating Time: 30 days
 TER Checksheet No. 141
 Licensee Submittal: Page MEB-71-02 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has/has not~~) provided a response to the SER concerns.
- The Licensee (~~has/has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has/has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has/has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has/has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

"X" DENOTES APPROPRIATE EVALUATION

~~X~~ THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 142

Equipment Item No. 142
 Motorized Valve Actuator Located in the Steam Tunnel
 Limitorque Model SMB-000, DC Motor, Class B Insulation
 Actuates Steam Drain Isolation Valves (FCV-1-56)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 1 day
 TER Checksheet No. 142
 Licensee Submittal: Page NEB-1-013 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 142

"X" DENOTES APPROPRIATE EVALUATION

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE tested AN EXACT COMPLETION DATE FOR THIS testing HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

Equipment Item No. 143
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-000
 Actuates Emergency Core Cooling System Valves (FCV-67-18, -22, -26)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 143
 Licensee Submittal: Page MEB-67-02 [14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QA, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action: (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input checked="" type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEDQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

~~X~~ THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

Equipment Item No. 144
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-000
 Actuates Emergency Core Cooling System Valves (FCV-67-17, -21, -25)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 144
 Licensee Submittal: Page MEB-67-01 [14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e , 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1469

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u> X </u>
Aging Degradation Evaluated Adequately	<u> X </u>
Qualified Life or Replacement Schedule Established (If Required)	<u> X </u>
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u> X </u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION on PAGE 5f



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this unit incorporates a motor brake.

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

Equipment Item No. 145
 Motorized Valve Actuator Located in the NW Corner Room
 Limatorque Model SMB-1, DC Motor, Class B Insulation
 Actuates Reactor Core Isolation Cooling Valves (FCV-71-37, -38, -39)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 145
 Licensee Submittal: Pages NEB-71-117, -118, and -119 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (Q1), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

Equipment Item No. 146
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-1
 Actuates Residual Heat Removal System Valves (FCV-74-1, -12, -24, -35)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 146
 Licensee Submittal: Page NEB-74-179B [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____X_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION ON PAGE 5f.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this MVA incorporates a motor brake.

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

Equipment Item No. 147
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-2
 HPCI Steam Line Isolation Valve (FCV-73-2)
 Licensee References 659, 1064, 1020
 Required Operating Time: 30 days
 TER Checksheet No. 147
 Licensee Submittal: Page NEB-73-130 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 142

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a Qualification Not Established</u> | III.b Not in Scope |
| I.b NOT QUALIFIED | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

SEE EVALUATION ON PAGE 5F



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this MVA incorporates a motor brake.

CONCLUSION:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

Equipment Item No. 148
 Motorized Valve Actuator Located in the HPCI Pump Room
 Limatorque Model SMB-2, DC Motor, Class B Insulation
 HPCI Steam Supply Valve (FCV-73-16)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 148
 Licensee Submittal: Page NEB-73-149 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14B

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

Equipment Item No. 149
 Motorized Valve Actuator Located in the NE Corner Room
 Limitorque Model SMB-2
 Core Spray System II Test Bypass Valve (FCV-75-50)
 Licensee Reference 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 149
 Licensee Submittal: Page NEB-75-234 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), T, (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b <u>Modification</u> | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 11

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *notified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

Equipment Item No. 150
 Motorized Valve Actuator Located in the Torus Room
 Limatorque Model SMB-2, DC Motor, Class B Insulation
 HPCI Steam Line Valve (FCV-73-3)
 Licensee References 662, 2876, 1620, 1063, 659
 Required Operating Time: 30 days
 TER Checksheet No. 150
 Licensee Submittal: Page NEB-73-147 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b <u>Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Project No. C5257
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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

Equipment Item No. 151
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-2
 RHR Suppression Pool Valve (FCV-74-71); RHR System I (FCV-74-57);
 RHR System I Test Valves (FCV-74-59, -73)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 151
 Licensee Submittal: Pages NEB-74-193, -195, and -204. [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/ has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Project No. C5257
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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

Equipment Item No. 152
 Motorized Valve Actuators Located in the Reactor Building
 Limitorque Model SMB-2
 Core Spray Discharge Control Valves (FCV-75-23, -25, -73, -75)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 152
 Licensee Submittal: Pages NEB-75-222, -224, -235, and -237 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Summary of Licensee Responses to the NRC SER	1b
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Licensee Response to NRC SER.	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u> X </u>
Adequate Similarity Between Equipment and Test Specimen Established	<u> X </u>
Aging Degradation Evaluated Adequately	<u> </u>
Qualified Life or Replacement Schedule Established (If Required)	<u> </u>
Program Established to Identify Aging Degradation	<u> </u>
Criteria Regarding Aging Simulation Satisfied (If Required)	<u> </u>
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u> </u>
o Peak Pressure Adequate	<u> </u>
o Duration Adequate	<u> </u>
o Required Profile Enveloped Adequately	<u> </u>
o Steam Exposure (If Required) Adequate	<u> </u>
Criteria Regarding Spray Satisfied	<u> </u>
Criteria Regarding Submergence Satisfied	<u> </u>
Criteria Regarding Radiation Satisfied	<u> </u>
Criteria Regarding Test Sequence Satisfied	<u> </u>
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	<u> </u>
Criteria Regarding Functional Testing Satisfied	<u> </u>
Criteria Regarding Instrument Accuracy Satisfied	<u> </u>
Test Duration Margin (1 hour + Function Time) Satisfied	<u> </u>
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	<u> </u>

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u> X </u>
I.b	Equipment Qualification Pending Modification	<u> </u>
II.a	Equipment Qualification Not Established	<u> </u>
II.b	Equipment Not Qualified	<u> </u>
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u> </u>
III.a	Equipment Exempt From Qualification	<u> </u>
III.b	Equipment Not in the Scope of the Qualification Review	<u> </u>
IV	Documentation Not Made Available	<u> </u>



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE MODIFIED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM.



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 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

Equipment Item No. 153
 Motorized Valve Actuators Located in the Reactor Building
 Limitorque Model SMB-2
 Containment Isolation (FCV-74-74, -75)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 153
 Licensee Submittal: Pages NEB-74-205A and -206B [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 3c , 3d
System Consideration Review	4a , 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a , 5b , 5c , 5d , 5e , 5f , 5g , 5h , 5i , 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a , 6b
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE MODIFIED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

Equipment Item No. 154

Cable
 (COAX, TRIAX, signal XLPE)

Times Wire & Cable, Brand Rex 936,
 Boston Insulated Wire, Okonite, Dearborn Wire,
 Alpha Wire, Belden, Consolidated, Rockbestos,
 Anaconda 17

Cable
 (CP, CPO, CPJS, PXJ)

Sumitomo Shoji, Plastic Wire & Cable, Collyer,
 Okonite, Triangle Conduit & Cable, Rome, Essex,
 PWC, Simplex, General Cable, Rockbestos

Cable
 (PNN, PJJ, PN, PJ)

Plastic Wire & Cable, Brand Rex 936, Rome,
 Cyprus, American Insulated Wire, General Cable,
 Tamaqua, PWC

Various Licensee References

Required Operating Time: Continuous

TER Checksheet No. 154

Licensee Submittal: Page EEB-68-0016, Typical [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P H CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/~~analysis~~)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	<u>X</u>
Qualified Life or Replacement Schedule Established (If Required)	<u>X</u>
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 471

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS4

NOTES:

The licensee 'EEQ' evaluation sheets for the cables identified on page 1a do not provide sufficient information (Insulation thickness, Insulation material ie specific compound, jacket thickness, Jacket material ie specific compound, sizes and types of conductors etc) to provide a correlation between installed cables and test reports. In the test program to be conducted on the installed Browns Ferry Cable the licensee should ensure adequate description of cable characteristics to demonstrate Type testing which satisfies DOR guideline requirements or IEEE-383-74 requirements.

The licensee should also provide evidence of test and analysis to establish the qualified life of the cable.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

Equipment Item No. 155
 Electrical Cable Located in the Drywell
 Anaconda, Silicone Rubber Insulation
 Low Voltage Power and Control Cable
 Licensee Reference 17
 Required Operating Time: Continuous
 TER Checksheet No. 155
 Licensee Submittal: Page EEB-68-0016, Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, (P), H, CS, (A), S, (R), M, I, (QM) RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS5

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a Qualification Not Established</u> | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____ X
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____ X
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____ X *
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established _____ X
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

** inside drywell only.*



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. XXXXXXXXXX

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I ; NUREG-0588, Cat. II .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	Electrical Cable	Electrical Cable	
Manufacturer's Name (5.2.2/-/-)	Anaconda	Anaconda	
Model Number (5.2.2/-/-)	N/A	see page 5f.	Note 1
Serial Number	N/A	N/A	
Features/Mounting (5.2.6/-/-)	N/A	N/A	
Connections/Interfaces (5.2.6/-/-)	Not stated		
Location/Elevation	Container	N/A	
Equipment ID No.	WLO, CP55	N/A	
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number	79117	79117	
Report Date	4/79	4/79	
Issued by	Anaconda	Anaconda	
Prepared for	Brown Ferry	TVA.	
Referenced Reports			
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	NA	Test	
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)	NA	Insulation Resistance Hi Pot Current Loading.	
Operating Conditions (-/2.2.10/2.2.10)			
Load/Cycles/Voltage/ Current/Freq.	Not Stated.	see page 5f.	Note 1



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS5

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	N/A	Not stated	
Accuracy (5.2.5/-/-)	N/A	N/A	
Number of Specimens	N/A	21 see page 5 f	(N/A 1)
Test Instruments Calibrated	N/A	yes	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active	N/A	
Test Duration (5.2.1/-/-)	NA	16 days	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	> 24 hrs	NA	
Required Function Time	1 year	N/A	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	N/A	aging	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	N/A	irradiation LOCA Simulator	
1. Representative Sample			
2. Baseline Data			
3. Performance Extremes			
4. Thermal Aging			
5. Radiation Aging			
6. Wear Aging			
7. Vibration/Seismic			
8. DBE Exposure			
9. Post-DBE Exposure			
10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	N/A	7 day @ 210°C 28 day @ 210°C anneal	
Material Aging Evaluation (7.0/-/-)	N/A	yes	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	N/A		
Radiation Aging, Type	NA	Gamma	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	Not stated	see accident Dose	
Radiation Aging, Dose Rate	Not stated	↓	
Radiation Aging, Method	N/A		
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	Not stated		
Operational Aging (-/4.2/-)	Not stated	Not stated	
Other Age Conditioning (-/4.2/-)	N/A	Not stated	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 years	> 40 years	
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	Not stated	N/A	
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	Reviews Every Program	N/A	
On-Going Analysis of Failures and Degradation (7.0/-/-)	↓	N/A	
Margin (General) (6.0/3.0/3.0)	N/A	N/A	
Margin (NUREG-0588, Cat. I) (-/3.2/-)	↓	↓	
1. Temperature (+15°F)			
2. Pressure (+10%, 10 psig max)			
3. Radiation (not required)			
4. Time (+10%, +1 hour + function time minimum)			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS5

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
--	-----------------------	--------------------------------	----------------------------------

ACCIDENT CONDITIONS

LOCA/MSLB/HELB/Uncontrolled
(4.1, 4.2, 4.3.1, 4.3.3/
1.1, 1.2, 1.5/1.1, 1.2, 1.5)

LOCA/MSLB

LOCA

Radiation Type

Gamma
& beta

Gamma

Radiation Dose (rd)
(4.1.2/1.4/1.4)

1×10^8 *
 2×10^6 **

1.2×10^8

Radiation Dose Rate (rd/hr)
Radiation Qual. Method
(5.3.1/-/-)

N/A

0.56 rd/hr

Proximity to Concentrated
Radiation
(4.1.2/1.4.6/1.4.6)

N/A

N/A

Equipment Susceptible to
Beta Radiation (4.1.2/-/-)

Not
stated

Not Stated

Radiation Dose (Normal +
Accident) (4.1.2/-/-)

N/A

Plateout Dose Considered
(-/1.48/1.48)

yla



Gamma + Beta Dose (rd)
(4.1.2/1.4.7/1.4.7)

2×10^9 *

Not Stated

X
Note 2

* in Containment

* in Compartments - steam valve panel



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 48

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase.	~15°/sec	18° F	
Peak: °F/psig/RH/Time	325/60/100/30M	280/35/100 | 3 hrs	X Note 3.
Decrease To: °F/psig/RH/Time	320/30/100/30M	240/11 | 100 | 3 hrs	
Decrease To: °F/psig/RH/Time	230/20/100/4hr	215/0-5/100 | 4 hr	
Decrease To: °F/psig/RH/Time	230-150/20-4/100 ~20 hrs	203/0/100 | 3.5 d. 180/0/100 | 12 d.	
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)		NA	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	N/A	Test	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	Demin. Water	2000 ppm (Sium) (H ₃ BO ₃) pH - 8.2	
Spray Density (gpm/ft ²)	Not stated	0.15	
Spray Duration	N/A	16 days	
Submergence Duration (4.1.3/2.2.5/2.2.5)	N/A	N/A	
In-Leakage Considered (5.2.6, 5.3.2/-/-)	Not stated	N/A	
Time to Submergence	N/A	N/A	
Dust Environment (-/2.2.11/2.2.11)	N/A	N/A	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

NOTES:

Note-1,

B. SPECIMEN DESCRIPTION

Description of the cable specimens and their required energizing potentials and currents are present in Table I:

TABLE I

CABLE SPECIMEN DESCRIPTION & ELECTRICAL LOADING

CABLE SPECIMEN NUMBER	DESCRIPTION	NOMINAL DESIGN DIAMETER	MEASURED OUTSIDE DIAMETER	REQUIRED ELECTRICAL LOADING VAC/AMPS
49.1.1-49.1.3	Low voltage power and control cable, NSG 1/C 12 AWG (7/0305), tinned copper conductor, 45 mil wall of CC-2193, Nuclezil silicone rubber insulation, 6 mil wall of glass braid covering.	.198	.200	480/25
49.2.1-49.2.3				
49.3.1-49.3.3				
49.4.1-49.4.3				
49.5.1-49.5.3				
49.6.1-49.6.3				
49.7.1-49.7.3				

Note 2 The radiation testing envelops the Gamma dose for specifications inside and outside primary containment. However Beta effects inside containment could exceed the tested values. Therefore qualification



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

NOTES:

Note 2 (cont'd)

for radiation has not been established.

If the cable is installed in conduit or covered cable tray, the beta effects could be eliminated.

Note 3. The test does not envelop the in-containment profile particularly the peak temperature and pressure.

The licensee stated:

"Silicone rubber insulated cables were tested under Anaconda Continental Test Report No. 79117, and Franklin Institute Test Report No. F-C2935. TVA cable types are designated SROJ, SROAJ, SROJJ, and SROJH on requisition 83999, 85112, and 8586.

The tests are adequate for the LOCA and SLB in containment. The Anaconda test addressed aging: 7 days at 210C (410F), and 28 days at 210C (410F), and a radiation dose of 1.2×10^8 R. The worst HELB valves outside the containment are even exceeded by this thermal aging and further the FIRC test (peak 340F for 2 hours), exceeded the HELB valves also.

Because of the conservatism of these tests including the mandrel bend and dielectric tests in water after the Temperature-Pressure profile, thermal aging and radiation, it is our engineering judgement that there is sufficient margin to warrant continued operation of more than a year in the post-LOCA environment. "

[1]

Since traceability between installed cable and the cable tested in F-C2935, it is not considered evidence of qualification (see item 154)

The peak temperature in the SROJ results



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS-5

NOTES:

Note 3 (cont'd)

is identified by the licensee as 308°F . This temperature is not enveloped by the Anasconda test. The use of aging data (accelerated air oven testing) cannot be used for establishing steam exposure qualification. The over aging test would establish a qualified life, after which the design basis accident must be superimposed.

It is therefore concluded that the required profile and peak temperature were not enveloped by the Anasconda test conducted for TVA.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

Equipment Item No. 156
 Pressure Switches Located in the NW Corner and HPCI Pump Rooms
 Static-O-Ring Model 6N-AA21
 Monitors HPCI and RCIC Pumps Suction Pressure (PS-71-21-1; PS-73-29-1)
 Licensee Reference 4215
 Required Operating Time: 30 days
 TER Checksheet No. 156
 Licensee Submittal: Pages NEB-71-112 and NEB-73-162 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), RT, P, H, CS, (A), S, (R), M, I, (QM), (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____X
o Peak Pressure Adequate	_____X
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____X
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____X
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	_____X
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I ; NUREG-0588, Cat. II .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	Pressure Switch	Pressure Switch	
Manufacturer's Name (5.2.2/-/-)	Stelco Pump	stator-O-ring	X
Model Number (5.2.2/-/-)	6N-AAA1	12N/AAA	Note 3
Serial Number	N/A	N/A	
Features/Mounting (5.2.6/-/-)	Not stated	horizontal	
Connections/Interfaces (5.2.6/-/-)	Not stated	Not stated	
Location/Elevation	Reactor Building	N/A	
Equipment ID No.	Various	N/A	
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number	30203-2	30203-2	
Report Date	N/A	20 November 1973	
Issued by	N/A	Viking Lab.	
Prepared for	N/A	Belilove Co.	
Referenced Reports	N/A	N/D.	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	N/A	test	
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)	N/A	Set point cycling	
Operating Conditions (-/2.2.10/2.2.10)	Not stated	N/A	
Load/Cycles/Voltage/ Current/Freq.			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	N/A	Not stated	
Accuracy (5.2.5/-/-)	N/A	Not stated	
Number of Specimens	N/A	2	
Test Instruments Calibrated	N/A	Yes	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active	N/A	
Test Duration (5.2.1/-/-)	N/A	6 hours	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	Not stated by	N/A	
Required Function Time	> 1.20 sec. 30 days	N/A	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	N/A	Functional	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	N/A	stem	
1. Representative Sample			
2. Baseline Data			
3. Performance Extremes			
4. Thermal Aging			
5. Radiation Aging			
6. Wear Aging			
7. Vibration/Seismic			
8. DBE Exposure			
9. Post-DBE Exposure			
10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	Not stated	Not stated	X
Material Aging Evaluation (7.0/-/-)	Not stated	↓	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	Not stated		
Radiation Aging, Type	Not stated		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	<i>Not stated</i>	<i>none</i>	
Radiation Aging, Dose Rate	↓	↓	
Radiation Aging, Method	↓	↓	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	<i>Not stated</i>		
Operational Aging (-/4.2/-)	↓	↓	
Other Age Conditioning (-/4.2/-)	↓	↓	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	<i>Not stated</i>	<i>not stated</i>	X
Normal Ambient Temperature	<i>} Not stated</i>	N/A	
Normal Ambient Radiation			
Normal Ambient Humidity			
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	<i>Beavers Ferry Program</i>	N/A	
On-Going Analysis of Failures and Degradation (7.0/-/-)	↓	↓	
Margin (General) (6.0/3.0/3.0)	N/A		
Margin (NUREG-0588, Cat. I) (-/3.2/-)	N/A		
1. Temperature (+15°F)			
2. Pressure (+10%, 10 psig max)			
3. Radiation (not required)			
4. Time (+10%, +1 hour + function time minimum)			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA/ MSLB	none	
Radiation Type	Normal		
Radiation Dose (rd) (4.1.2/1.4/1.4)	3×10^7 -		X * note 2
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	Not stated		
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	Not stated		
Equipment Susceptible to Beta Radiation (4.1.2/-/-)			
Radiation Dose (Normal + Accident) (4.1.2/-/-)			
Plateout Dose Considered (-/1.48/1.48)			
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)			

* the licensee stated that a material evaluation had been conducted but did not provide any data.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase	N/A	<i>not stated</i>	
Peak: °F/psig/RH/Time	300/1.3/100%/30sec	212/0.25/100%/6hrs	Note 1 X
Decrease To: °F/psig/RH/Time	228 / 0 / 100% / 24hr	<i>ambient</i>	
Decrease To: °F/psig/RH/Time	<i>duration not stated</i>		
Decrease To: °F/psig/RH/Time			
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	N/A	N/A	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)			
Spray Composition (4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)			
Spray Density (gpm/ft ²)			
Spray Duration			
Submergence Duration (4.1.3/2.2.5/2.2.5)			
In-Leakage Considered (5.2.6, 5.3.2/-/-)			
Time to Submergence			
Dust Environment (-/2.2.11/2.2.11)			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

NOTES:

1. The test profile does not envelope the environmental service conditions specified by the licensee.

2. The licensee EQWS states:

"2. The radiation dose of 1×10^6 rad is based upon a materials analysis of the pressure switch. The material in the device which limits the allowable radiation dose are the seals (Buna-N) which, according to several studies including the guidelines furnished in bulletin 79-01B, are acceptable up to a dose of 1×10^6 rad."

specific details of the analysis were not provided. The SERW sheet indicates a required dose of 3×10^7 rad which is not enveloped by the analysis. Therefore radiation qualification has not been established.

3. The licensee should provide evidence of similarity of the test specimen to that which is installed.



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 FRC Assignment No. 13
 FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

Equipment Item No. 157
 Motorized Valve Actuator Located in the Torus Room
 Limatorque Model SMB-00
 RCIC/HPCI Turbine Exhaust Vacuum Relief Line Isolation (FCV-71-59)
 Licensee References 662, 2876, 1620
 Required Operating Time: 30 days
 TER Checksheet No. 157
 Licensee Submittal: Page NEB-71-126 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QA, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|---------------------------------------|
| I.a Qualified | <u>II.c Qualified Life Deficiency</u> |
| I.b Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately X
- Qualified Life or Replacement Schedule Established (If Required) X
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
(If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
or Replacement Schedule Justified X
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 167

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEDQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEDQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEDQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

Equipment Item No. 158
 Motorized Valve Actuators Located in the RWCU Heat Exchange Room
 Limitorque Model SMB-0
 Containment Isolation (FCV-69-2)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 1 year
 TER Checksheet No. 158
 Licensee Submittal: Page NEB-69-74 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable .

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1505

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action see Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u> X </u>
Aging Degradation Evaluated Adequately	<u> X </u>
Qualified Life or Replacement Schedule Established (If Required)	<u> X </u>
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	_____
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u> X </u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (RL).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 769

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 159

Equipment Item No. 159
 Solenoid Valves Located in the Reactor Building
 Atkomatic Model 15830WP-VPI
 RHR Service Water (FSV-23-56)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 159
 Licensee Submittal: Page EEB-23-1001 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, (QM) RPN, EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 159

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~ / ~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies
(If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life
or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 159

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan, submitted to NRC in February 1981 with the revised BFN EEEQR (RI).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 469

Equipment Item No. 160
 Penetration Assembly
 GE Model NS04
 Electrical Distribution
 Licensee References 25, 812
 Required Operating Time: Continuous
 TER Checksheet No. 160
 Licensee Submittal: Page EEB-76-0024 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h 5i, 5i ₂ , 5i ₃ , 5i ₄ , 5i ₅
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and ~~or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a Qualification Not Established</u> | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____ **X**
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established _____ **X**
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

LICENSEE RESPONSE TO NRC SER

1. All noted deficiencies for this component identified in the SER have been adequately addressed in the November (R0), and/or February (R1), submittal of the BFN EEEQR to NRC and no other information is required.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

Checksheets 5a-5g 5i1-5i5 have been removed due to the
proprietary nature of information contained therein.



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NRC Contract No. NRC-03-79-118
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 FRC Assignment No. 13
 FRC Task No. 409

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 161

Equipment Item No. 161
 Motorized Valve Actuators Located in the SW Corner Room
 Limitorque Model SMB-0, DC Motor, Class B Insulation
 HPCI Suppression Pool Suction Valve (FCV-73-26)
 Licensee References 662, 1620, 2876, 1063, 659
 Required Operating Time: 1 year
 TER Checksheet No. 161
 Licensee Submittal: Page NEB-73-160 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 161

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has/has-not~~) provided a response to the SER concerns.
- The Licensee (~~has/has-not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has/has-not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has/has-not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (~~has/has-not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 161

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.

5. CONCLUSIONS

The tabulations in Section 4.2 represent a summary of the results of the equipment environmental qualification (EEQ) assessment conducted in accordance with the methodology presented in Section 3. The evaluations are based on the available qualification documentation provided by the Licensee, complemented in several cases by other relevant technical information. The major qualification deficiencies that have been identified and the results of the evaluation are shown in the Equipment Environmental Qualification Summary Forms (Tables 4-1, 4-2, 4-3, and 4-4).

Although Sections 4.3, 4.4, and Appendix C of this report present a detailed evaluation of (1) the Licensee's qualification methodology, (2) the equipment environmental qualification of each equipment item, and (3) the Licensee's response to the NRC SER, it is appropriate to highlight for the Licensee and the NRC certain conclusions and concerns reached as a result of the review which require special attention. These concerns are summarized below.

- o The Licensee has not provided a schedule, in its response to the NRC SER, for accomplishing corrective actions for equipment whose qualification has not been established. With respect to "testing," the Licensee stated [14] that the schedule was detailed in "Wyle Laboratories Qualification Program Plan" submitted to the NRC (as Enclosure 1) in TVA's March 3, 1981 submittal [12]. FRC does not have this enclosure to Reference 12 and therefore cannot provide details with respect to schedule.
- o The Licensee has committed to replace many major electrical equipment items which are located outside the drywell potentially exposed to moderately harsh post-accident conditions. It is noted that, in many cases, an appropriate analysis to establish qualification would be a cost-effective method.
- o It appears that the Licensee has many SCEW sheets associated with equipment which provides no safety function. The Licensee should review this matter.

The Licensee has provided the following information with respect to TMI Action Plan items [14]:

"In the development of the list of safety-related electrical equipment required for LOCA/HELB accident mitigation inside and/or outside primary containment (EEEQR Table 5.2) which was submitted to NRC in November 1980 (RO), and February 1981 (R1), TVA addressed the requirement of cold shutdown. TVA also addressed, in their November 1980 (RO), and February 1981 (R1) reports, all TMI devices that were installed in the plant at that time. TVA will address in future revisions of the EEEQR the TMI devices that will be installed in the plant at that time. TVA will address in future revisions of the EEEQR the TMI devices that will be installed when the detail design has been completed and procurement has defined the exact devices to be installed."

The Licensee has provided the following generic responses to the NRC SER [14]:

"TVA has performed a detailed environmental evaluation for that equipment noted as having deficiencies which has a present status of Category I or II as defined in the BFN EEEQR (Table 5.2). Equipment, with deficiencies noted, that has a present status of Category III and IV was not addressed further when (1) the status category has not changed, (2) the planned test for category III equipment covers all deficiencies, and (3) an acceptable justification for continued operation has been given on the EWS. These components will be addressed after testing or replacement is complete. TVA has also corrected all errors contained in Appendixes B and C made by NRC in transferring the equipment from Table 5.2 in the BFN EEEQR to Appendixes B and C.

The method of identifying that all the deficiencies noted for each device listed in Appendix B and C are resolved is shown by the code marked in the column to the right of the deficiencies on Attachment 2. The code legend is as follows:

1. All noted deficiencies for this component identified in the SER have been adequately addressed in the November (RO), and/or February (R1), submittal of the BFN EEEQR to NRC and no other information is required.
2. Those noted deficiencies circled in Attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (RO) or February (R1) submittal of the BFN EEEQR to NRC.
3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on

the BWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in Attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in Attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).
5. Components have been removed from Table 5.2 which was contained in the November 1980 EEEQR submittal per the notes on Table 5.2 (R2) which was contained in the February 2, 1981, revision of the BFN EEEQR (R1).
6. Component has been removed from Table 5.2 which is being submitted with this revision of the BFN EEEQR per the notes on Table 5.2 (R3) or per notes one through four given in Section 4.2 of the SER.
7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS."



6. REFERENCES

The references listed in this section of the report were used to develop the Equipment Environmental Qualification evaluation for this plant. The references have been separated into two lists: (1) Plant-Specific References and (2) Plant Generic References. All non-generic documents are listed on the "Plant-Specific References" list. All qualification documents that could be applicable to equipment installed in several plants were listed on the "Plant Generic References" list. These documents include topical reports, test reports, component and material analyses, etc. cited by the Licensee as evidence of qualification in accordance with the documentation reference instructions established by IE Bulletin 79-01B. Since these documents were compiled by a computer data base, the citation numbering was computer generated and the same document has the same generic reference number in all Technical Evaluation reports prepared under this equipment qualification program.

Throughout the text of the report, references are designated by a bracketed number; the reference numbers are not presented in sequential order.

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APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

This appendix contains design basis event (DBE) temperature/pressure profiles (tables) that are referenced by the Licensee in the "Environment Specifications" column on the equipment work sheets (EWS). Three tables in this appendix are used to locate the appropriate figure or table which defines the accident temperature/pressure values for each room. The temperatures/pressures given in either figures or tables are assumed to linearly return to ambient in 24 hours. The three tables are as follows:

- o Table A-1 [Licensee Table B.0 (1,2,3)] - Room Number, Name, and Plant Location

This table relates the room number to a room name and the corresponding plant location (see plant arrangement drawings, sheets 1-6 for plant locations).

- o Table A-2 [Licensee Table B.00 (1,2,3)] - DBE Environmental Temperature/Pressure Curves - Room Number Designation

This table relates various room numbers to the specific Licensee-numbered figures for the DBE temperature and pressure profiles contained in this appendix.

- o Table A-3 (Licensee Table 1) - Summary of Operational Environmental Conditions

This table presents peak temperature, pressure, and integrated radiation doses for various plant locations and operational conditions.

- o Table A-4 [Licensee Table B.1 (1,2,3)] - Temperature/Pressure

This table presents peak accident pressure/temperature values for areas 1 through 16 (identified in Table A-1).

Based on these considerations, each equipment item was evaluated with respect to the environmental service conditions presented in this appendix.

With respect to environmental service conditions, the Licensee has stated:

A. Service Conditions

The environmental conditions present in plant areas that can affect safety-related equipment have been established. The following categories were used to bound anticipated plant conditions.

1. Normal - The temperature, pressure, humidity, and radiation ranges that are expected to be present when the plant is in any of the technical specification modes of operation.
2. Abnormal- Conditions that could exist for all areas for a short period of time that may occur once or more a year.
3. Accident- Environmental conditions that would be experienced as a result of high energy pipe breaks outside containment, or a large, intermediate or small LOCA or main stream line break inside containment.

All analyses performed to determine the service conditions were performed consistent with the guidelines of IE Bulletin 79-01B and NUREG-0588 and in accordance with either TVA quality assurance procedure EP 3.03 or General Electric's internal quality assurance program.

B. Temperature and Pressure Inside Containment

The controlling breaks for the pressure response of the drywell and wetwell and the temperature response of the wetwell are the large LOCA Design Basis Accident (DBA) and the Intermediate Break Accident (IBA). The DBA and a 0.5 ft² steam leak produce the most severe temperature transient in the drywell. The containment pressure and temperature response for all breaks were evaluated by the methods discussed in General Electric Report No. NEDO-20533, June 1974. Mass and energy releases were calculated using the methods also discussed in the above General Electric report. Details of the analyses are provided in FSAR Section 14 and General Electric Report NEDO-24580.

In response to the NRC SER, the Licensee stated [14]:

"SER Section 3.2 Service Conditions - Containment Spray System (Single Failure)"

A discussion of the operation of the containment spray system as it is related to its source of demineralized water and the concept of single failure is given below.

The torus serves as the water source for the containment spray. It contains demineralized water. No chemical spray is used at BFN.

The primary containment airspace at BFN can be sprayed using the RHRS containment spray mode. In this mode, the unit operator manually aligns the RHR system to inject torus water through the drywell and torus spray headers. Per BFN FSAR Vol. 7 question response 12.2.16, it is necessary to spray the containment to mitigate the effects of various small steam-line breaks inside containment. Redundant and fully divisionalized instruments are used to notify the operator of drywell/torus conditions that require containment spray. The two RHR loops are redundant and fully divisionalized. All equipment necessary to spray the containment is required to be environmentally qualified.

SER Section 3.5 Submergence - Inside and Outside Primary Containment

A discussion of the issue of submergence both inside and outside primary containment is given below.

Water released from a LOCA/HELB inside primary containment will drain to the drywell sumps. For large prolonged releases the drywell sumps will be filled and water will accumulate in the drywell base. If the water level reaches plant elevation 552 feet, the water will spill over into the downcomer connections between the drywell and torus. Any further water accumulation will drain into the torus and increase the torus water level. The torus contains sufficient free volume to accommodate the entire inventory of the reactor coolant and one condensate storage tank. Based on this, the submergence level inside the drywell is plant elevation 552 feet, and the maximum submergence level inside the torus has been conservatively calculated to be plant elevation 542 feet.

SER Section 3.6 Chemical Spray

The effects of demineralized water upon equipment qualification for that equipment located inside primary containment is addressed on the attachments of the EWS for all equipment evaluated as qualified to the DOR guidelines. For that equipment to be tested or replaced, this will be addressed in the EWSs after testing or replacement. Chemical spray has been considered in the evaluations of generic devices such as cables, junction boxes, terminal blocks, etc., but the results will not be placed on the EWS attachments until the next revision of the EEEQR."

C. Outside Containment

High Energy Line Breaks

Plant areas outside containment were reviewed to determine areas where high energy piping was located and could potentially produce effects that would impact safety-related equipment. The areas affected by high energy line breaks are the reactor building and the main steam valve vaults.

1. Reactor Building

The high energy lines located in the reactor building are:

- (1) High Pressure Coolant Injection (HPCI) steam supply to the pump turbine - 547°F, 1020 psia, quality - 1.
- (2) Reactor Core Isolation Cooling (RCIC) supply to the RCIC pump turbine - 547°F, 1020 psia, quality - 1.
- (3) Reactor Water Cleanup (RCU) system - 547°F, 1020 psia, quality - 0.

Single-ended circumferential ruptures at the fluid conditions listed above were postulated. Mass and energy releases for all steam supply lines except one break of the RCU were generated using the Moody critical flow correlation assuming an FL/D equal to zero. Upstream pressure and temperature, and therefore mass flow rates, were assumed to remain constant until the line was isolated. These steam supply lines isolate automatically on high temperature in the reactor building. Temperature sensors are located in the vicinity of the line to assure rapid detection and isolation. Isolation times include signal process time, valve stroke time, and break detection time. The sensors used are redundant, class 1E, and electrically trained.

Mass and energy release of the remaining RCU break was generated using the RETRAN computer code. Only this break requires operator action for isolation. Isolation was assumed to occur 10 minutes after the break. Detection is based on high fluid temperature at the discharge of the nonregenerative heat exchangers.

The steam valve vault was modeled using three nodes and were input into the COMPARE-MOD1 computer code. No heat sinks were considered.

The valve vaults at Browns Ferry were constructed with large blowout panels to provide pressure relief to the turbine building in the event of a pipe break. These paths were included in the model.

2. Radiation Environment

The radiation environments inside the drywell and in the reactor building after a design basis LOCA were calculated consistent with the requirements of IE Bulletin 79-01B and NUREG-0588.

Initial airborne sources in the drywell were calculated assuming an instantaneous release of 100 percent of the core inventory of iodine. Transfer of iodine from the drywell free volume to the water in the torus was conservatively calculated as a function of time until the airborne concentration was reduced by a factor of 200 (considered to be at equilibrium). Sources in the water in the torus were calculated assuming an instantaneous release of 1 percent of the core inventory of the solid fission products and the iodine transferred from the drywell. Airborne activity in the reactor building was calculated based on a design basis leak rate from the primary containment and design flow of the SGTs.

Source terms were calculated at various time after an accident allowing for decay and dose rates were calculated with a point-kernel-with-buildup computer code. Radiation exposures in the reactor building due to recirculation of the torus water through the RHR and containment spray systems were also calculated. These dose rates were then integrated over the duration of the accident.

3. Main Steam Valve Vaults

The high energy lines in the valve vaults are the main steam lines and the main feedwater lines. Breaks in the main steam line are controlled from an environmental standpoint due to the large line size and the high energy associated with the steam. Conditions of the main steam are 550°F, 1050 psia, quality - 1.

A double-ended rupture of the main steam coincident with a break of the 4-inch RCIC steam line was evaluated. Mass and energy releases were provided by General Electric. Break flow was terminated by isolation of the main steam lines based on signals from safety-related sensors.

4. Operation Environmental Conditions

An environmental listing of service conditions are tabulated in Table 1. The service conditions considered were pressure, temperature, humidity, and radiation. Normal and abnormal space ambient temperatures for nonaccident conditions were obtained from information used in the initial design phase of the plant in conjunction with data accumulated at the plant site in various spaces, for all units, under extreme outside temperature conditions (100°F outside atmosphere). Pressures and temperatures for accident conditions were obtained from transient curves and analysis which studied the effects of a LOCA on reactor zone spaces. Environmental service and conditions were only considered in the reactor zone and primary containment. The control bay and electrical board room were not considered since their atmospheres did not interface with the reactor zone environment. The environmental table of service conditions was developed for various plant conditions including the following: normal average day, abnormal conditions (outside temperature 96-100° and maximum river water temperature exists), LOCA/HELB inside primary containment, HELB outside primary containment, and tornado (sudden pressure drop by 3 pounds per square inch).

Table A-1. Licensee Table B.0 (1,2,3)

Room Number, Name, and Plant Location

<u>Room No.</u>	<u>Room Name</u>	<u>Plant Location*</u> <u>(Sheet 1-6)</u>
0	Inside Primary Containment (Drywell)	Sheet 2
00	Inside Primary Containment (Wetwell)	Wetwell
1	HPCI Pump (or Turbine) Room; elevation 519.0'	Sheet 1
2	S.W. RHR Pump Room; elevation 519.0'	Sheet 1
3	N.W. RICI and Core Spray Pump Room; elevation 519.0'	Sheet 1
4	N.E. Core Spray Pump Room; elevation 519.0'	Sheet 1
5	S.E. RHR Pump Room; elevation 519.0'	Sheet 1
6	Pressure Suppression Chamber (HPCI Torus Room); elevation 519.0'	Sheet 1
7	Main Steam Vault Room	Sheet 2
8	Open Area; elevation 565.0'	Sheet 3
9	Open Areas; elevation 593.0'	Sheet 3
10	RWCU Pump Room; elevation 593.0'	Sheet 3
11	RWCW Heat Exchange Room; elevation 593'	Sheet 3
12	Open Areas; elevation 621.25'	Sheet 4
13	South Open Areas; elevation 639.0'	Sheet 5

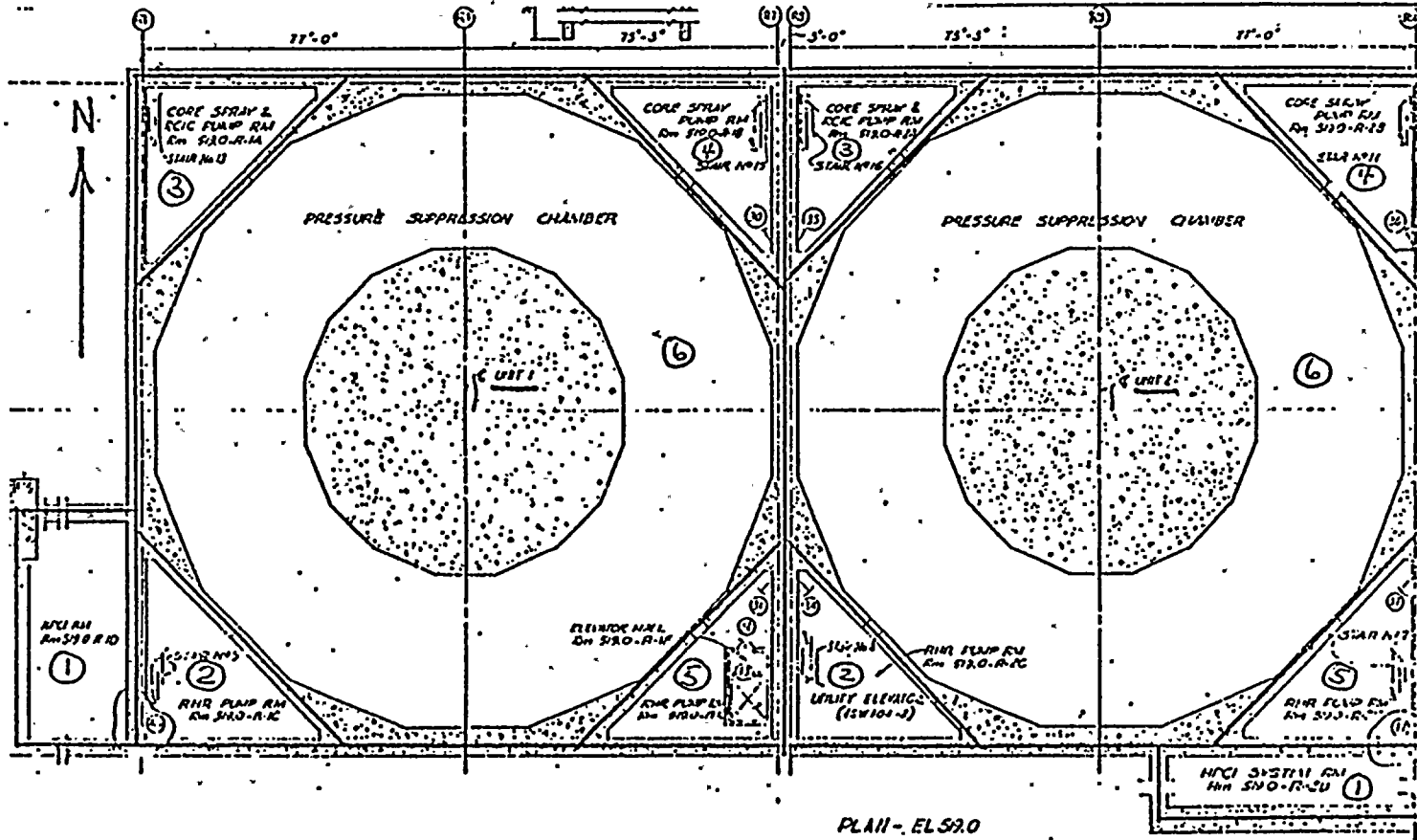
* Unit 2 locations same as Unit 3.

Table A-1 (Cont.) Licensee Table B.0 (1,2,3)

<u>Room No.</u>	<u>Room Name</u>	<u>Plant Location*</u> <u>(Sheet 1-6)</u>
14	North Open Area; elevation 639.0'	Sheet 5
15	Units 1-3 Refueling Floor; elevation 664.0'	Sheet 6
16	Unit 1-3; elevation 593; RWCU BW receiving tank rm	Sheet 3
17A	Unit 1-3; elevation 639; RWCU Demineralizer A	Sheet 5
17B.	Unit 1-3; elevation 639; RWCU Demineralizer B	Sheet 5
18	Unit 1-3; elevation 621.25; Cleanup Demin Vlv Rm	Sheet 4

* Unit 2 locations same as Unit 3.

Table A-1 (Cont.). Licensee Table B.0 - Sheet 1 of 6

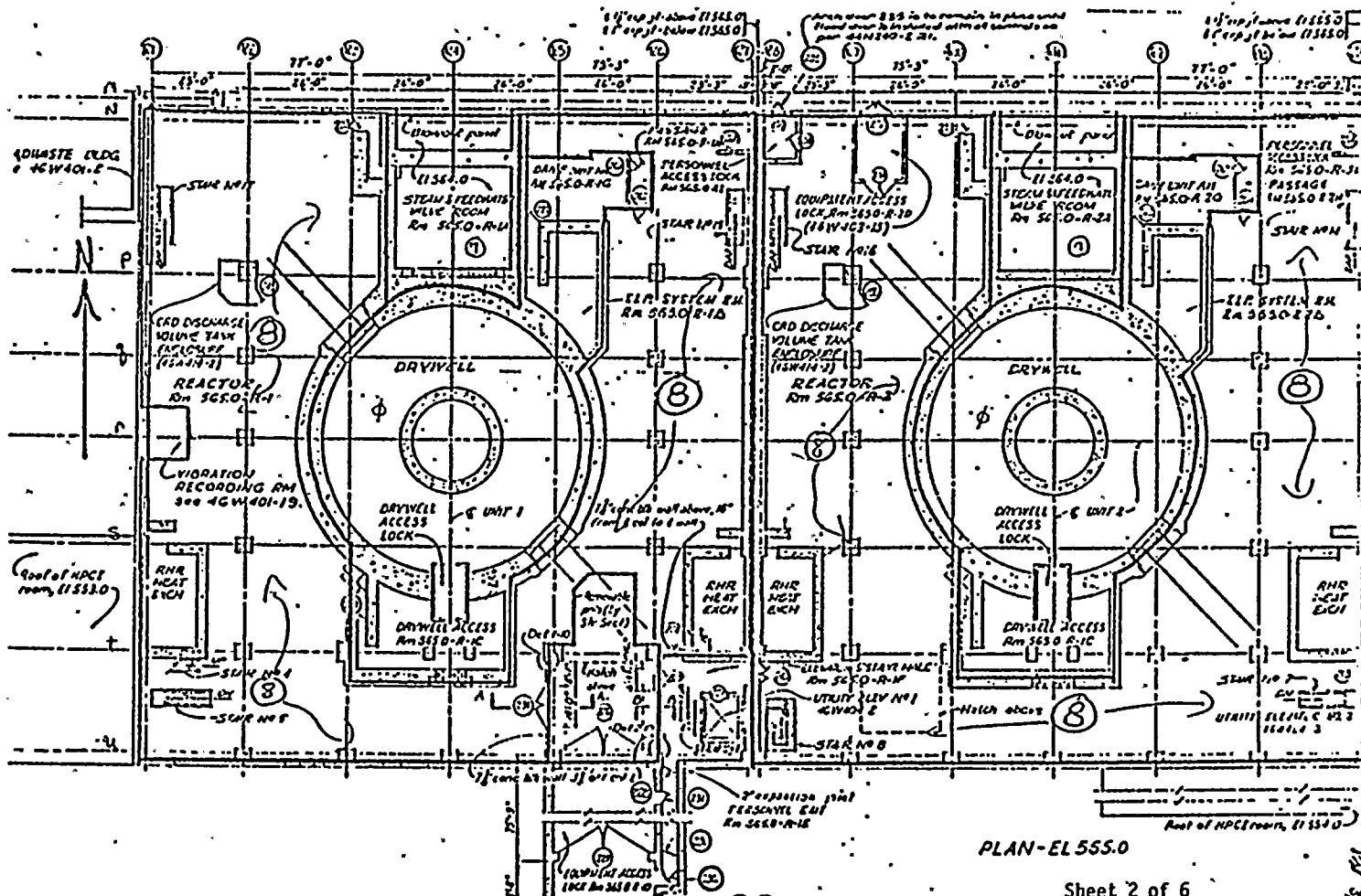


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FIGURE SUPPLIED
BY THE LICENSEE

Sheet 1 of 6
Appendix B
TABLE B.0 (1,2,3)

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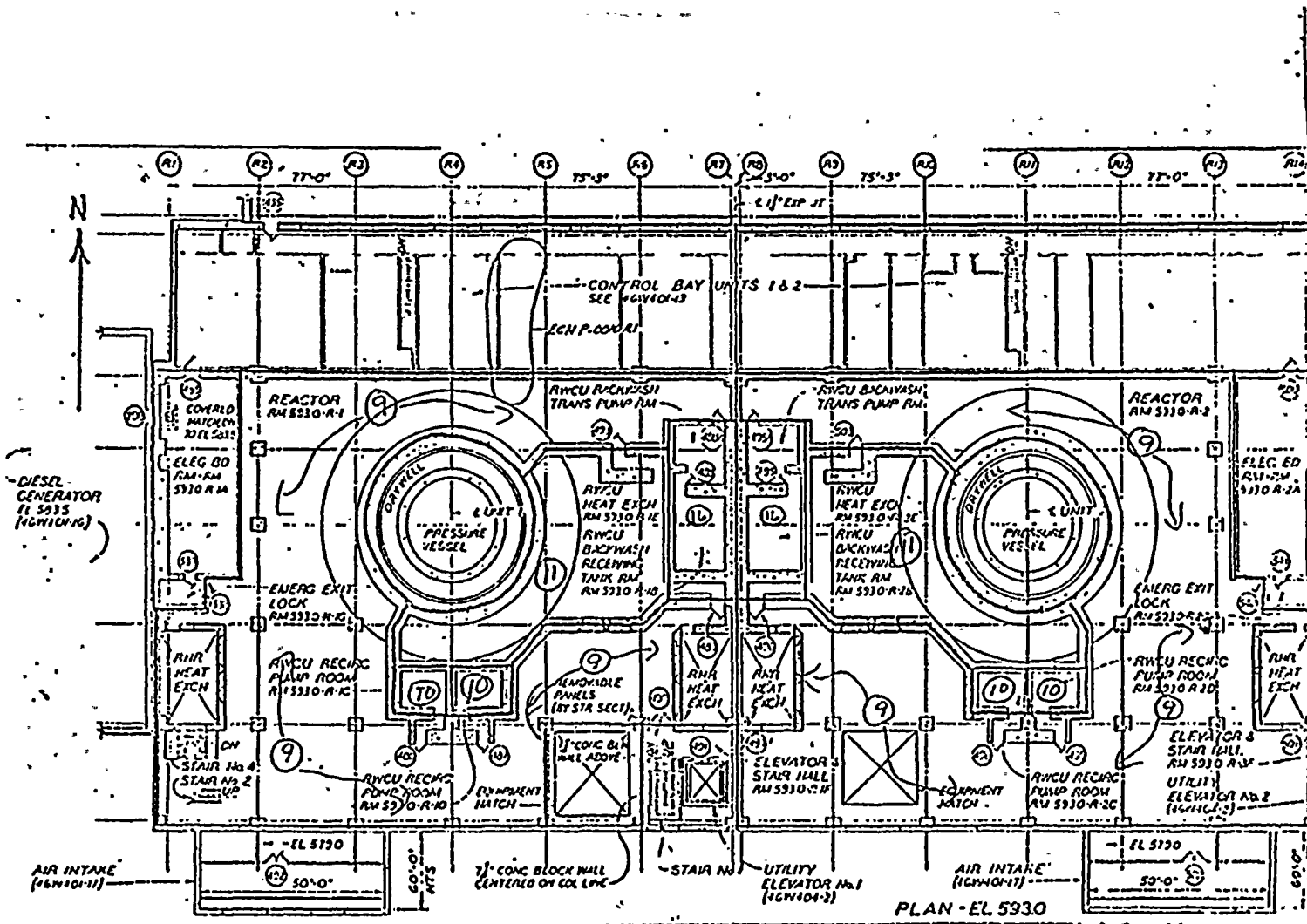


PLAN-EL 555.0

Sheet 2 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
BY THE LICENSEE

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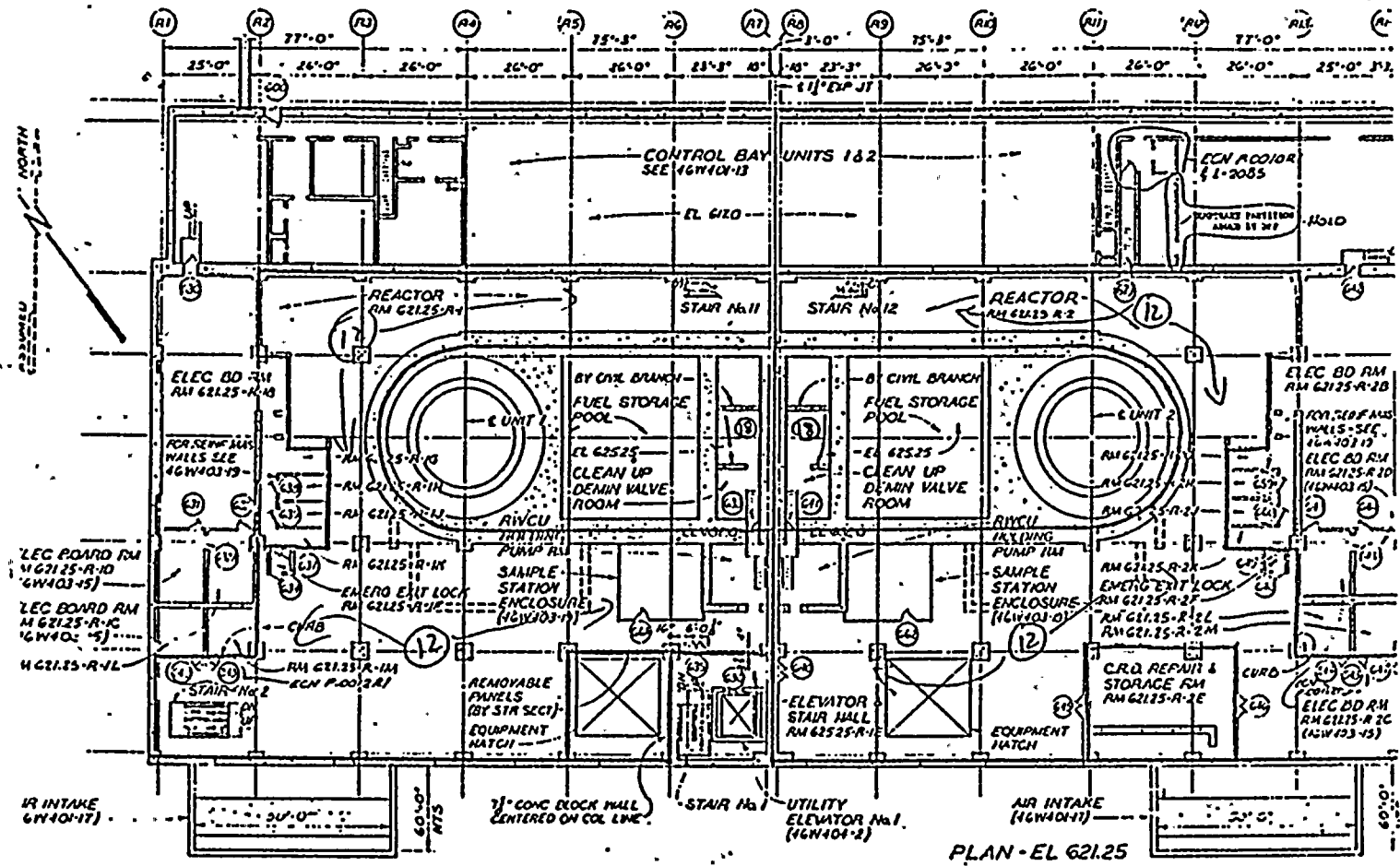
Sheet 3 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
BY THE LICENSEE

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Table A-1 (Cont.). Licensee Table B.0 - Sheet 4 of 6

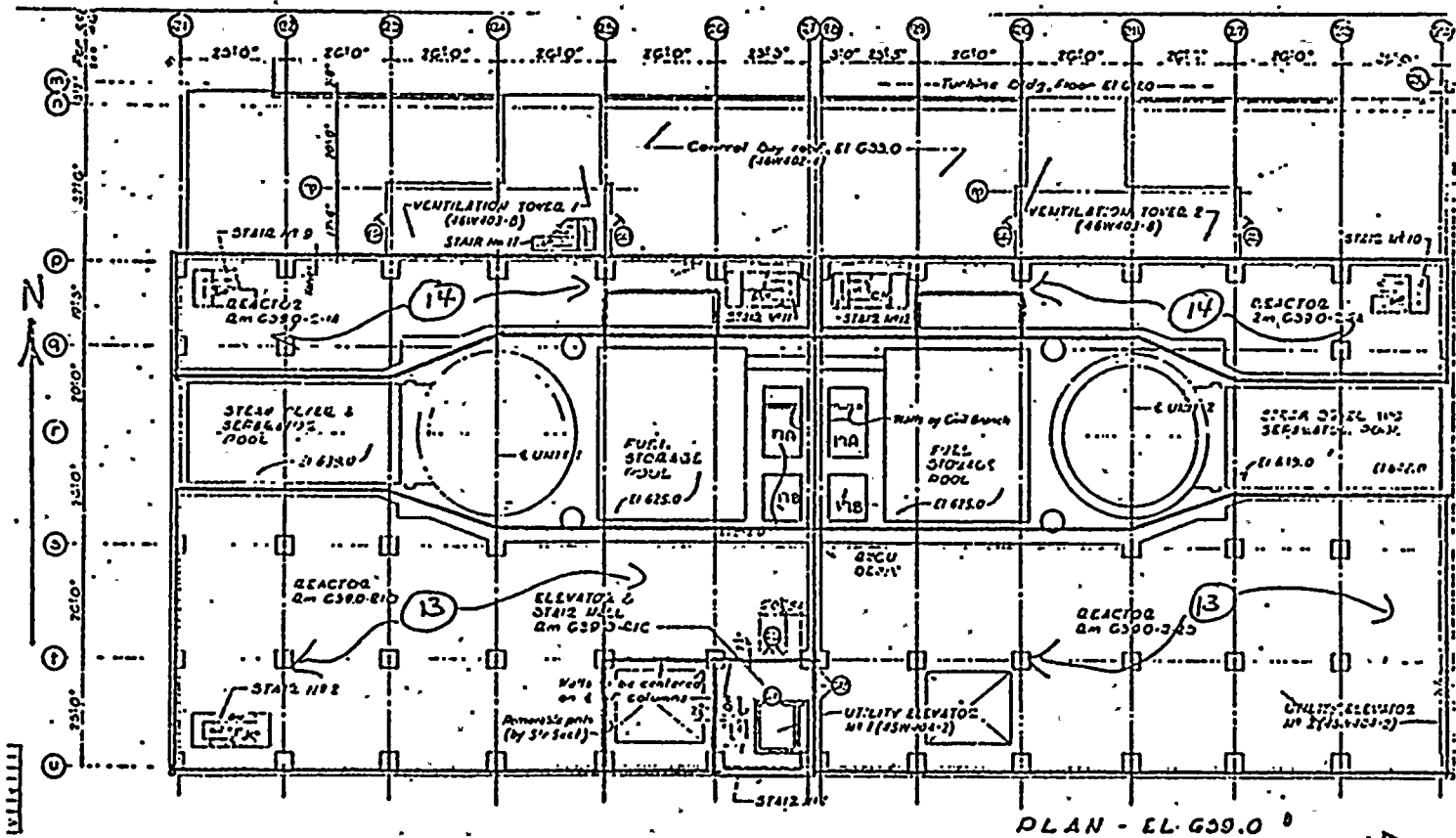
A-12



PLAN - EL 621.25
Sheet 4 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
BY THE LICENSEE

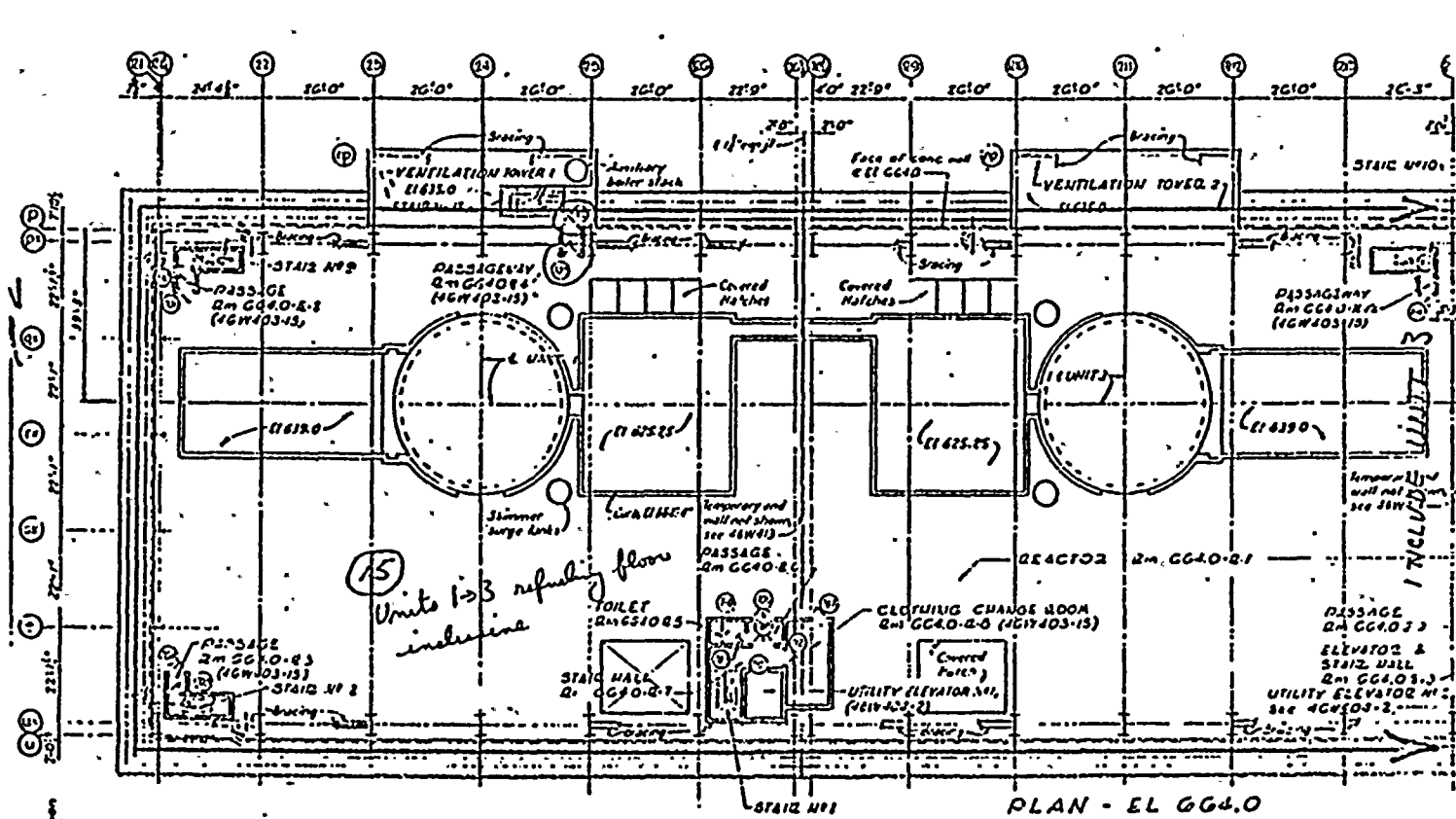
Table A-1 (Cont.). Licensee Table B.0 - Sheet 5 of 6



Sheet 5 of 6
 Appendix B
 TABLE B.0 (1,2,3)

FIGURE SUPPLIED
 BY THE LICENSEE

Table A-1 (Cont.). Licensee Table B.0 - Sheet 6 of 6



PLAN - EL GG4.0

Sheet 6 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
BY THE LICENSEE

TABLE B.00 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS*

Room No. Designation	Unit 1		Units 2 and 3	
	Temperature	Pressure	Temperature	Pressure
0	Figure B.0 (1,2,3)	Figure B.0 (1,2,3)	Figure B.0 (1,2,3)	Figure B.0 (1,2,3)
00 (Metwell)	B.00 (1,2,3)	B.00.0 (1,2,3)	B.00 (1,2,3)	B.00.0 (1,2,3)
1	B.1 (1)	↓ Table B.1 (1,2,3)	B.1 (2,3)	↓ Table B.1 (1,2,3)
2	B.2 (1)		B.2 (2,3)	
3	B.3 (1)		B.3 (2,3)	
4	B.4 (1)		B.4 (2,3)	
5	B.5 (1)		B.5 (2,3)	
6	B.6 (1)		B.6 (2,3)	
7	B.7 (1)		B.7 (2,3)	
8	B.8 (1)		B.8 (2,3)	
9	B.9 (1)		B.9 (2,3)	
10	B.10 (1)		B.10 (2,3)	
11	B.11 (1)		B.11 (2,3)	
12	B.12 (1)		B.12 (2,3)	
13	B.13 (1)		B.13 (2,3)	
14	B.14 (1)		B.14 (2,3)	
15	Table B.1 (1,2,3)		Table B.1 (1,2,3)	
16	B.16 (1)**		B.16 (2,3)**	

**Same as room 9 for units 1, 2, and 3

FIGURE SUPPLIED
BY THE LICENSEE

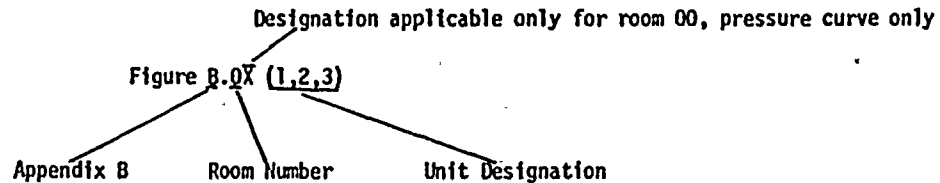
Table A-2. Licensee Table B.00 (Cont.)

TABLE B.00 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS* (Continued)

Room No. Designation	Unit 1		Units 2 and 3	
	Temperature	Pressure	Temperature	Pressure
17A	Table B.1 (1,2,3)	Table B.1 (1,2,3)	Table B.1 (1,2,3)	Table B.1 (1,2,3)
17B	↓	↓	↓	↓
18				

*Figure Designation:



*Table Designation:

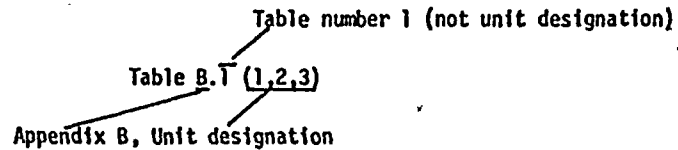


FIGURE SUPPLIED
BY THE LICENSEE

Table A-3. Licensee Table 1

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (°F)	Peak Humidity (%)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Outside	--	--	2	ATM	96-100	100	5 x 10 ²	NA
			5	11.4	NA	NA	NA	NA
Reactor Building	541.5	Drywell	1	15.6	140	100	1 x 10 ⁸	NA
			2	15.6	150	100	1 x 10 ⁸	NA
			3	69.4	325	100	NA	Center 1 x 10 ⁸ 2 x 10 ⁹
			4	NA	NA	NA	NA	Edge 4 x 10 ⁷ 4 x 10 ⁹
			5	15.6	NA	NA	NA	NA
			5	15.6	NA	NA	NA	NA
	519.0	Wetwell	1	ATM	95	100	NA	NA
			2	ATM	105	100	NA	NA
			3	43.2	158	100	NA	2 x 10 ⁸
			4	NA	NA	NA	NA	NS
			5	ATM	NA	NA	NA	NA
	519.0	HPCI Room	1	ATM ^a	95	98	2 x 10 ⁴	NA
2			ATM ^a	105	98	2 x 10 ⁴	NA	
3			ATM ^a	150	100	NA	3 x 10 ⁴	
4			15.7	300	100	NA	NS	
5			11.4	NA	NA	NA	NA	
519.0	SW Pump Room	1	ATM ^a	95 ^{***}	98	2 x 10 ⁴	NA	
		2	ATM ^a	105 ^{***}	98	2 x 10 ⁴	NA	
		3	ATM ^a	160	100	NA	3 x 10 ⁷	
		4	15.0	292(U1) 158(U2&3)	100	NA	NS	
		5	11.4	NA	NA	NA	NA	

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FIGURE SUPPLIED
 BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (°F)	Peak Humidity (%)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor Building	519.0	NW Pump Room	1	ATM [#]	95	98	2 x 10 ⁴	NA
			2	ATM [#]	105	98	2 x 10 ⁴	NA
			3	ATM [#]	160	100	NA	3 x 10 ⁷
			4	15.0	297	100	NA	NS
			5	11.4	NA	NA	NA	NA
	519.0	NE Pump Room	1	ATM [#]	95	98	2 x 10 ⁴	NA
			2	ATM [#]	105	98	2 x 10 ⁴	NA
			3	ATM [#]	160	100	NA	3 x 10 ⁷
			4	15.0	171(U1) 160(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	519.0	SE Pump Room	1	ATM [#]	95	98	2 x 10 ⁴	NA
			2	ATM [#]	105	98	2 x 10 ⁴	NA
			3	ATM [#]	160	100	NA	3 x 10 ⁷
			4	15.0	139(U1) 294(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	519.0	Pressure Suppression Chamber	1	ATM [#]	95 ^{###}	98	1.5 x 10 ⁵	NA
			2	ATM [#]	105 ^{###}	98	1.5 x 10 ⁵	NA
			3	ATM [#]	170	100	NA	3 x 10 ⁷
			4	15.0	217(U1) 220(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	565	Main Steam Valve Vault	1	ATM [#]	140	98	2 x 10 ⁶	NA
			2	ATM [#]	160	98	2 x 10 ⁶	NA
			3	ATM [#]	140	100	NA	3 x 10 ⁴
			4	21.5	308	100	NA	NS
			5	11.4	NA	NA	NA	NA

FIGURE SUPPLIED
 BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

<u>Plant Location</u>	<u>Elevation</u>	<u>Building Location</u>	<u>Operational Condition</u>	<u>Pressure Extreme (PSIA)</u>	<u>Peak Temperature (°F)</u>	<u>Peak Humidity (%)</u>	<u>Total 40-Yr Integrated Dose (Rads)</u>	<u>Integrated Accident Dose (Rads)</u>
Reactor Building	565	General Floor Area	1	ATM*	90	98	1×10^5	NA
			2	ATM*	100	98	1×10^5	NA
			3	ATM	140	100	NA	2.1×10^7 **
			4	15.0	147(U1) 157(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	593	General Floor Area	1	ATM*	90	98	2×10^4	NA
			2	ATM*	100	98	2×10^4	NA
			3	ATM	135	100	NA	2.1×10^7 **
			4	15.0	214(U1) 211(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
593		Reactor Water Cleanup Pump Rooms	1	ATM*	120	98	1.4×10^7	NA
			2	ATM*	130	98	1.4×10^7	NA
			3	ATM	135	100	NA	3×10^4
			4	15.9	220	100	NA	NS
			5	11.4	NA	NA	NA	NA
593		Heat Exchanger Room	1	ATM*	125	98	1.4×10^7	NA
			2	ATM*	135	98	1.4×10^7	NA
			3	ATM	135	100	NA	3×10^7
			4	18.2	227(U1) 221(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
621		General Floor Area	1	ATM*	90	98	1×10^3	NA
			2	ATM*	100	98	1×10^3	NA
			3	ATM	185	100	NA	3×10^4
			4	15.0	174(U1) 199(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA

FIGURE SUPPLIED
 BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

<u>Plant Location</u>	<u>Elevation</u>	<u>Building Location</u>	<u>Operational Condition</u>	<u>Pressure Extreme (PSIA)</u>	<u>Peak Temperature (°F)</u>	<u>Peak Humidity (%)</u>	<u>Total 40-Yr Integrated Dose (Rads)</u>	<u>Integrated Accident Dose (Rads)</u>
Reactor Building	659	General Floor Area (South)	1	ATM*	90	98	1×10^3	NA
			2	ATM*	100	98	1×10^3	NA
			3	ATM	130	100	NA	3×10^4
			4	15.0	135(U1) 178(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	639	General Floor Area (North)	1	ATM*	90	98	1×10^3	NA
			2	ATM*	100	98	1×10^3	NA
			3	ATM	130	100	NA	3×10^4
			4	15.0	153(U1) 174(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	664	Refueling Floor	1	ATM*	90	98	1×10^3	NA
			2	ATM*	100	98	1×10^3	NA
			3	15.0	120	100	NA	3×10^4
			4	NA	NA	NA	NA	NS
			5	11.4	NA	NA	NA	NA
593.0	RWCW BW Receiving Tank Room	1	ATM*	95	98	5.3×10^7	NA	
		2	ATM*	105	98	5.3×10^7	NA	
		3	ATM	135	100	NA	3×10^4	
		4	15.0	214(U1) 211(U1&2)	100	NA	NS	
		5	11.4	NA	NA	NA	NA	
639.0	RWCW Demineralizer A	1	ATM*	90	90	2.1×10^8	NA	
		2	ATM*	100	90	2.1×10^8	NA	
		3	ATM	100	90	NA	3×10^4	
		4	ATM	105	90	NA	NS	
		5	11.4	NA	NA	NA	NA	

FIGURE SUPPLIED
BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

<u>Plant Location</u>	<u>Elevation</u>	<u>Building Location</u>	<u>Operational Condition</u>	<u>Pressure Extreme (PSIA)</u>	<u>Peak Temperature (°F)</u>	<u>Peak Humidity (%)</u>	<u>Total 40-Yr Integrated Dose (Rads)</u>	<u>Integrated Accident Dose (Rads)</u>
Reactor Building	639.0	RWCU Demineralizer B	1	ATM [#]	90	90	2.1 x 10 ⁸	NA
			2	ATM [#]	100	90	2.1 x 10 ⁸	NA
			3	ATM	100	90	NA	3 x 10 ⁴
			4	ATM	105	90	NA	NS
			5	11.4	NA	NA	NA	NA
	621.5	Cleanup Demineralizer Valve Room	1	ATM [#]	95	90	1.7 x 10 ⁵	NA
			2	ATM [#]	105	90	1.7 x 10 ⁵	NA
			3	ATM	105	90	NA	3 x 10 ⁴
			4	ATM	110	90	NA	NS
			5	11.4	NA	NA	NA	NA

FIGURE SUPPLIED
 BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

NOTES:

A. Operational condition definitions:

1. Normal average day.
2. Abnormal conditions, outside temperature 96-100°F and maximum river water temperature exists. The maximum duration for this condition is 8 hours during a 24-hour period but may occur on a daily basis for a 2- or 3-week period. (Outside design temperature is 95°F.)
3. LOCA/HELB inside primary containment.
4. HELB outside primary containment.
5. Tornado (sudden pressure drop of 3.0 pounds per square inch).

B. ATM indicates a pressure equal to atmospheric pressure will be present. Normal atmospheric pressure at the Browns Ferry site is 14.4 pounds per square inch.

C. ATM⁺ indicates a pressure slightly below atmospheric.

D. All dose rates and integrated dose rates shown are upper limits for the summation of the gamma and beta contributions unless otherwise indicated. All dose rates are for LOCA; HELB is not significant (denoted NS). Maximum dose rates for these elevations are indicated by **. Actual values may vary significantly depending on location. Total radiation dose rates can be obtained by adding the 40-year integrated and accident dose rates.

E. Normal humidity is 30 to 80 percent.

F. For operational condition 3, the drywell and wetwell pressure and temperature values are peak values. For transient conditions, see attachment 1.

G. For operational condition 4, temperatures shown are peak values for transient conditions (see attachment 2).

H. Pressure, humidity, and radiation parameters apply to units 1-3. Temperatures are applicable to all units unless otherwise indicated. *** indicates space temperatures may reach 150°F during normal shutdown mode.

I. Primary containment areas are not subject to a chemical spray.

J. Reactor building equipment is not subject to submergence.

K. NA indicates not applicable for this operating condition.

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FIGURE SUPPLIED
BY THE LICENSEE

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Table A-4. Licensee Table B.1 (1,2,3)

TABLE B.1 (1,2,3)

TEMPERATURE - PRESSURE (Selected Areas)

<u>Unit 1</u>		<u>Unit 2 & 3</u>	
<u>Time</u>	<u>Compartment (1)</u>	<u>Time</u>	<u>Compartment (1),(10), & (11)</u>
2 sec	1.3 psig		Same as for unit 1
5 "	1.1 "		
11 "	.8 "		
30 "	.1 "		
50 "	0. "		

<u>Time</u>	<u>Compartment (10)</u>	<u>Time</u>	<u>All Remaining Area</u>
.02 sec	2.4 psig	1 sec	.1 psig
.6 "	.8 "	30 "	.5 "
5 "	1.3 "	45 "	.5 "
45 "	1.3 "	50 "	.1 "
47 "	.2 "	120 "	0. "

<u>Time</u>	<u>Compartment (11)</u>	<u>All Units Compartment 7</u>	
1 sec	2.4 psig		
10 "	3.4 "		
45 "	3.8 "		
47 "	.4 "		
55 "	.1 "		
120 "	0. "		

<u>Time</u>	<u>All Remaining Areas</u>	<u>Time</u>	<u>Steam Valve Vault</u>
1 "	.1 psig	.1 sec	1.7 psig
30 "	.5 "	3 "	7.1 "
45 "	.6 "	4 "	4.5 "
50 "	.2 "	5 "	2.7 "
120 "	0. "	6 "	2.0 "
		10 "	1.8 "
		150 "	1.8 "

Temperature-Pressure (Compartment 15, 17A, 17B, 18) - All Units

<u>Room No.</u>	<u>Temperature (° F)</u>	<u>Pressure (PSIA)</u>
15	120	15.0
17A	105	Atm.
17B	105	Atm.
18	110	Atm.

FIGURE SUPPLIED
BY THE LICENSEE

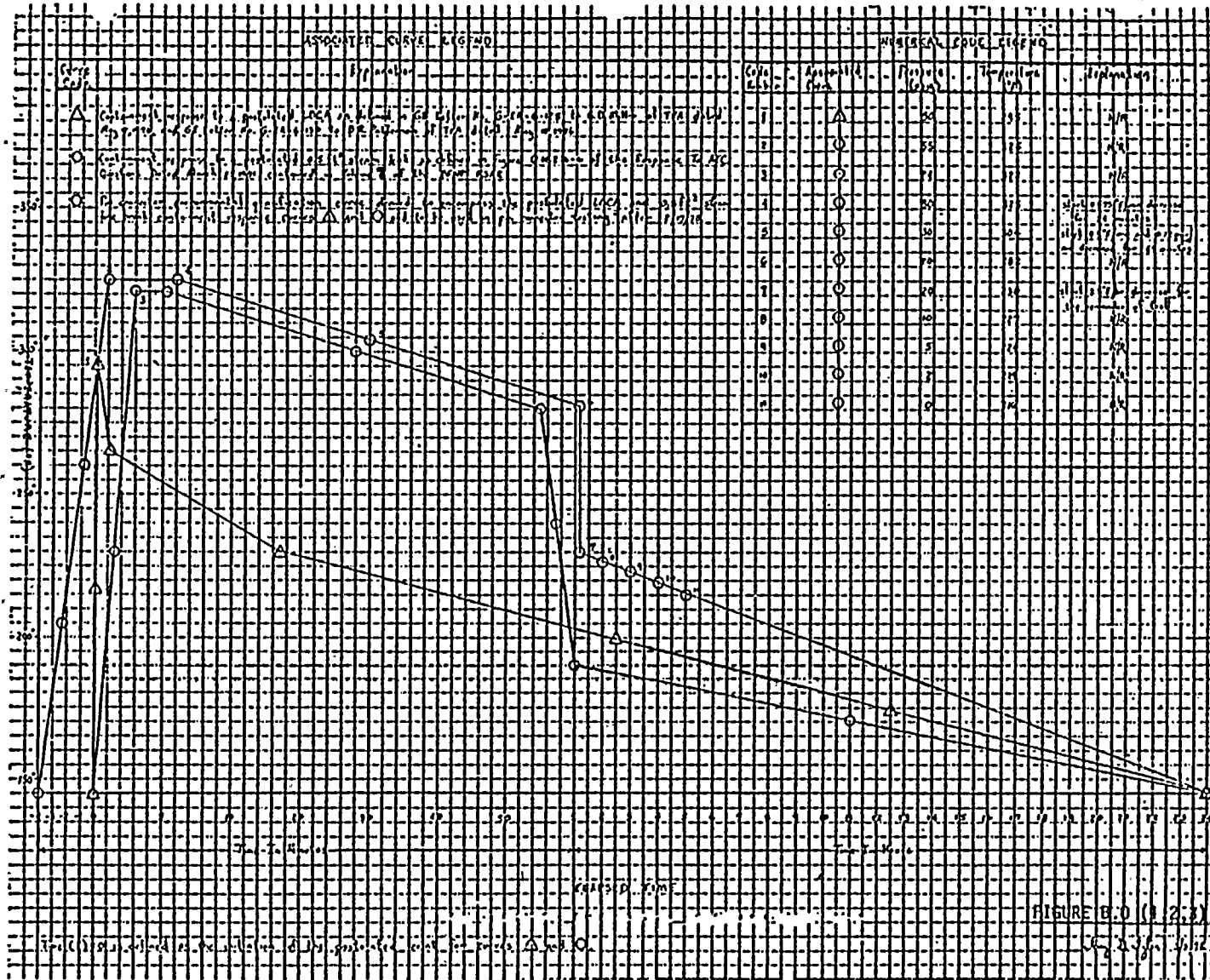


Figure A-1. DBA/IBA Drywell Temperature Response Environmental Test Curve (after 1/17/78). (Licensee Figure C.1-3)

FIGURE SUPPLIED BY THE LICENSEE

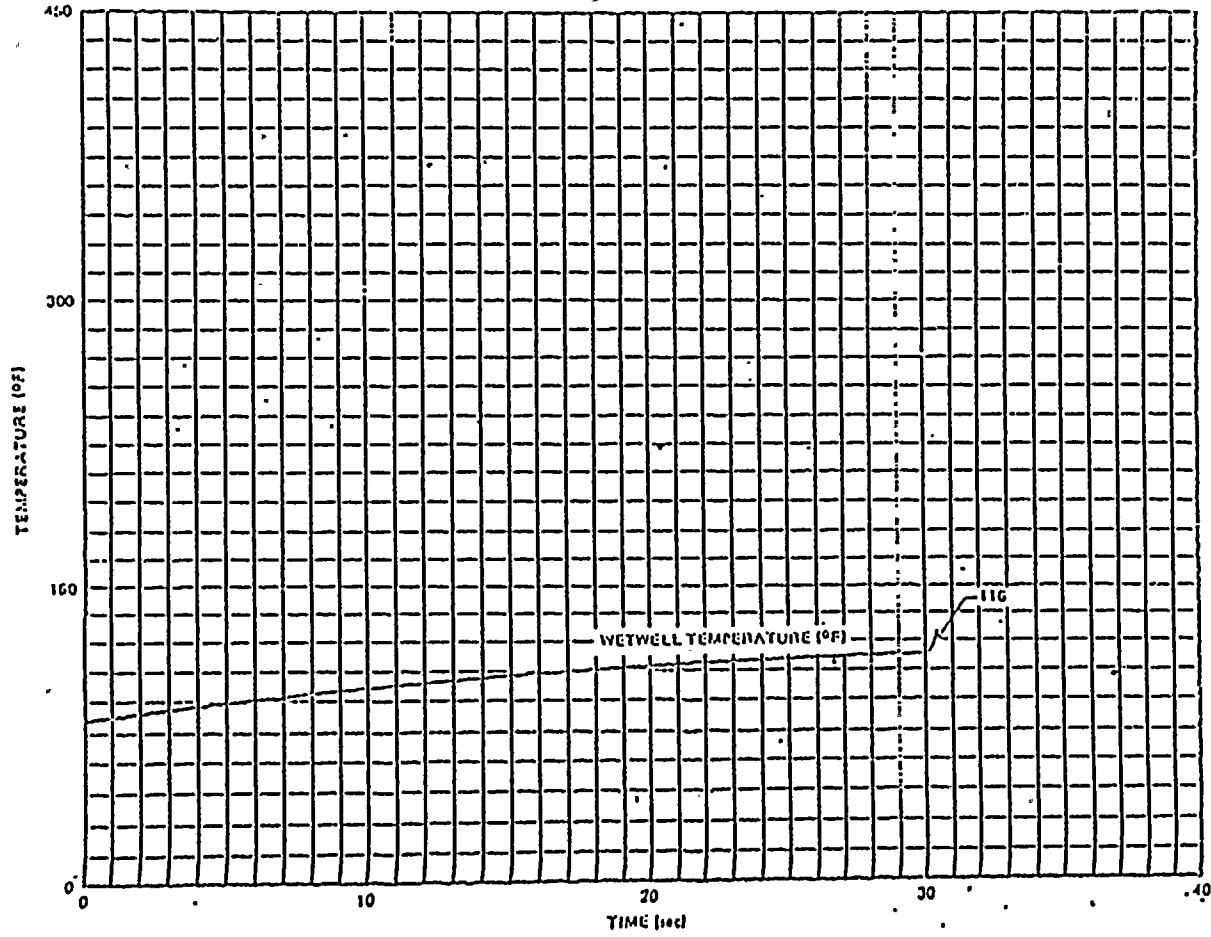


Figure A-2. DBA Wetwell Temperature Response (Licensee Figure C.1-1)

FIGURE SUPPLIED
BY THE LICENSEE

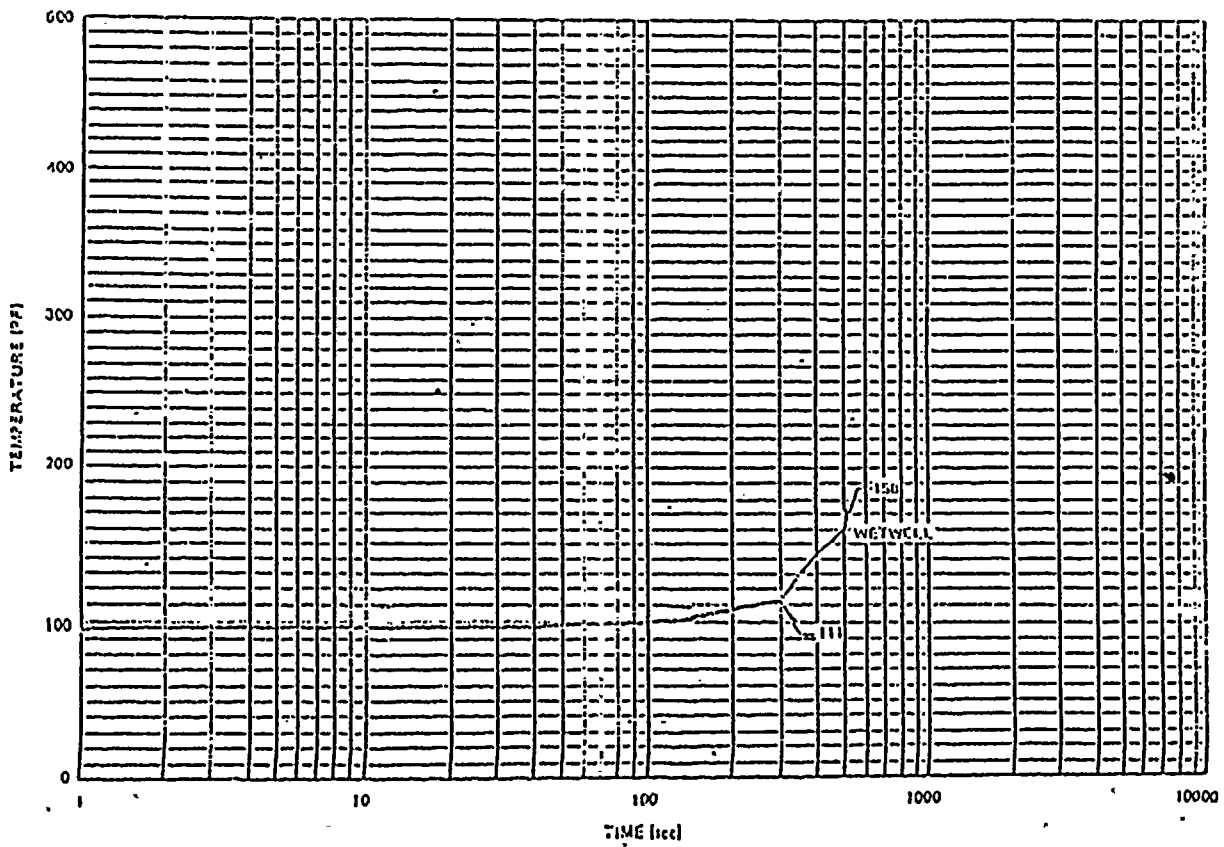


Figure A-3. IBA Wetwell Temperature Response (Licensee Figure C.1-2)

FIGURE SUPPLIED
BY THE LICENSEE

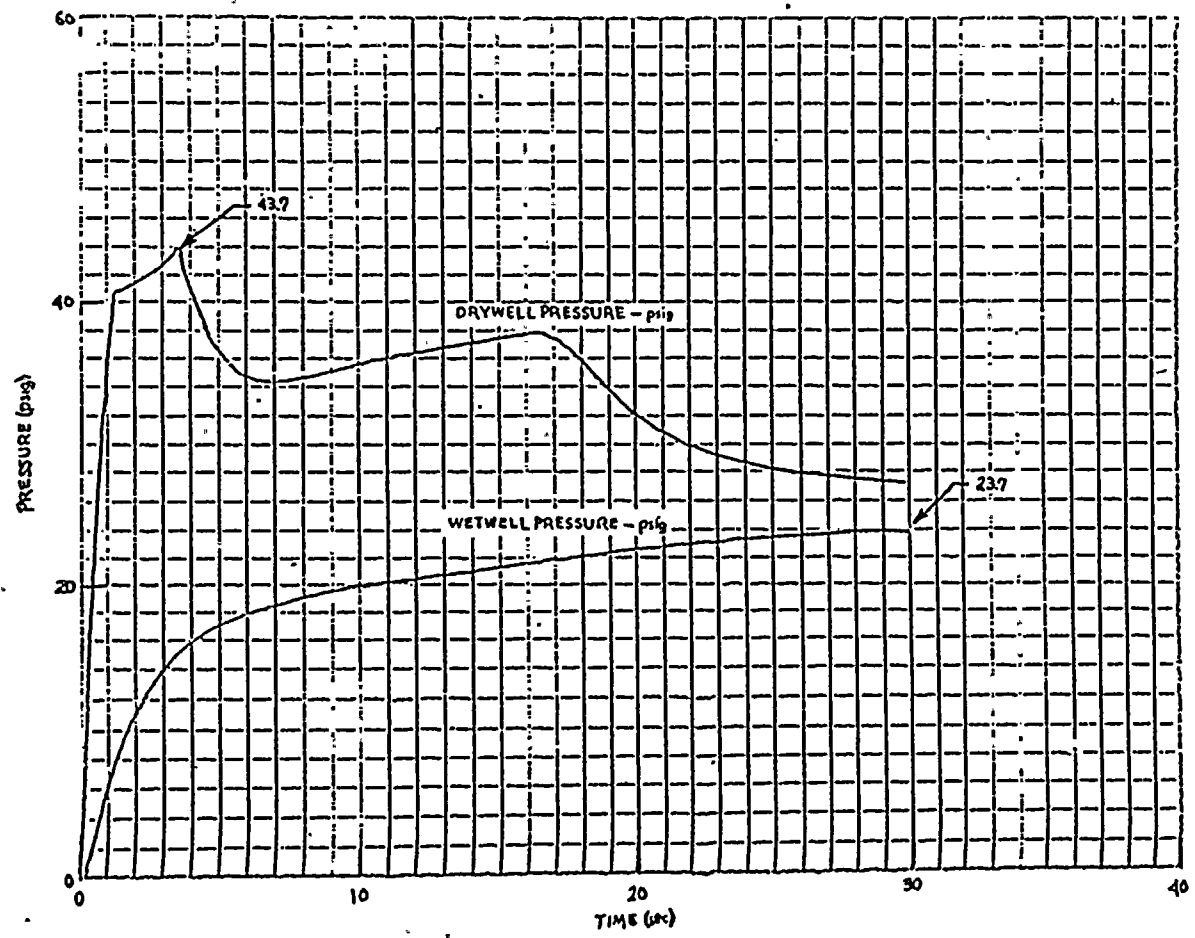


Figure A-4. DBA Containment Pressure Response (Licensee Figure C.1-4)

FIGURE SUPPLIED
BY THE LICENSEE

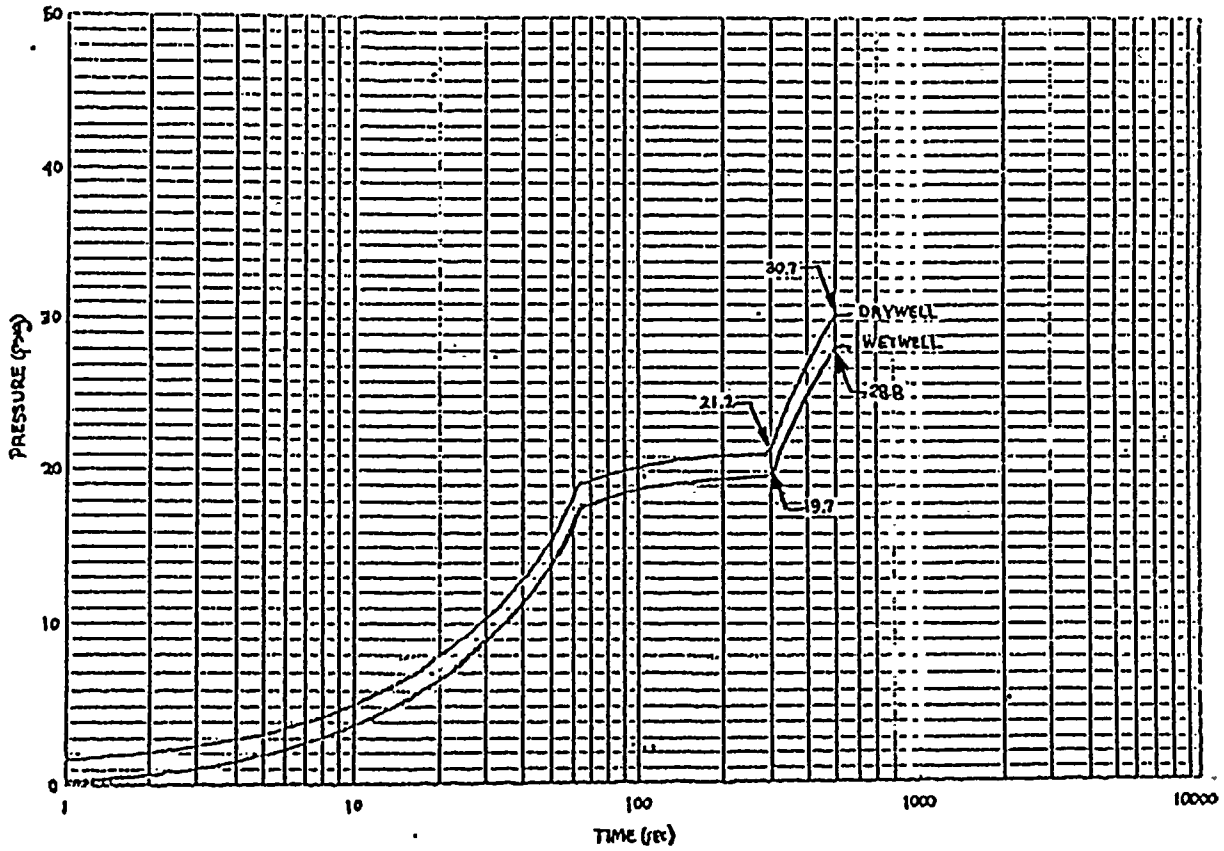
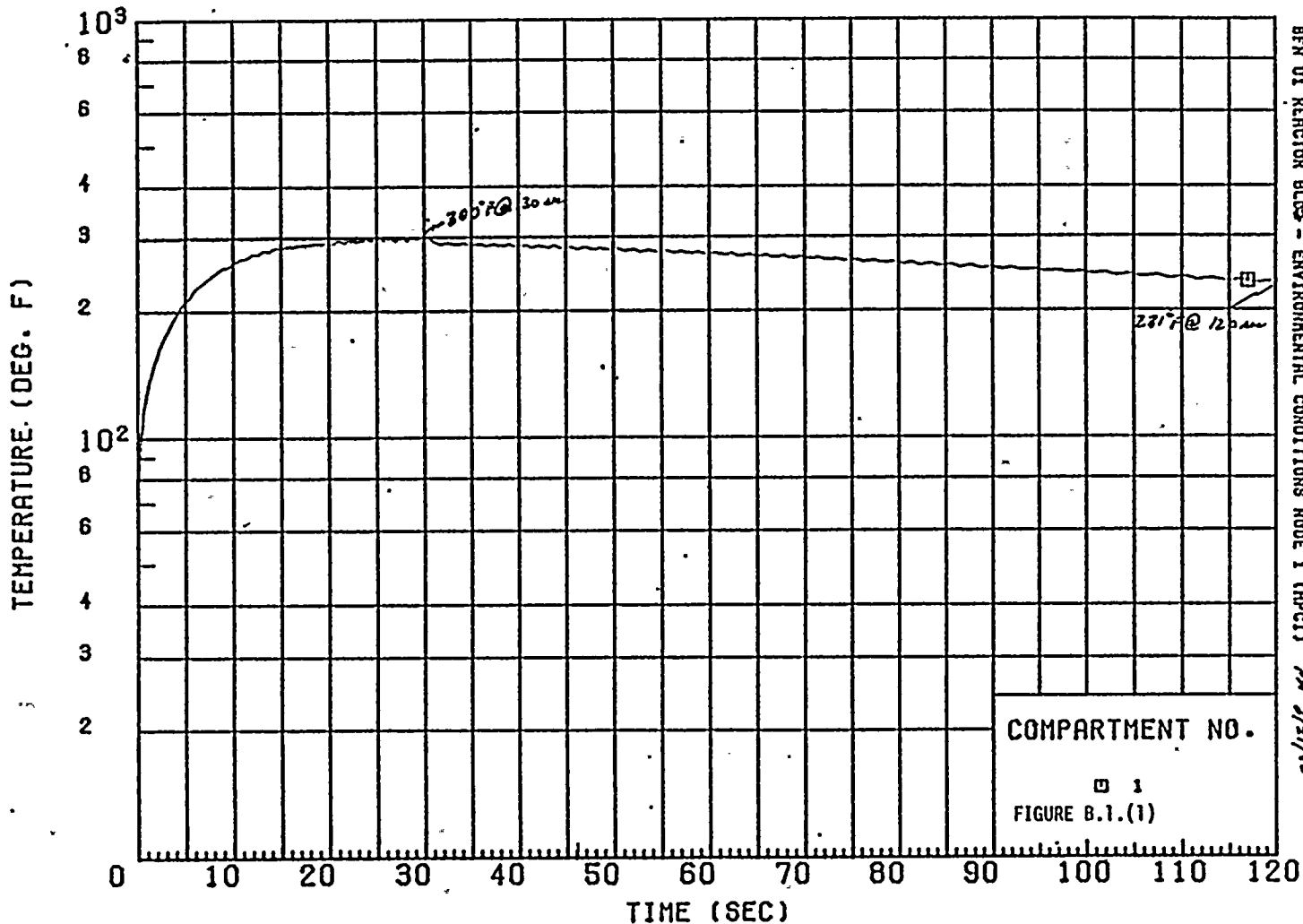


Figure A-5. IBA Containment Pressure Response (Licensee Figure C.1-5)

FIGURE SUPPLIED
BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

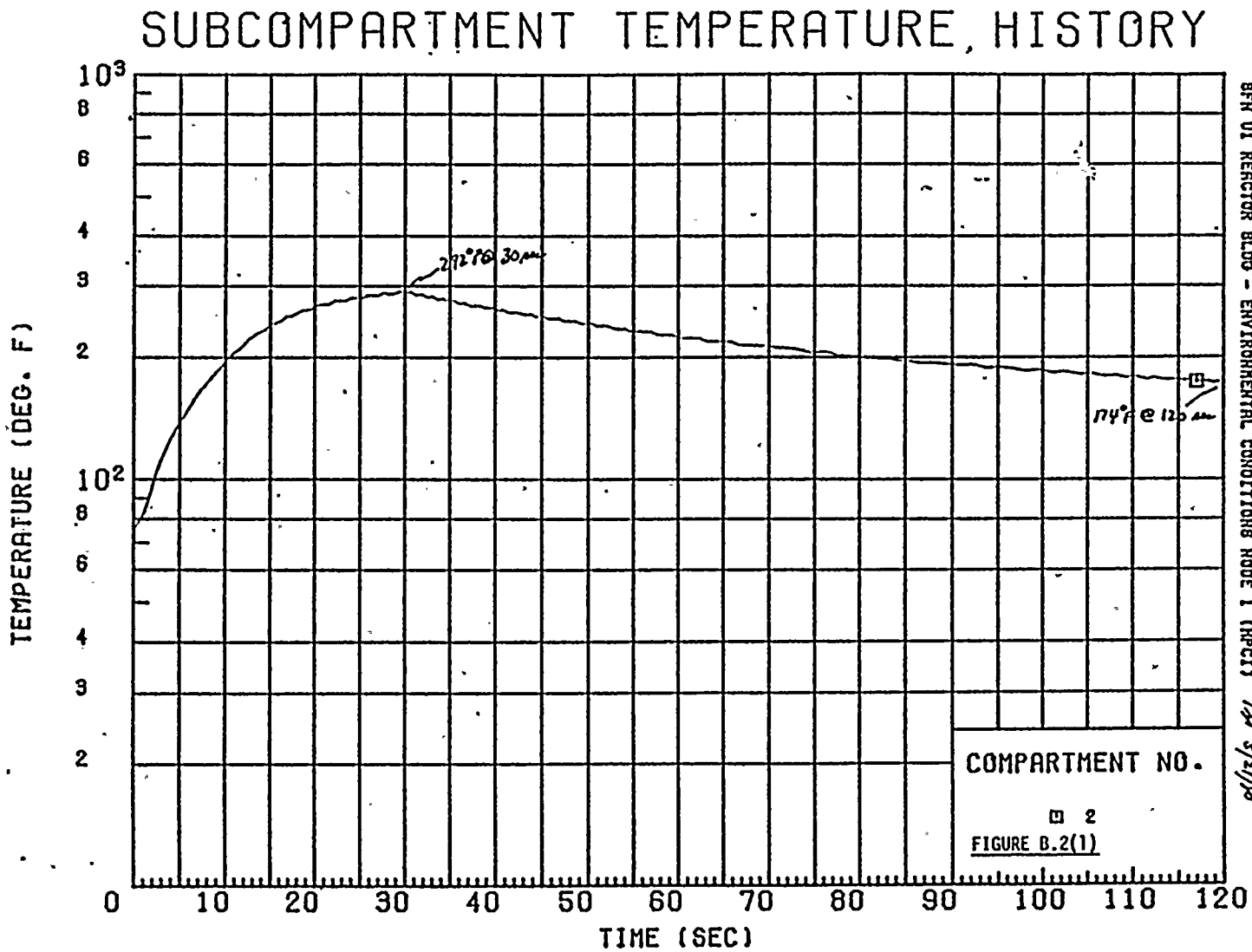


SFN INET. 2J
NEU. II NO.
BEH UI REACTOR 6L09 - ENVIRONMENTAL CONDITIONS NODE 1 (HPCL) AM 2/21/60
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Figure A-6. Licensee Figure B.1 (1)

FIGURE SUPPLIED
BY THE LICENSEE

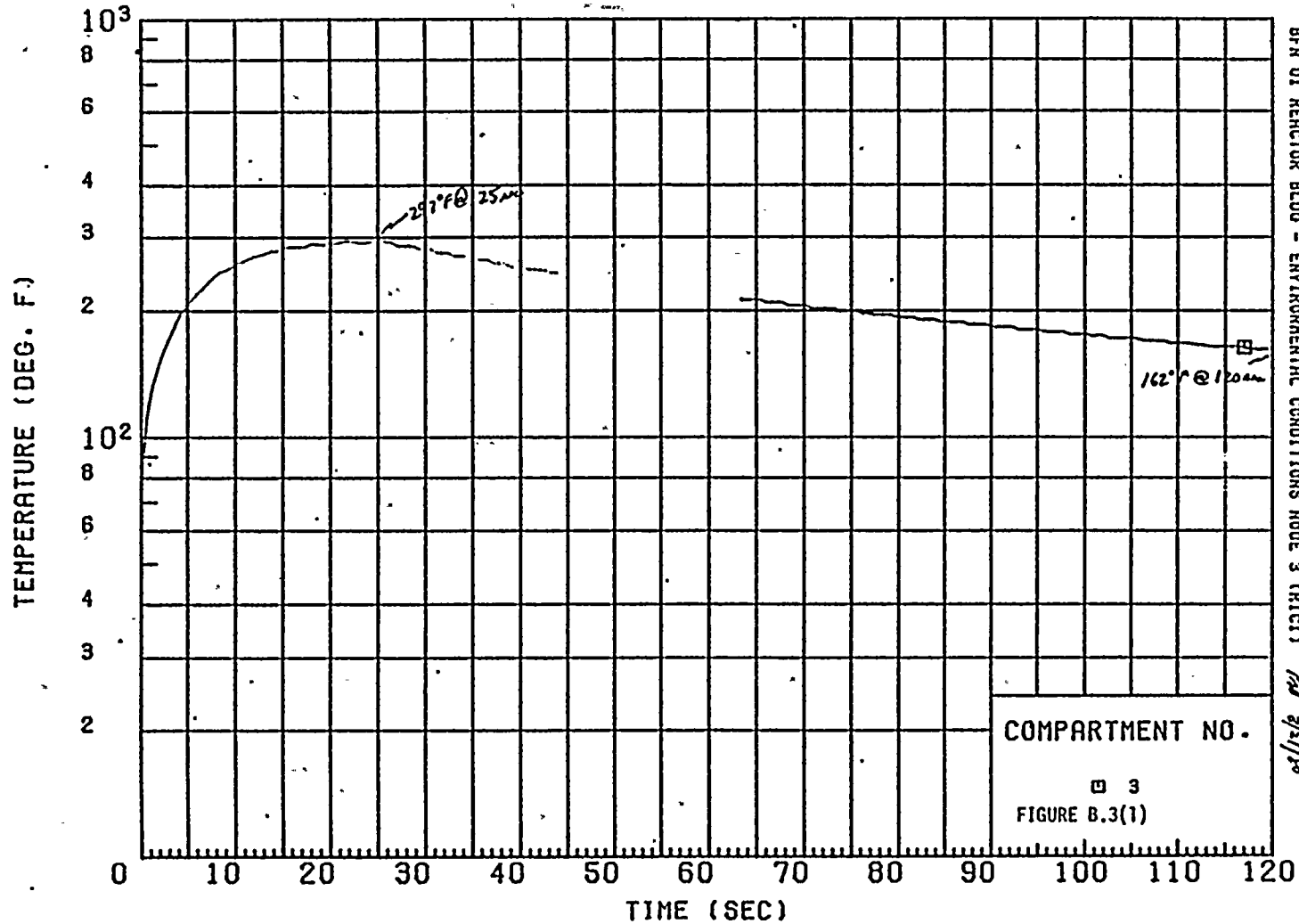


SFH (REV. 2) NEG. TI NO. PAGE OF
 BFM UI REACTOR BLDG - ENVIRONMENTAL CONDITIONS HOSE 1 (HRC1) 1st 5/21/80

Figure A-7. Licensee Figure B.2 (1)

**FIGURE SUPPLIED
BY THE LICENSEE**

SUBCOMPARTMENT TEMPERATURE HISTORY

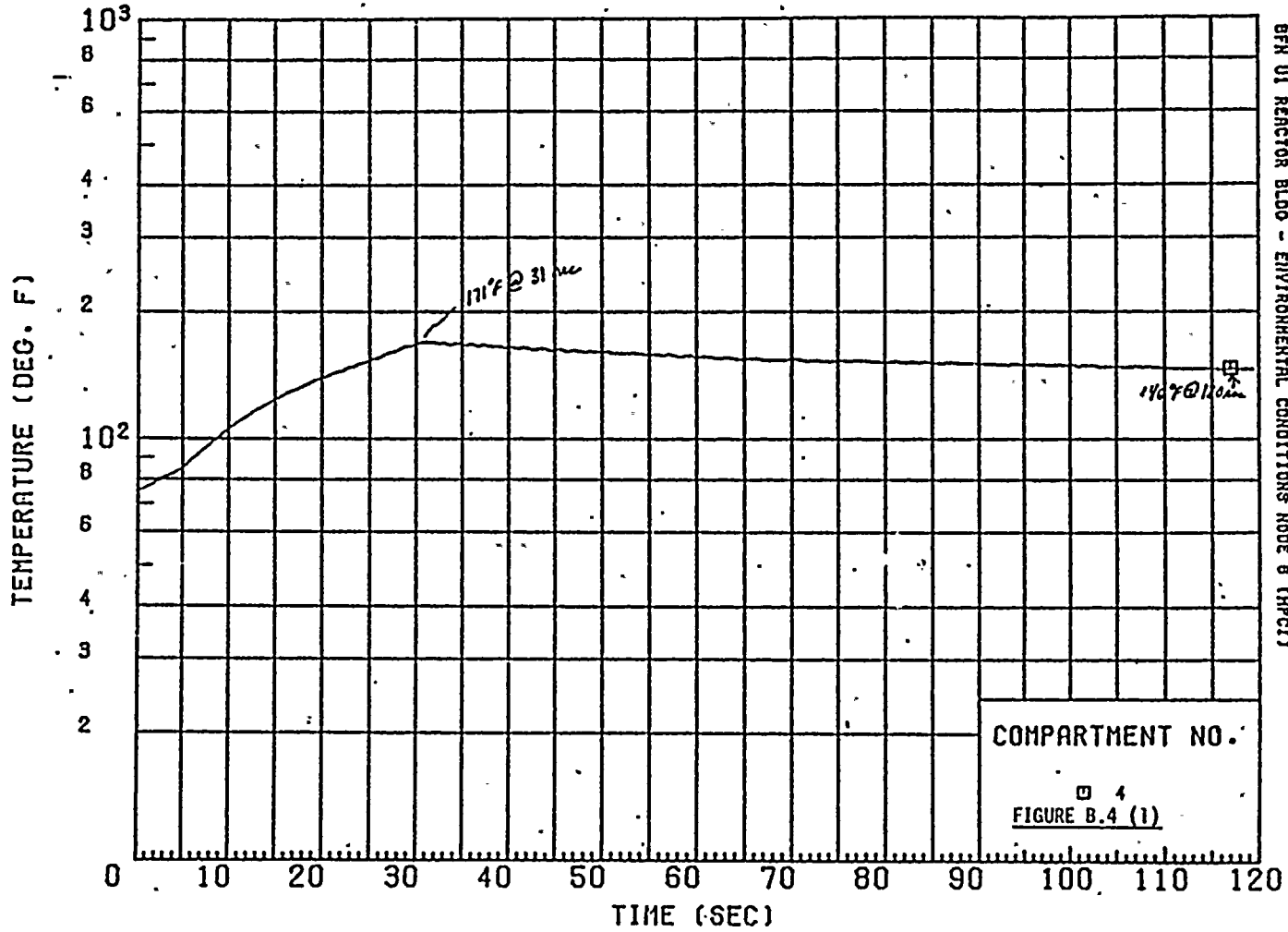


SPR (REV. 2) NEO. TI NO. PROE OF
 BN VI REACTOR BLDG - ENVIRONMENTAL CONDITIONS HOSE 3 (RICH) Rd 2/21/50

Figure A-8. Licensee Figure B.3 (1)

FIGURE SUPPLIED
BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY



SPA (REV. 2) NEG. TI NO.
BFN U1 REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 8 (HPC1)

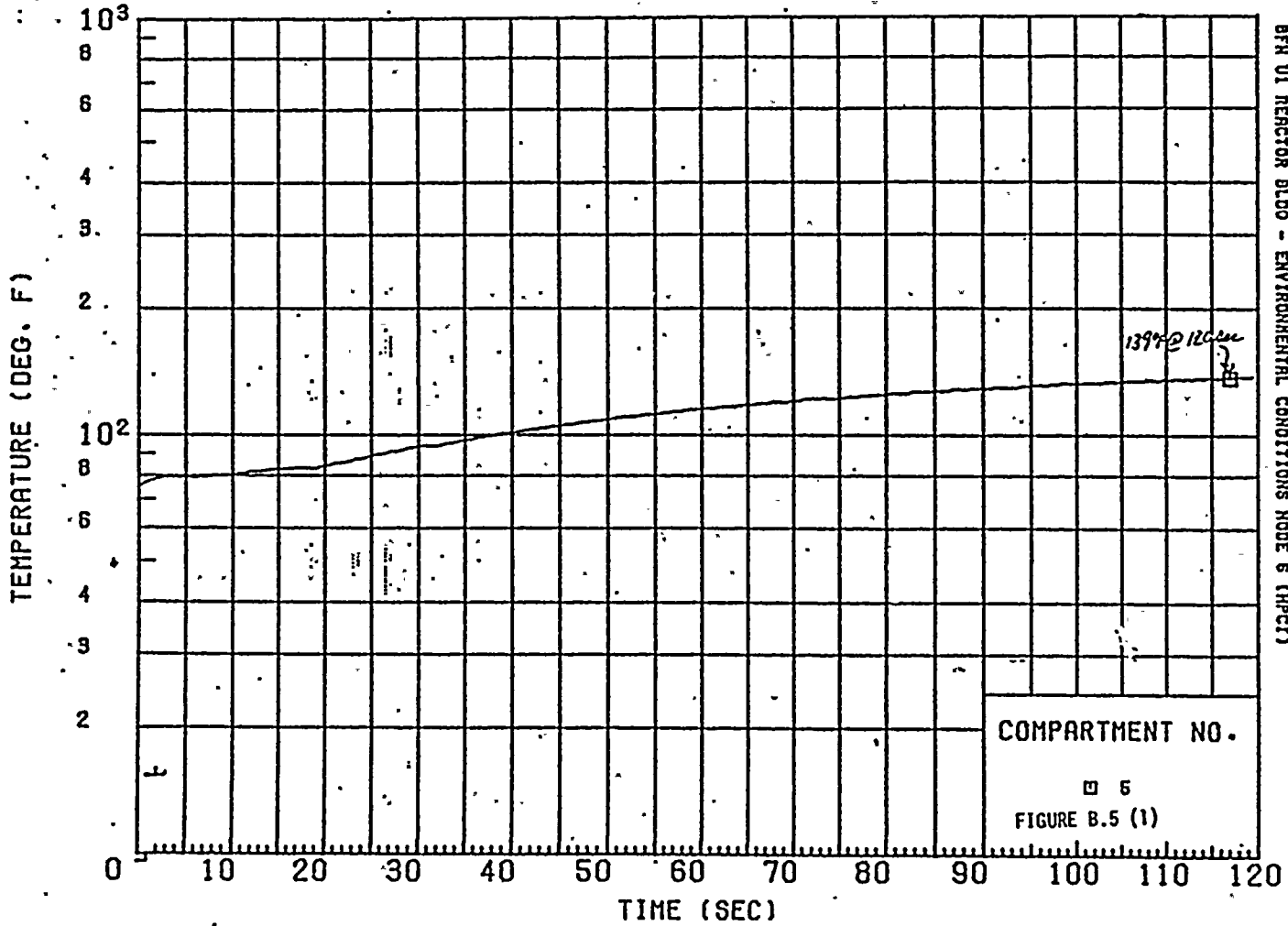
PAGE 0F

Figure A-9. Licensee Figure B.4 (1)

TER-C5257-469

FIGURE SUPPLIED
BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

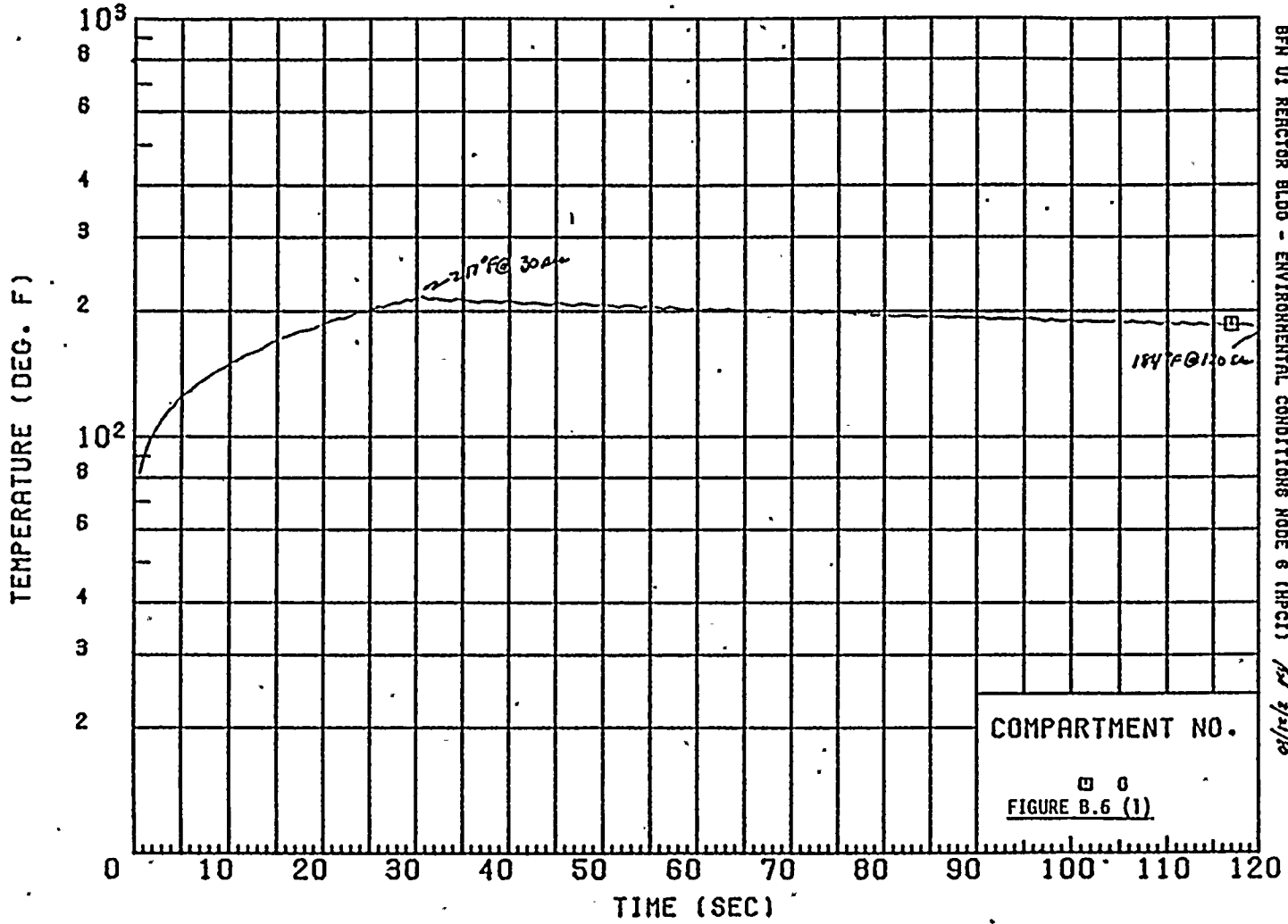


SPR (REV. 2) NEG. T1 NO.
BFH U1 REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 6 (HPECT)
PAGE OF

Figure A-10. Licensee Figure B.5 (1)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY



SPA (REV. 2) NEG. T.I. NO. PAGE OF
 BFN U1 REACTOR BLDG - ENVIRONMENTAL CONDITIONS MODE 8 (HFCT) 1st 2/21/50

Figure A-11. Licensee Figure B.6 (1)

FIGURE SUPPLIED BY THE LICENSEE

TER-C5257-469

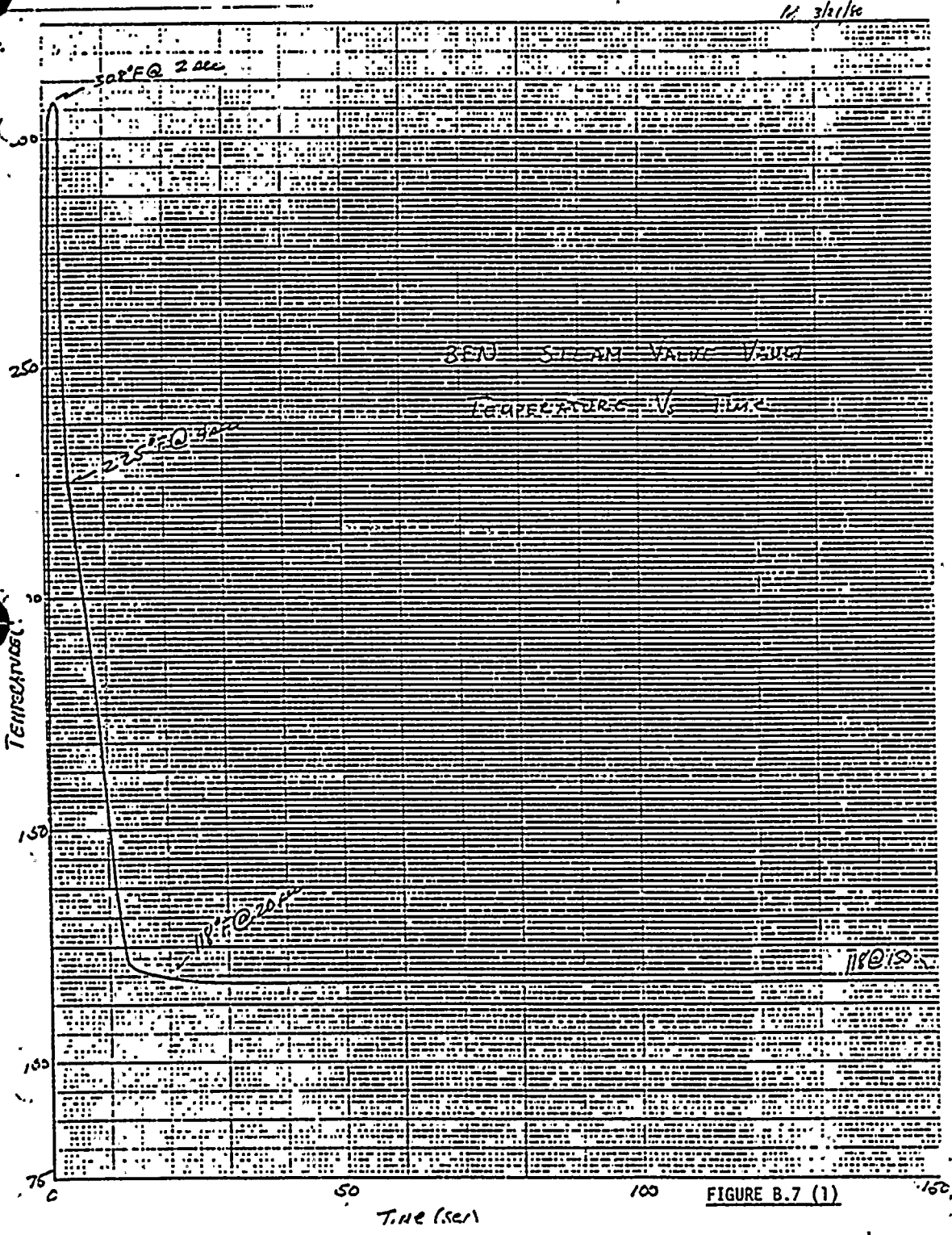


Figure A-12. Licensee Figure B.7 (1)

FIGURE SUPPLIED BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

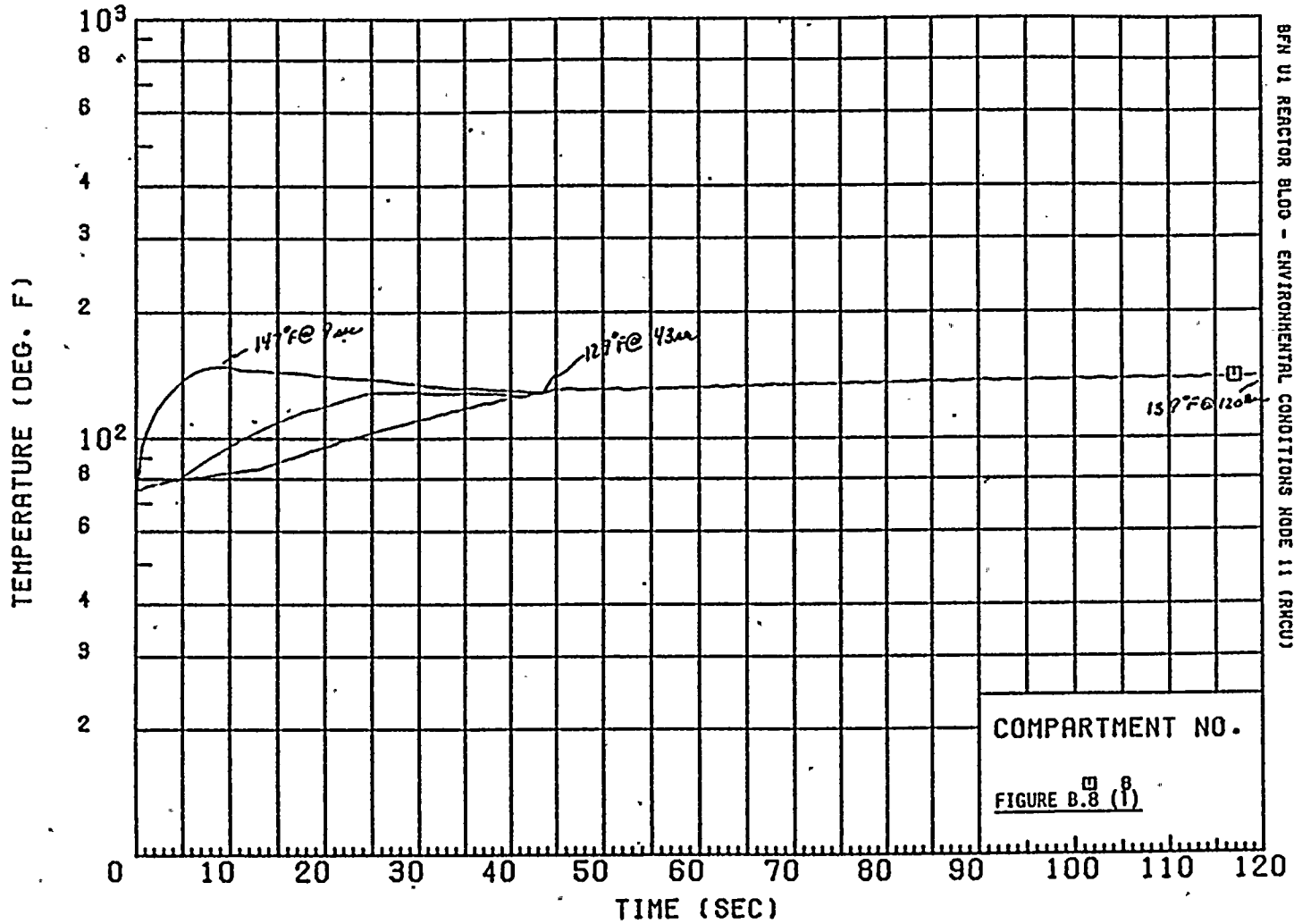
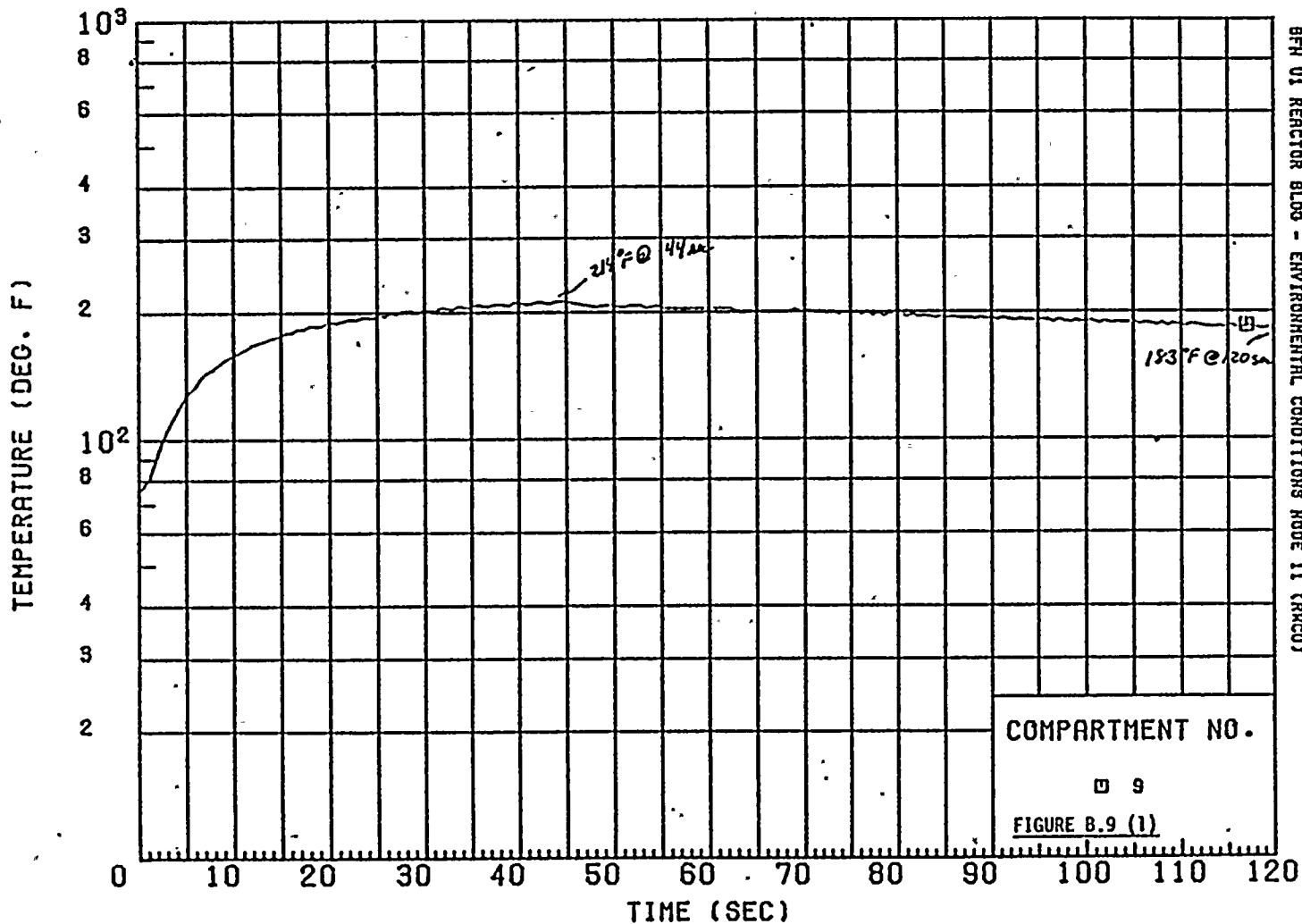


Figure A-13. Licensee Figure B.8 (1)

FIGURE SUPPLIED
BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY



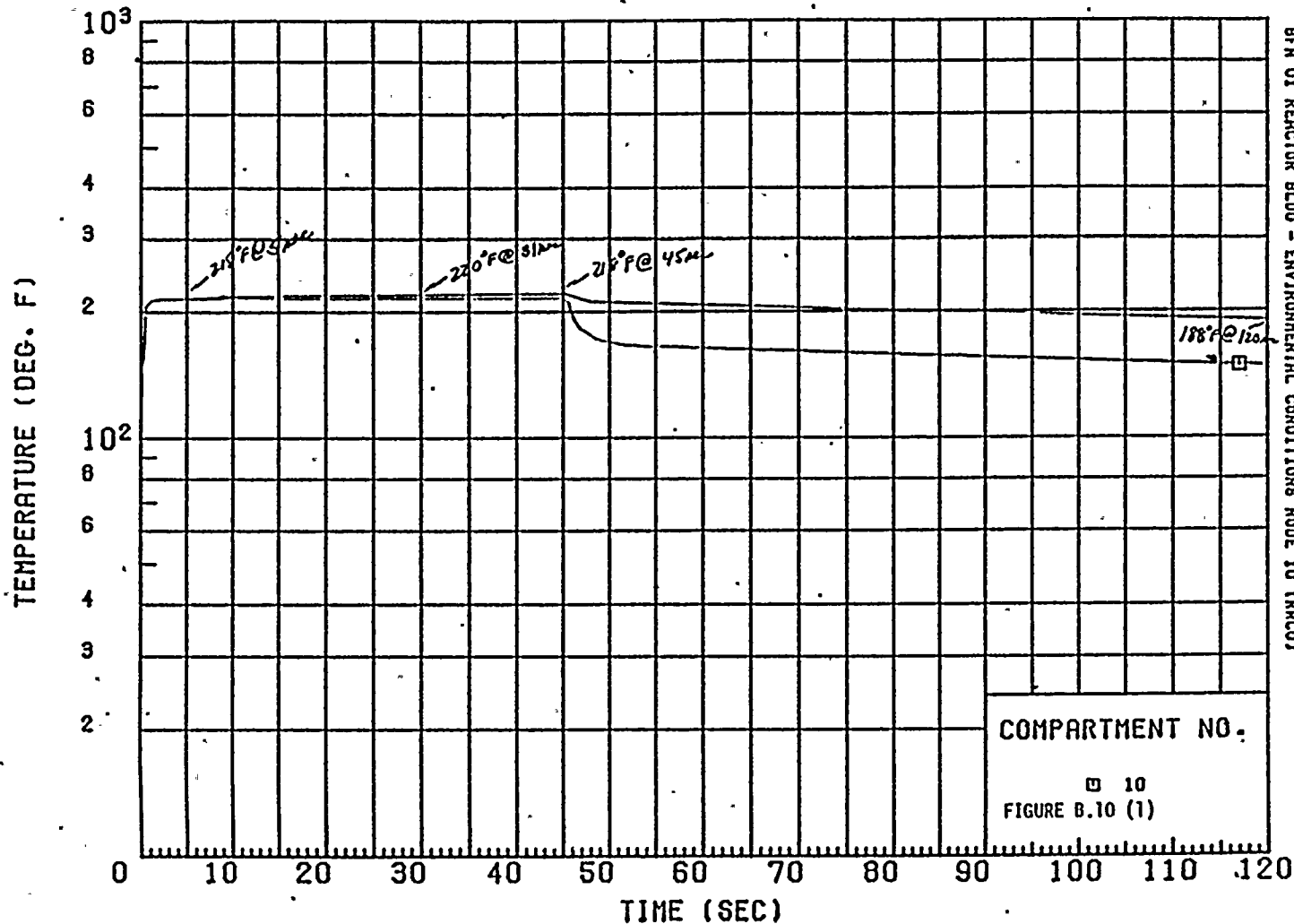
SPR (REV. 2) NEG. TI NO.
BFH VI REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 11 (RNGU)

Figure A-14. Licensee Figure B.9 (1)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY

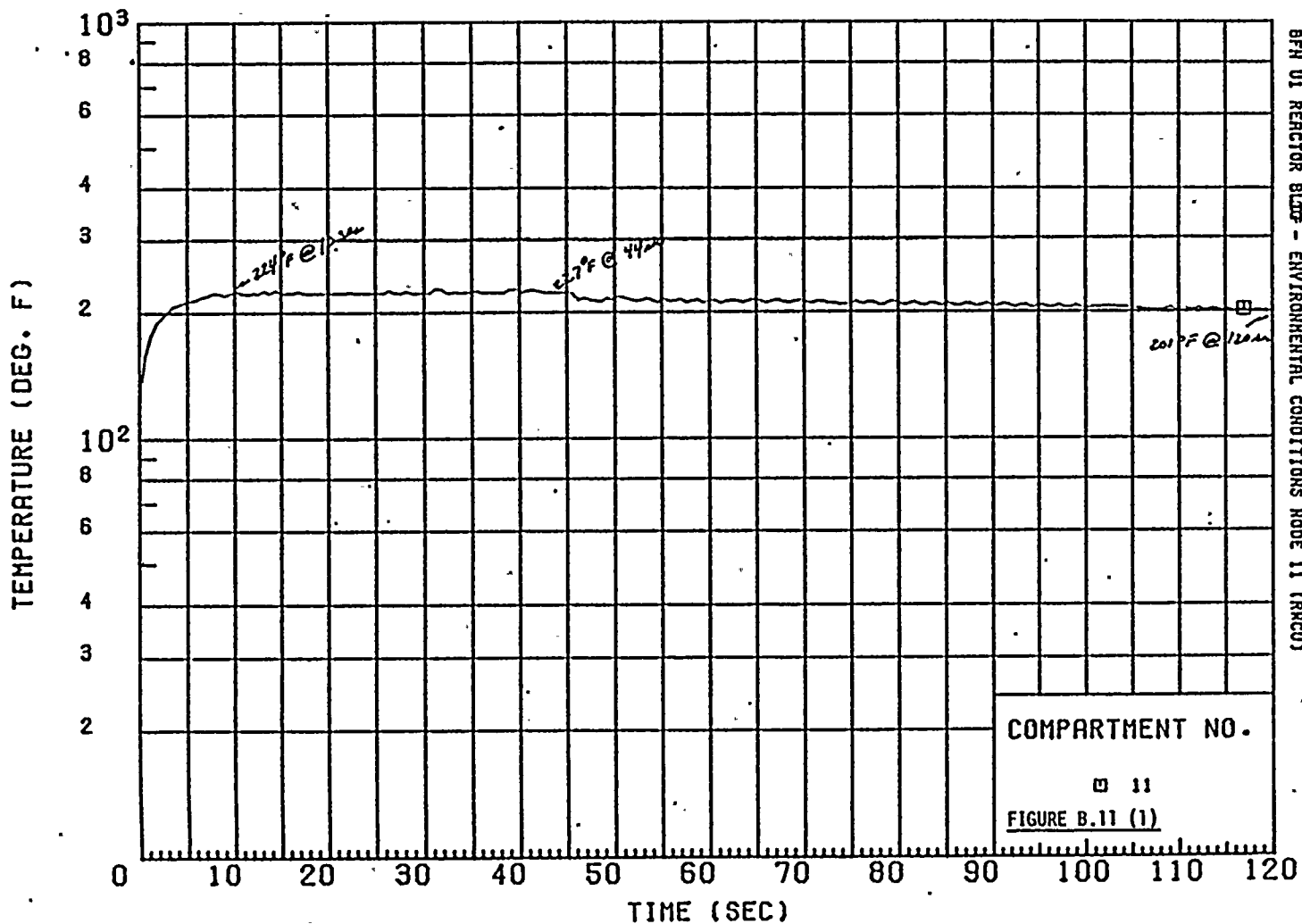


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BFR VI REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 10 (RRCU)
NEG. 11 NO.

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Figure A-15. Licensee Figure B.10 (1) **FIGURE SUPPLIED BY THE LICENSEE**

SUBCOMPARTMENT TEMPERATURE HISTORY



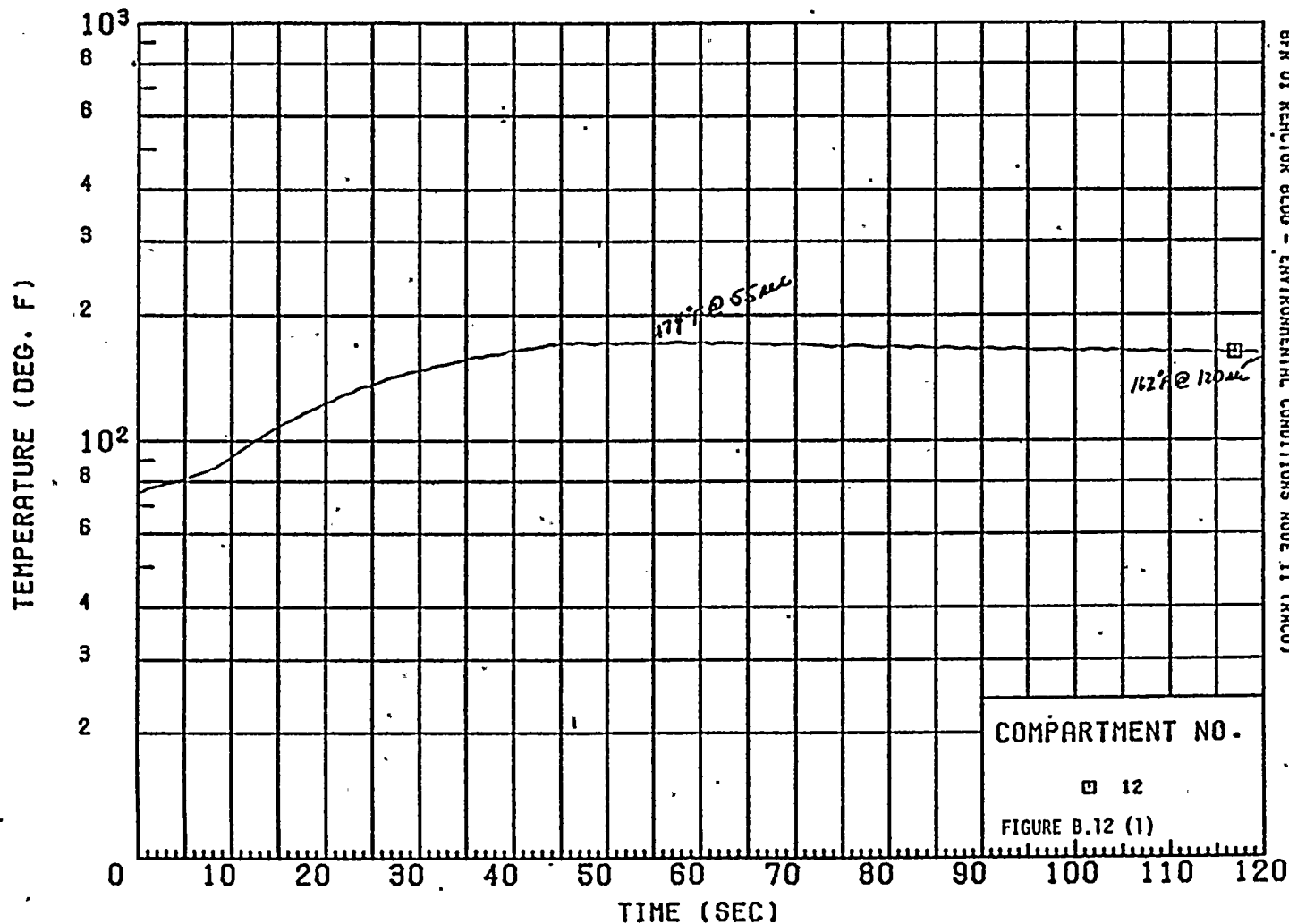
SFR (REV. 2) NEG. T1 NO.
BFH U1 REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 11 (RNGU)

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Figure A-16. Licensee Figure B.11 (1)

FIGURE SUPPLIED
BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY



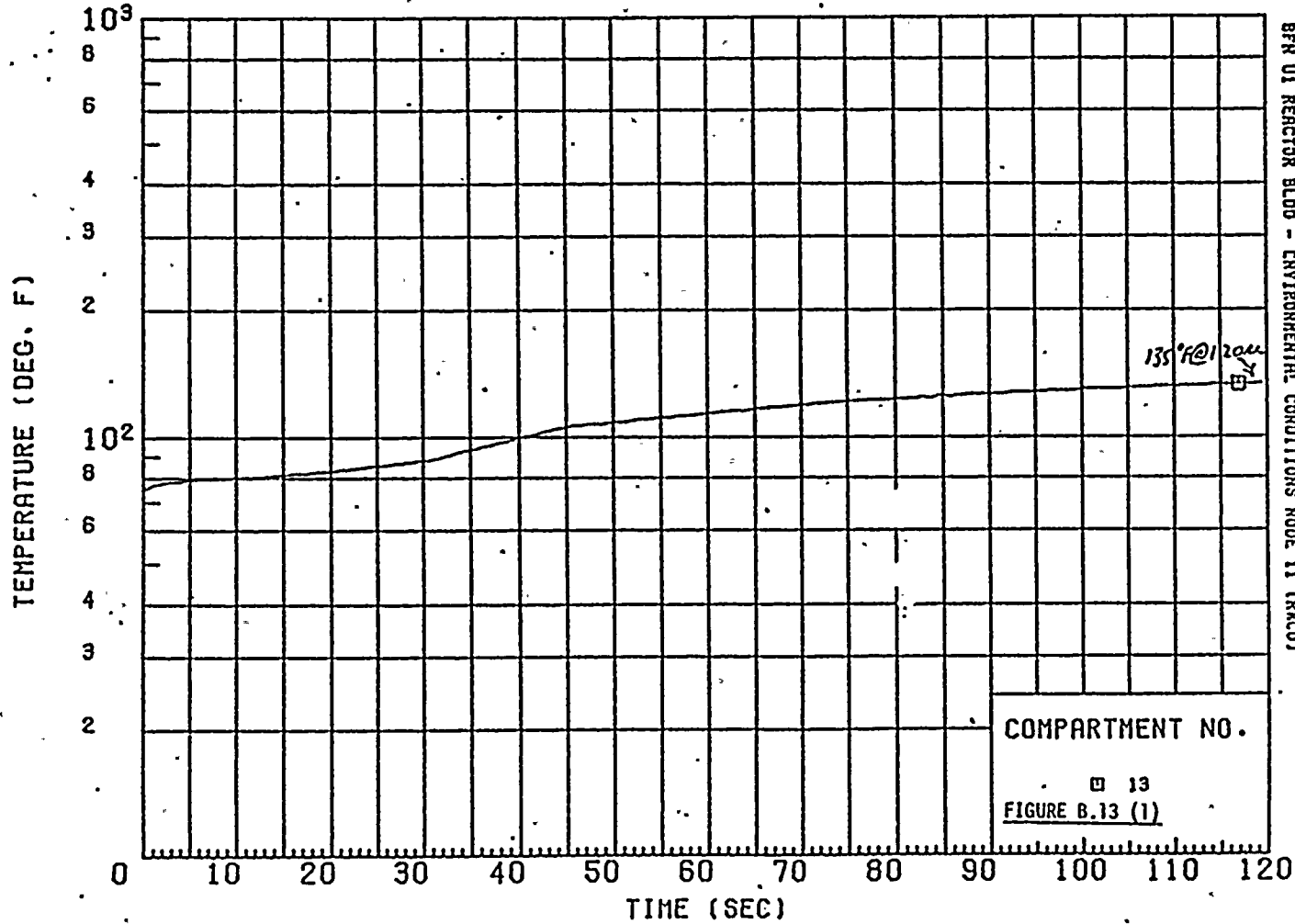
SPH (KEY. 2) NEG. TI NO.
 BFR U1 REACTOR BLOO - ENVIRONMENTAL CONDITIONS NODE 11 (RMCU)

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Figure A-17. License Figure B.12 (1)

**FIGURE SUPPLIED
BY THE LICENSEE**

SUBCOMPARTMENT TEMPERATURE HISTORY

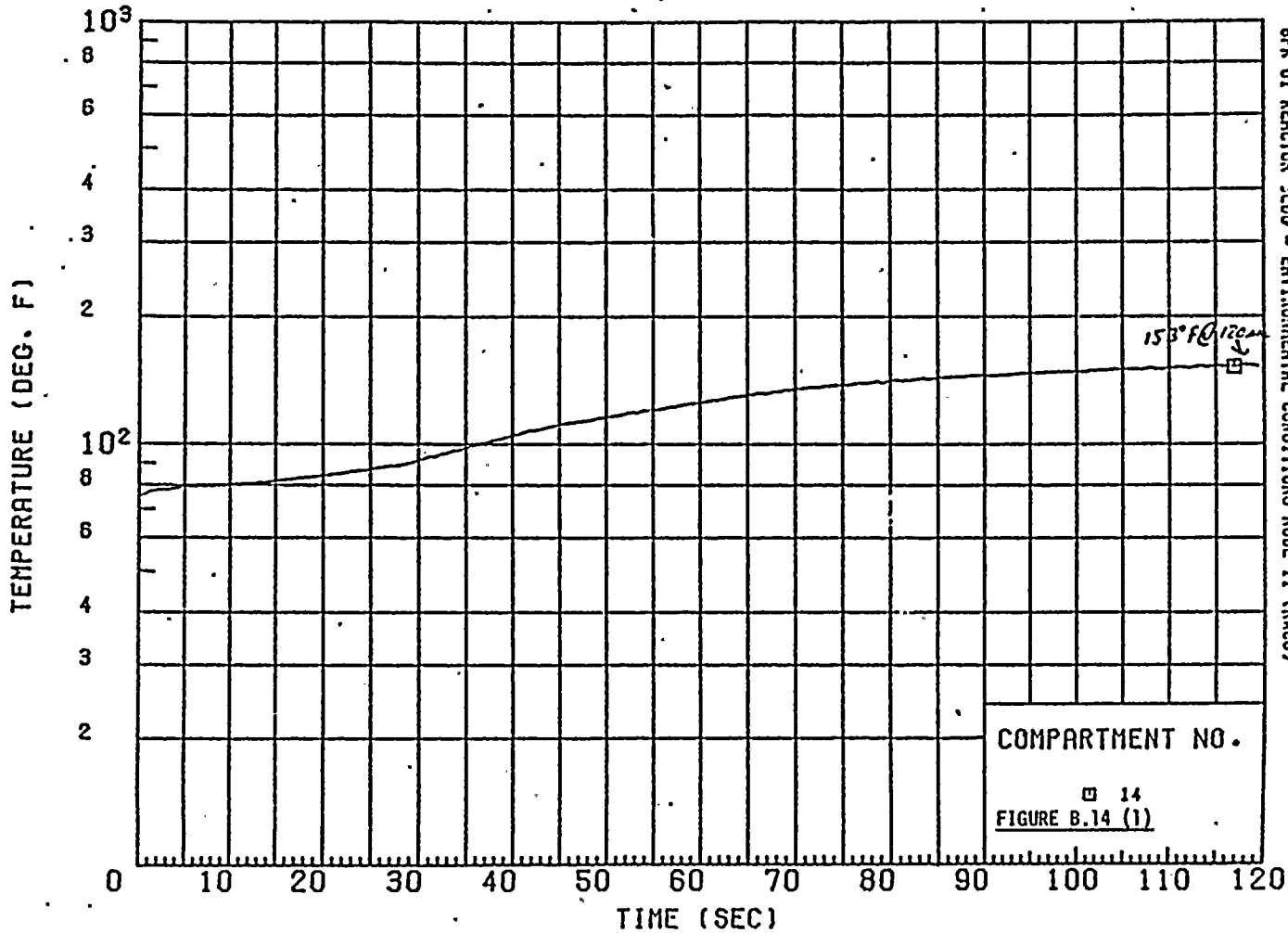


SPR (REV. 2) NEG. T1 NO. PAGE OF
BFR U1 REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 11 (RRCU)

Figure A-18. Licensee Figure B.13 (1)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY



SFR (REV. 2) NEG: TITNO:
BFR U1 REACTOR 2100 - ENVIRONMENTAL CONDITIONS NODE 11 (RRCU) PHASE UP

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Figure A-19. Licensee Figure B.14 (1)

FIGURE SUPPLIED
BY THE LICENSEE

APPENDIX B - LISTING OF SAFETY-RELATED ELECTRICAL EQUIPMENT

The following table lists the groupings of safety-related electrical equipment items for Browns Ferry Unit 1. Equipment items provided in the table are used in the detailed equipment environmental qualification evaluation presented in Section 4.4 and summarized in Section 4.2. This table was generated from the lists of equipment provided by the Licensee [1, 12, 14].

The Licensee identified an extensive list of safety-related electrical equipment in various locations of the plant. The equipment listed by the Licensee was analyzed, and all identical equipment located within plant areas that are exposed to the same environmental service conditions was grouped together and designated an "equipment item." In this report, the term "equipment item" refers to a specific type of electrical equipment, designated by manufacturer and model, which is representative of all identical equipment in a plant area exposed to the same environmental service conditions (e.g., Flow Transmitter, Fischer & Porter, Model 10B2496, located within containment). This analysis resulted in a reduced listing of equipment (equipment items) that formed the basis for the review. This appendix contains the tabulation of the equipment items, locations, function, plant identification numbers, required operating time, and applicable qualification documentation references.

Equipment Item No. 1

Solenoid Valves Located in the Reactor Building

AAA Model S02

Control Air Isolation (FSV-32-62, -63)

Licensee reference not cited

Required Operating Time: 1 hour, 1 year

TER Checksheet No. 1

Licensee Submittal: Pages EEB-32-1001 and -1002 [1]

Equipment Item No. 2

Flow Indicating Switch Located in the Reactor Building

Fischer & Porter Model 10A2235A-55AR1011

Sampling System Flow (FIS-43-13A, B)

Licensee reference not cited

Required Operating Time: 1 day

TER Checksheet No. 2

Licensee Submittal: Pages EEB-43-1001 and -1002 [1]

Equipment Item No. 3

Differential Pressure Switch Located in the Reactor Building

Dwyer Model 3302

Various HVAC Functions (PDS-64-15, 62B, 62C, 62D, 62A, 61A, 61B, 61C, 61D, 61A/C, 7, 63)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 3

Licensee Submittal: Pages EEB-64-1001 through 1012; EEB-64-1041 [1]

Equipment Item No. 4

Pressure Differential Modifier Located in the Reactor Building

Honeywell Model: Relay Assembly R7165-1078; Terminal Assembly 122700

Reactor Zone Static Pressure (PDM-64-8, -16, -64)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 4

Licensee Submittal: Pages EEB-64-1014, -1015, and -1038 [1]

Equipment Item No. 5

Pressure Differential Indicating Controller Located in the Reactor Building

Fischer & Porter Model 53EL3311BB1B ESL-01

Reactor Zone Static Pressure (PDIC-64-8, -16, -64)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 5

Licensee Submittal: Pages EEB-64-1016, -1017, and -1018 [1]

Equipment Item No. 6
 Pressure Differential Transmitter Located in the Reactor Building
 Fischer & Porter Model 10B2494TBAB
 Refueling Zone Static Pressure (PDT-64-8, -16, -64)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 6
 Licensee Submittal: Pages EEB-64-1019, -1020, and -1021 [1]

Equipment Item No. 7
 Temperature Element Located in the Drywell
 Weed Model SP601-1A-A-3-C-275-5N4-2
 Drywell Temperature (TE-64-52B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 7
 Licensee Submittal: Page EEB-64-1027 [1]

Equipment Item No. 8
 Temperature Element Located in the Drywell
 Weed Model SP601-1A-A-3-C-275-SN4-2
 Drywell Temperature (TE-64-52A, C)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 8
 Licensee Submittal: Pages EEB-64-1039 and -1040 [1]

Equipment Item No. 9
 Flow Transmitter Located in the Reactor Building
 GE/MAC Model 50-554212BKZZ3
 Standby Gas Treatment Flow Indication and Alarm (FT-65-1)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 9
 Licensee Submittal: Page EEB-65-1001 [1]

Equipment Item No. 10
 Differential Pressure Transmitter Located in the Reactor Building
 GE/MAC Model 555
 Equipment Cooling Discharge Flow Indication (FT-67-9A)
 Containment Atmospheric Dilution System Flow (FT-84-19, -20)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 10
 Licensee Submittal: Pages EEB-67-1014; EEB-84-1007, -1008 [1]

Equipment Item No. 11
Temperature Switch Located in the Reactor Building
Fenwal Model 18002-27
Reactor Water Clean-Up Leak Detection (TS-69-30A through H)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 11
Licensee Submittal: Pages EEB-69-1001 through -1008 [1]

Equipment Item No. 12
Solenoid Valve Located in the Torus Room
Valcor Model 526D
Containment Inerting System Isolation Valves (FSV-76-56, -65, -63, -68, -58,
-67, -61, -62, -66, -57, -55)
Licensee Reference 4760
Required Operating Time: 1 year
TER Checksheet No. 12
Licensee Submittal: Pages EEB-76-1001 through 1007, -1012, -1013, -1024,
and -1025 [1]

Equipment Item No. 13
Solenoid Valve Located in the Drywell
Valcor Model 526D
Containment Inerting System Isolation Valves (FSV-76-49, -60, -51, -59)
Licensee Reference 4760
Required Operating Time: 1 year
TER Checksheet No. 13
Licensee Submittal: Pages EEB-76-1008 through -1011 [1]

Equipment Item No. 14
Solenoid Valve Located in the Reactor Building
Target Rock Model 73FF-005
N₂ Isolation Valves (FSV-84-8A)
Licensee Reference 4654
Required Operating Time: 1 year
TER Checksheet No. 14
Licensee Submittal: Pages EEB-84-1001, -1002, 1003, and -1013 [1, 14]

Equipment Item No. 15
I/P Converter Located in the Reactor Building
Fisher Controls Model 546
Containment Atmospheric Dilution System Signal Converter (FM-84-19B, -20B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 15
Licensee Submittal: Pages EEB-84-1009 and -1010 [1]

Equipment Item No. 16
Pressure Switch Located in the Reactor Building
Custom Components Model 630GH
Monitors Standby Gas Treatment Duct Pressure (PS-84-21, -22)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 16
Licensee Submittal: Pages EEB-84-1011 and -1012 [1]

Equipment Item No. 17
Radiation Monitor Located in the Reactor Building
Nuclear Measurement Corp., Model Not Stated
Cooling Water System Monitors (RE-90-132A, -133A, -134A)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 17
Licensee Submittal: Pages EEB-90-0001, -0004, -0007, and -0167 [1, 12]

Equipment Item No. 18
Thermostat Located in the Reactor Building
Honeywell Model T675A1508
Standby Liquid Control System (SBLC) Pump Motor Temperature (TC-63-5A, -5B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 18
Licensee Submittal: Page MEB-63-01 [1]

Equipment Item No. 19
Motorized Valve Actuator Located in the Reactor Building
Limitorque Model SMB-3
Actuates Residual Heat Removal Valve (FCV-74-47)
Licensee Reference's 662, 659, 1063, 1620, 2876
Required Operating Time: 1 year
TER Checksheet No. 19
Licensee Submittal: Page NEB-74-186 [1, 14]

Equipment Item No. 20
Thermostat Located in the Reactor Building
Honeywell Model T675A1540
Pump Motor Temperature Controller (TS-64-68, -69, -70, -71, -72, -73)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 20
Licensee Submittal: Page MEB-64-02 [1]

Equipment Item No. 21
Pump Motor Located in the Corner Rooms
General Electric Model 5K Series
Dunes Reactor Building Drain Pumps (SPA; B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 21
Licensee Submittal: Pages MEB-77-04, -06 [1]

Equipment Item No. 22
Differential Pressure Indicator Switches Located in the NE Corner Room
Barton Model 278
Main Steam Flow Indication (PDIS-1-13A through 13D; -25A through -25D;
-36A through -36D; -50A through -50D)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 22
Licensee Submittal: Page NEB-1-003 [1]

Equipment Item No. 23
Solenoid Operators Located in the Drywell
Automatic Valve Corp. Model C5497
Pilot for Main Steam Isolation Valves (FSV-1-14, -26, -37, -51: all A thru C)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 23
Licensee Submittal: Page NEB-1-005 [1]

Equipment Item No. 24
Solenoid Operators Located in the Steam Tunnel
Automatic Valve Corp. Model C5497
Pilot for Main Steam Isolation Valves (FSV-1-15, -27, -38, -52: all A thru C)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 24
Licensee Submittal: Page NEB-1-007 [1]

Equipment Item No. 25
Temperature Switches Located in the Steam Tunnel
Fenwal Model 17002-40
MSLB Detection (TS-1-17A, B, C, D)
Licensee References 824, 827
Required Operating Time: 1 hour
TER Checksheet No. 25
Licensee Submittal: Page NEB-1-008 [1]

Equipment Item No. 26
Temperature Switches Located in the Reactor Building
Fenwal Model 17002-40
Reactor Water Clean-Up Steam Line Break Detection (TS-69-29J, K, L, M)
Licensee References 824, 4762, 827
Required Operating Time: 1 hour
TER Checksheet No. 26
Licensee Submittal: Page NEB-69-81 [1]

Equipment Item No. 27
Pressure Switches Located in the Reactor Building
Barksdale Model B2T-A12SS
Reactor Feedwater Pressure Indication and Control (PS-3-22A, B, C, D;
-57A, B, C, D; -74A)
Licensee Reference 4265
Required Operating Time: 1 day
TER Checksheet No. 27
Licensee Submittal: Pages NEB-3-015, -018, and -021 [1]

Equipment Item No. 28
Pressure Switches Located in the SW Corner Room
Barksdale Model B2T-A12SS
Measure HPCI and RCIC Steam Line Pressure (PS-71-1A, B, C, D;
PS-73-1A, B, C, D)
Licensee Reference 4265
Required Operating Time: 30 days
TER Checksheet No. 28
Licensee Submittal: Pages NEB-71-84 and NEB-73-128 [1, 12]

Equipment Item No. 29
Level Indicator Switches Located in the Reactor Building
Yarway Model 4418C
Feedwater Level Indication and Control (LITS-3-46A, B; LIS-3-56A, B, C, D;
-58A, C; LITS-3-58B; LIS-3-184, -185)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 29
Licensee Submittal: Pages NEB-3-016, -017, -019, -020, and -022 [1]

Equipment Item No. 30
Pressure Switches Located in the Reactor Building
Barton Model 288
Reactor Feedwater Pressure (PS-3-74B; PDIS-75-28, -56)
Licensee References 3252, 4266
Required Operating Time: 1 year
TER Checksheet No. 30
Licensee Submittal: Pages NEB-3-021A and NEB-75-226 [1]

Equipment Item No. 31

Pressure Switches Located in the SW and NE Corner Rooms
Barton Model 288

RCIC Steam Flow Interlocks (PS-68-96)

Core Spray Interlock (PDIS-71-1A, B)

Licensee References 3252, 4266

Required Operating Time: 1 hour/1 year

TER Checksheet No. 31

Licensee Submittal: Pages NEB-68-72A and NEB-71-83 [1, 12]

Equipment Item No. 32

Level Indicator Switches Located in the Reactor Building
Barton Model 288

Reactor Water Level (LIS-3-203A, B, C, D; -208A, B, C, D)

Licensee References 3252, 4266

Required Operating Time: 1 year

TER Checksheet No. 32

Licensee Submittal: Page NEB-3-023 [1]

Equipment Item No. 33

Differential Pressure Indicating Switches Located in the SW Corner Room
Barton Model 288

Measures HPCI Steam Flow (PDIS-73-1A, B)

Licensee References 3252, 4266

Required Operating Time: 1 hour

TER Checksheet No. 33

Licensee Submittal: Page NEB-73-129 [1, 12]

Equipment Item No. 34

Motorized Valve Actuator Located in the Reactor Building
Limatorque Model SMB-00

Actuates Residual Heat Removal System Valves (FCV-74-77)

Licensee References 662, 659, 1063, 1620, 2876

Required Operating Time: 1 year

TER Checksheet No. 34

Licensee Submittal: Page NEB-74-207 [1]

Equipment Item No. 35

Motorized Valve Actuator Located in the Torus Room
Limatorque Model SMB-2

HPCI/RCIC Test Return Valve (FCV-73-36)

Licensee References 662, 659, 1063, 1620, 2876

Required Operating Time: 30 days

TER Checksheet No. 35

Licensee Submittal: Page NEB-73-168 [1, 12]

Equipment Item No. 36

Flow Transmitters Located in the HPCI Pump and Corner Rooms

GE/MAC Model Series 50-555111BDAA3AAA

Measures ECCS Flow (FT-71-36; FT-73-33)

Licensee reference not cited

Required Operating Time: 30 days/1 year

TER Checksheet No. 36

Licensee Submittal: Pages NEB-71-116; NEB-73-165 [1, 12]

Equipment Item No. 37

Motorized Valve Actuator Located Corner Room

Limitorque Model SMB: Sizes 1 and 2

Core Spray System I Test Bypass and Flow Isolation Valves (FCV-75-22, FCV-75-9)

Actuates RHRs Valves (FCV-74-1, -12, -24, -35)

Licensee References 662, 2876 1620

Required Operating Time: 1 year

TER Checksheet No. 37

Licensee Submittal: Pages NEB-74-179 [1]; NEB-75-217 and -221 [1, 12, 14]

Equipment Item No. 38

Transformer

GE, Model Not Stated

Auxiliary Power Transformer (TSLA, 1B, 1E)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 38

Licensee Submittal: Page EEB-APS-0203, Typical

Equipment Item No. 39

Terminal Block Located Outside Containment

General Electric Model CR-15182

Electrical Distribution/Wire Termination

Licensee reference not cited

Required Operating Time: Continuous

TER Checksheet No. 39

Licensee Submittal: Page EEB-01-0102, Typical [1]

Equipment Item No. 40

Pressure Transmitter Located in the Reactor Building

GE/MAC Model 551

Pressure Indication Emergency Equipment Cooling Water (PT-67-15, -16)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 40

Licensee Submittal: Pages EEB-67-1006 and -1011 [1]

Equipment Item No. 41
Pressure Solenoid Operator
Target Rock Model 1/2 SMS-A-01
Pilot Valves for Main Steam Relief Valves (PSV-1-4, -5, -19, -22, 23, -31,
-34, -41, -42)
Licensee Reference 3453
Required Operating Time: 1 year
TER Checksheet No. 41
Licensee Submittal: Page NEB-1-002 [1]

Equipment Item No. 42
Limit Switch Located Inside Containment
NAMCO Model EA740-50100
Inboard MSIV Position Indication (ZS-1-14, -26, -37, -51)
Licensee Reference 3746
Required Operating Time: 1 day
TER Checksheet No. 42
Licensee Submittal: Pages EEB-1-1004, -1007, and -1009 [1]

Equipment Item No. 43
Limit Switch Located in the Drywell
NAMCO Model EA740-50100
Outboard MSIV Position Indication (ZS-1-15, -27, -38, -52)
Licensee Reference 3746
Required Operating Time: 1 hour
TER Checksheet No. 43
Licensee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 [1]

Equipment Item No. 44
Limit Switches Located in the Reactor Building
NAMCO Model D1200G
Containment Isolation Valve Position Indication (FCV-64, -20, -21, -29,
-30, -31, -32, -34)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 44
Licensee Submittal: Pages NEB-64-045, -048, -052, -054, -056, -056A [1]

Equipment Item No. 45
Pressure Switch Located in the Reactor Building
Barton Model 289
Containment Pressure (PDIS-64-20, -21)
Licensee Reference 3252
Required Operating Time: 1 hour
TER Checksheet No. 45
Licensee Submittal: Page NEB-64-046 [1]

Equipment Item No. 46
 Flow Switches Located in the NW Corner Room
 Barton Model 289
 Monitors RCIC Flow (FS-71-36)
 Licensee Reference 3252
 Required Operating Time: 30 days
 TER Checksheet No. 46
 Licensee Submittal: Page NEB-71-115 [1]

Equipment Item No. 47
 Pressure Transmitter Located in the Reactor Building
 GE/MAC Model 552032KAAT1
 Drywell Pressure Signal (PT-64-50)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 47
 Licensee Submittal: Page NEB-64-058 [1]

Equipment Item No. 48
 Power Supply Located in the Reactor Building
 GE Model 583001AAGK1
 Supplies Pressure Transmitter Power (PX-64-54, -66; PX-71-36A)
 Licensee reference not cited
 Required Operating Time: 1 hour to 30 days
 Checksheet No. 48
 Licensee Submittal: Pages NEB-64-060 and NEB-71-98 [1, 12, 14]

Equipment Item No. 49
 Level Transmitter Located in the Torus Room
 Rosemount Model 1151 Series
 Measures Suppression Chamber Water Level (LT-64-54, -66)
 Licensee References 4660, 3476, 4143
 Required Operating Time: 1 hour to 1 year
 TER Checksheet No. 49
 Licensee Submittal: Page NEB-64-061 [1, 12]

Equipment Item No. 50
 Temperature Element Located in the Torus Room
 American Standard Models 158B7079P051 and 158B7079P001
 Measure Suppression Pool Temperature (TE-64-55A, B, C, D, E, F)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 50
 Licensee Submittal: Pages NEB-64-062 and -063 [1, 12, 14]

Equipment Item No. 51
 Pressure Switches Located in the Reactor Building
 Static-O-Ring Model 12N/AA4
 Drywell Pressure Signal: Half SCRAM, High-High (PS-64-56A through 56D,
 57A through 57D, 58A through 58D)
 Licensee Reference 4215
 Required Operating Time: 1 day to 30 days
 TER Checksheet No. 51
 Licensee Submittal: Pages NEB-64-064, -065, and -066 [1, 12]

Equipment Item No. 52
 Switches Located in Various Areas in the Reactor Building
 General Electric Model CR2940
 Circuit Control
 Licensee Reference 4662
 Required Operating Time: Not stated
 TER Checksheet No. 52
 Licensee Submittal: Pages EEB-73-0136, EEB-74-0397, EEB-75-0148, EEB-71-0253,
 EEB-01-0107, and EEB-23-0040 [1]

Equipment Item No. 53
 Switches Located in Various Areas in the Reactor Building
 Cutler Hammer Model CH-10250T
 Circuit Control
 Licensee reference not cited
 Required Operating Time: Not stated
 TER Checksheet No. 53
 Licensee Submittal: Page EEB-74-0397, Typical [1]

Equipment Item No. 54
 Pump Motor Located in the SE and SW Corner Rooms
 General Electric Model 5K6348XC23A
 Drives RHR Pumps (1A, 1B, 1C, 1D)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 54
 Licensee Submittal: Pages NEB-74-211 and -212 [1]

Equipment Item No. 55
 Temperature Switches Located in the NW Corner and HPCI Pump Rooms
 Fenwal Model 17023-6
 Area Steam Leak Detection (TS-71-2A, -B, -C, -D; TS-73-2F; TS-73-2A, C, B, D,
 E, G, H)
 Licensee References 824, 827
 Required Operating Time: 1 hour
 TER Checksheet No. 55
 Licensee Submittal: Pages NEB-71-89A; NEB-73-136, -131, and -132 [1, 12]

Equipment Item No. 56

Temperature Switches Located in the Torus Room
Fenwal Model 17023-6

Area Leak Detection (TS-71-2E through -2H, -2J through -2N, -2P, -2R, -2S;
TS-73-2J, -2L, -2N, -2R, -2K, -2M, -2P, -2S)

Licensee References 824, 827

Required Operating Time: 1 hour

TER Checksheet No. 56

Licensee Submittal: Pages NEB-71-090, -141, and -142 [1, 12]

Equipment Item No. 57

Turbine Controls Located in the NW Corner Room

Terry Turbines Type GS

Isolation Control of Pump Turbines (FCV-71-9; SC-71-10; FCV-71-10; SE-71-42A,
B; PS-71-44; TIS-71-45, -46)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 57

Licensee Submittal: Page NEB-71-101, Typical [1, 12]

Equipment Item No. 58

Pressure Switches Located in the NW Corner Room

Mercoid Model DA-7043-804

PSIC/HPCI, Turbine Exhaust Pressure Monitoring (PS-71-13A, B; PS-73-22A, B)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 58

Licensee Submittal: Pages NEB-71-106 and NEB-73-158 [1, 12]

Equipment Item No. 59

Square Root Converter Located in the Reactor Building

GE Model 565100AAAAC1

Measures Square Root RCIC Flow (FM-71-36)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 59

Licensee Submittal: Page NEB-71-114 [1]

Equipment Item No. 60

Turbine Controls Located in the HPCI Pump Room

Terry Turbines Type CCS

Controls HPCI Pump Turbine (SE-73-5; FCV-73-18; SC-73-19; FCV-73-19;
PS-73-47A, B; TIS-73-52; PDS-73-53)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 60

Licensee Submittal: Page NEB-73-173A, Typical [1]

Equipment Item No. 61
Pressure Switches Located in the HPCI Pump Room
Barksdale Model PIH-MB5SS-V
HPCI Turbine Exhaust Pressure (PS-73-20A, B, C, D)
Licensee Reference 4265
Required Operating Time: 30 days
TER Checksheet No. 61
Licensee Submittal: Page NEB-73-156 [1, 12]

Equipment Item No. 62
Level Switches Located in the Torus Room
Robertshaw Model SL-202-A2X
Suppression Pool Level (LS-73-57A, B)
Licensee reference not cited
Required Operating Time: 30 days
TER Checksheet No. 62
Licensee Submittal: Page NEB-73-176 [1, 12]

Equipment Item No. 63
Pressure Switches Located in the SW and SE Corner Rooms
Static-O-Ring Model 5N-AA3
Monitors RHR Pump Discharge Pressure (PS-74-8A, -19A, -8B, -19B, -31A, -42A, -31B, -42B)
Licensee Reference 4215
Required Operating Time: 1 year
TER Checksheet No. 63
Licensee Submittal: Pages NEB-74-180, -180A, -184, and -184A [1, 12]

Equipment Item No. 64
Differential Pressure Indication Switches Located in the NE Corner Room
Barton Model 289A
Measures RHR Flow (FIS-74-64)
Licensee References 4266, 3252
Required Operating Time: 1 year
TER Checksheet No. 64
Licensee Submittal: Page NEB-74-198 [1, 12]

Equipment Item No. 65
Flow Switch Located in the NE Corner Room
Barton Model 289
Measures Core Spray Flow (FIS-75-49)
Licensee References 3252, 4266
Required Operating Time: 1 year
TER Checksheet No. 65
Licensee Submittal: Page NEB-75-232 [1]

Equipment Item No. 66

Pump Motors Located in the NE and NW Corner Rooms

General Electric Model 5K6336XC198A

Drive Core Spray Pumps (A, B, C, D)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 66

Licensee Submittal: Pages NEB-75-238 and -238A [1, 12, 14]

Equipment Item No. 67

Pressure Switches Located in the NW Corner Room

Barksdale Model PIH-M85SSV

Measures RCIC Turbine Exhaust Pressure (PS-71-11A through D)

Licensee References 4265, 3422

Required Operating Time: 30 days

TER Checksheet No. 67

Licensee Submittal: Page NEB-71-104 [1, 12]

Equipment Item No. 68

Electrical Penetration Assembly

Physical Sciences Corp. Model PSC P/N 2022C, 2019C

Electrical Distribution

Licensee References 827, 27

Required Operating Time: Continuous

TER Checksheet No. 68

Licensee Submittal: Page EEB-01-0087, Typical [1]

Equipment Item No. 69

Solenoid Valves Located in the Torus Room

Versa Model VSG-3521

Drywell Sump Isolation Valve (FSV-77-2A, -2B, -15A, -15B)

Licensee reference not cited

Required Operating Time: 1 hour

TER Checksheet No. 69

Licensee Submittal: Page NEB-77-249 [1, 12]

Equipment Item No. 70

Switches Located in the Drywell

Cutler Hammer Model CH-10250T

Circuit Control

Licensee reference not cited

Required Operating Time: Not stated

TER Checksheet No. 70

Licensee Submittal: Page EEB-74-0400, Typical [1]

Equipment Item No. 71

Level Switches Located in the Corner Rooms

Autocon Model M-4

Floor Drain Sump Level (LS-77-8A, -8B, -17A, -17B)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 71

Licensee Submittal: Pages NEB-77-250, -251, -260, and -261 [1, 12]

Equipment Item No. 72

Terminal Block Located Inside the Drywell

General Electric Model CR-15182

Electrical Distribution/Wire Termination

Licensee reference not cited

Required Operating Time: Continuous

TER Checksheet No. 72

Licensee Submittal: Page EEB-01-0101, Typical [1]

Equipment Item No. 73

Ion Chambers Located in the Steam Tunnel

General Electric Model 237X731G001

Area Radiation Monitors (RE-90-137, 136, 138 -139)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 73

Licensee Submittal: Pages NEB-90-280, -279, -281, -282 [1, 12]

Equipment Item No. 74

Solenoid Valve Located in the Reactor Building

ASCO Model HV-200-924 Series

Containment Isolation System Valve (FSV-64-139, -140, -141)

Licensee reference not cited

Required Operating Time: 1 hour

TER Checksheet No. 74

Licensee Submittal: Pages EEB-64-1033, -1036, and -1037 [1]

Equipment Item No. 75

Motorized Valve Actuator Located in the Reactor Building

Limatorque Model SMB-5T

Actuates Residual Heat Removal Valves (FCV-74-66, -52)

Licensee References 662, 659

Required Operating Time: 1 year

TER Checksheet No. 75

Licensee Submittal: Page NEB-74-191 [14]

Equipment Item No. 76
 Level Switches Located in the Reactor Building
 Robertshaw Model SL-305-E3-X
 SCRAM Discharge Volume Level (LS-85-45A, B, C, D, E)
 Licensee reference not cited
 Required Operating Time: 1 hour
 TER Checksheet No. 76
 Licensee Submittal: Page NEB-85-276 [1, 12]

Equipment Item No. 77
 Motorized Valve Actuator Located in the Reactor Building
 Limatorque Model SMB-4
 Actuates Residual Heat Removal System Valves (FCV-74-67, -53)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 77
 Licensee Submittal: Pages NEB-74-202 and -192 [1, 12, 14]

Equipment Item No. 78
 Radiation Monitors Located in the Reactor Building Refueling Floor
 GE Model 194X927G014
 Area Radiation Monitors (RE-90-140, -141, -142, -143)
 Licensee reference not cited
 Required Operating Time: 1 year
 Checksheet No. 78
 Licensee Submittal: Pages NEB-90-283 and -284 [1, 12]

Equipment Item No. 79
 Motorized Valve Actuators Located in the High Pressure Coolant
 Injection Pump Room
 Limatorque Model SMB-4T, DC Motor, Class B Insulation
 Actuates High Pressure Coolant Injection System Valves (FCV-73-34,
 -35, -44)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 79
 Licensee Submittal: Pages NEB-73-166, -167, -167A, and -170 [1, 12, 14]

Equipment Item No. 80
 TIP System Valve Assembly Located in the Reactor Building
 GE Model 136B1302G2
 Containment Isolation (GE-7-104)
 Licensee reference not cited
 Required Operating Time: 1 hour
 TER Checksheet No. 80
 Licensee Submittal: Page NEB-NM-287 [1, 12]

Equipment Item No. 81
Motor Control Center Located in Open Area
International Switchboard Corp., Model Not Stated
Power Distribution (MOV DB 1E)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 81
Licensee Submittal: Page EEB-APS-0009 (Typical) [1]

Equipment Item No. 82
Motor Control Center Located in Open Area
GE Model 7700 Series
Power Distribution (MOV 1B, 1D, 1C)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 82
Licensee Submittal: Page EEB-APS-0007 (Typical) [1]

Equipment Item No. 83
Motor Generator Set Located in Open Area
Louis Allis Model 8-127033
LPCI M-G Set (1DN, 1DA, 1EN, 1EA)
Licensee Reference 4661
Required Operating Time: 1 year
TER Checksheet No. 83
Licensee Submittal: Page EEB-APS-0191 (Typical) [1]

Equipment Item No. 84
Solenoid Valve Located in Open Area
Target Rock Model 1/2 SMS-A-01-1
Actuates Main Steam Relief Valve (PSV-1-179, -180)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 84
Licensee Submittal: Pages EEB-1-1001 and -1002 [1]

Equipment Item No. 85
Terminal Block Located in the Drywell
GE Model EB-5
Electrical Distribution/Wire Termination
Licensee Reference 4652
Required Operating Time: Continuous
TER Checksheet No. 85
Licensee Submittal: Page EEB-01-0101 (Typical) [1]

Equipment Item No. 86
 Terminal Block Located Outside Containment
 General Electric Model EB-5
 Electrical Distribution/Wire Termination
 Licensee Reference 4652
 Required Operating Time: Continuous
 TER Checksheet No. 86
 Licensee Submittal: Page EEB-01-0102 (Typical) [1]

Equipment Item No. 87
 Penetration Assembly Located in the Drywell
 GE Series 100
 Licensee Reference 25
 Required Operating Time: Continuous
 TER Checksheet No. 87
 Licensee Submittal: Page EEB-01-0090 (Typical) [1]

Equipment Item No. 88
 Limit Switch Located in the Steam Tunnel
 NAMCO Model EA-740-50100
 Outboard MSIV Position Indication (ZS-1-15, -27, -38, -52)
 Licensee Reference 3746
 Required Operating Time: 1 day
 TER Checksheet No. 88
 Licensee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 [1]

Equipment Item No. 89
 Switches Located in the Drywell
 General Electric Model CR2940
 Circuit Control
 License Reference 4662
 Required Operating Time: Not stated
 TER Checksheet No. 89
 Licensee Submittal: Page EEB-74-0400 [1]

Equipment Item No. 90
 Limit Switch Located in the Drywell
 NAMCO Model EA-740-50100
 Inboard MSIV Position Indication (ZS-1-14, -26, -37, -51)
 Licensee Reference 3746
 Required Operating Time: 1 day
 TER Checksheet No. 90
 Licensee Submittal: Pages EB-1-1004, -1005, -1007, and -1009 [1]

Equipment Item No. 91
Flow Transmitter Located in the Reactor Building
GE/MAC Model 555
EECW Pump D Discharge Flow Indication (FT-67-12A, -12B)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 91
Licensee Submittal: Pages EEB-67-1012 and -1013 [12]

Equipment Item No. 92
Limit Switches Located in the Reactor Building
Micro Model BZE6-2RN
EECW Header Valve Position Signal (FCV-67-50, -51, -53)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 92
Licensee Submittal: Pages EEB-67-1015, -1016, and -1017 [12]

Equipment Item No. 93
Flow Switch Located in the Reactor Building
GE/MAC Model 560130AAAC1
EECW Pump D Discharge Flow (FS-67-12B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 93
Licensee Submittal: Page EEB-67-1018 [12]

Equipment Item No. 94
Pressure Transmitter Located in the SW Corner Room
Rosemount Model 1151
HPCI System Pressure Measurement (PT-73-65)
Licensee reference not cited
Required Operating Time: 30 days
TER Checksheet No. 94
Licensee Submittal: Page EEB-73-1002 [12]

Equipment Item No. 95
Motorized Valve Actuators Located in the Drywell
Limitorque Model SMB-3, AC Motor Class H Insulation
Actuates Reactor Water Recirculation Pump Isolation Valve (FCV-68-3, -79)
Licensee References 659, 1064
Required Operating Time: 1 year
TER Checksheet No. 95
Licensee Submittal: Page NEB-68-070 [1, 14]

Equipment Item No. 96
Limit Switch Located in the Torus Room
Micro Model OP-AR
RHR System Flush Vent. Valve Position Indication (FCV-74-102, -103, -119, -120)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 96
Licensee Submittal: Pages EEB-74-1005 through -1008 [12]

Equipment Item No. 97
Solenoid Valve Located in the Reactor Building
Atkomatic Model 15820-WP
Core Spray Vent Valve (FSV-75-71, -72)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 97
Licensee Submittal: Pages EEB-75-1005 and -1006 [12]

Equipment Item No. 98
Level Switch Located in the Torus Room
Robertshaw Model 351A
Radwaste Fluid Level Detection (LS-77-25F)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 98
Licensee Submittal: Page EEB-77-1002 [12]

Equipment Item No. 99
Level Switch Located in the HPCI Pump Room
Robertshaw Model 351A
Radwaste Fluid Level Detection (LS-77-25E)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 99
Licensee Submittal: Page EEB-77-1003 [12]

Equipment Item No. 100
Solenoid Valve Located in the Reactor Building
Valcor Model 526D
Drywell H₂ and O₂ Analyzer Valves (FSV-76-52, -50)
Licensee Reference 4760
Required Operating Time: 1 year
TER Checksheet No. 100
Licensee Submittal: Pages EEB-76-1022 and -1023 [12, 14]

Equipment Item No. 101

Level Switch Located in the NE and NW Corner Rooms

Robertshaw Model 351A

Radwaste Fluid Level Detection (LS-77-25A, -25B, -17A, and -17B)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 101

Licensee Submittal: Pages EEB-77-1007, -1001, [12]

Equipment Item No. 102

Level Switch Located in the SW Corner Room

Robertshaw Model 351A

Radwaste Fluid Level Detection (LS-77-25C, -25D)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 102

Licensee Submittal: Pages EEB-77-1008 and -1009 [12]

Equipment Item No. 103

Limit Switch Located in the Reactor Building

Micro Model EX-AR30

Actuates Containment Exhaust Valve (FCV-84-19, -20)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 103

Licensee Submittal: Pages EEB-84-1014 and -1015 [12]

Equipment Item No. 104

Flow Control Valve Located in the Reactor Building

RAMCON Model 25B4

Radiation Monitoring Drywell Leak Detection (FCV-90-254A, B; -257A, B; -255)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 104

Licensee Submittal: Pages EEB-90-1001, -1002, -1003, -1004 and -1005 [12]

Equipment Item No. 105

Acoustic Accelerometer Located in the Drywell

ENDEVCO Model 2273A

Safety Relief Valve Position Indication (XT-1-4, -5, -18, -19, -22, -23, -30, -31, -34, -41, -42, -179, -180)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 105

Licensee Submittal: Pages EEB-1-1011 through -1023 [12]

Equipment Item No. 106

Pump Motor Located in the NE Corner Room

General Electric Model 5K Series

Drives Reactor Building Equipment Drain Pumps (SP-A, B)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 106

Licensee Submittal: Pages MEB-77-01, -03, -04, -06 [1]

Equipment Item No. 107

Pressure Switches Located in the NE and NW Corner Rooms

Mercoid Model DA-7043-804

Core Spray Pump A and B Discharge Pressure (PS-75-7, -16, -35, -44)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 107

Licensee Submittal: Pages NEB-75-216 and -229 [1, 12]

Equipment Item No. 108

Flow Switch Located in the HPCI Room

Barton Model 289A

Monitors RHR Flow (FIS-74-50)

Licensee Reference 4266

Required Operating Time: 1 year

TER Checksheet No. 108

Licensee Submittal: Page NEB-74-188 [1, 12]

Equipment Item No. 109

Flow Switch Located in the NW Corner Room

Barton Model 289

Monitors Core Spray Flow (FIS-75-21)

Licensee Reference 4266

Required Operating Time: 1 year

TER Checksheet No. 109

Licensee Submittal: Page NEB-75-219 [1, 12]

Equipment Item No. 110

Flow Switch Located in the High Pressure Coolant Injection Room

Barton Model 289

Monitors High Pressure Coolant Injection Flow (FS-73-33)

Licensee Reference 4266

Required Operating Time: 1 year

TER Checksheet No. 110

Licensee Submittal: Page NEB-73-164 [1, 12]

Equipment Item No. 111

Solenoid Valve Located in the Reactor Building
ASCO 8000 Series

Containment Isolation Valves (FSV-67-53, -50;
FSV-64-10, -44, -45, -43, -36, -42)

Licensee reference not cited

Required Operating Time: 1 hour to 1 year

TER Checksheet No. 111

Licensee Submittal: Pages EEB-67-001, -003; EEB-64-1032, -1024, -1030, -1023,
-1024, -1013 [1]

Equipment Item No. 112

Solenoid Valve Located in the Torus Room
ASCO 8000 Series

Containment Inerting System Valves (FSV-76-38A, -38B, -43A, -42A, -42B,
-41A, -41B, -37A, -37B, -39A, -39B, -40A, and -40B), Main Steam Isolation
Valve (Plant I.D. Not Stated), Control Rod Drive System Solenoid Valve
(FSV-85-70A, B)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 112

Licensee Submittal: Pages EEB-76-1014, -1015, -1016, -1017, -1018, -1019,
-1020, -1026, -1021, -1027, -1028, -1029, -1030; NEB-1-002A; EEB-85-1001,
-1002 [1]

Equipment Item No. 113

Solenoid Valve Located in the Reactor Building
ASCO Model HB830081F

Containment Isolation Valve Pilot (FSV-64-32)

Licensee Reference 712

Required Operating Time: 1 hour

TER Checksheet No. 113

Licensee Submittal: Page NEB-64-053A [1]

Equipment Item No. 114

Solenoid Valve Located in the Drywell

ASCO Model X8300B61F

Sampling System Isolation Valve (FSV-43-13)

Licensee Reference 806

Required Operating Time: 1 hour

TER Checksheet No. 114

Licensee Submittal: Page NEB-43-030 [1, 12]

Equipment Item No. 115

Solenoid Valve Located in the Reactor Building

ASCO Model HVA-90-405-2A

Control Rod Drive System Solenoids (FSV-85-37A, -37B, -39A, -39B)

Licensee References 4673, 4674

Required Operating Time: 1 hour

TER Checksheet No. 115

Licensee Submittal: Pages NEB-85-268 and -274 [1, 12]

Equipment Item No. 116
Solenoid Valve Located in the Reactor Building
ASCO Model X8300-B61F
Sampling System Isolation Valves (FSV-43-14)
Licensee Reference 806
Required Operating Time: 1 day
TER Checksheet No. 116
Licensee Submittal: Page NEB-43-032 [1, 12, 14]

Equipment Item No. 117
Solenoid Valve Located in the Torus Room
ASCO Model 8300C61U
RHR Vent Valves (FSV-74-119, -120, -102, -103)
Licensee reference not cited
Required Operating Time: 1 hour, 1 year
TER Checksheet No. 117
Licensee Submittal: Pages EEB-74-1004, -1003, -1002, and -1001 [1]

Equipment Item No. 118
Solenoid Valve Located in the Reactor Building
ASCO Model No. HT8211C94
Acuates Drywell or Suppression Chamber Exhaust Valve (FSV-84-20)
Licensee reference not cited
Required Operating Time: 1 year
Checksheet No. 118
Licensee Submittal: Page EEB-84-1006 [1]

Equipment Item No. 119
Solenoid Valve Located in the Reactor Building
ASCO Model 8300 Series
Containment Purge Makeup Isolation Valves (FSV-76-17, -18, -19, -24)
Licensee Reference 806
Required Operating Time: 1 day
TER Checksheet No. 119
Licensee Submittal: Pages NEB-76-240, -241 and -242 [1, 12, 14]

Equipment Item No. 120
Solenoid Valve Located in the NE Corner Room
ASCO Model 8300 Series
Containment Isolation Reactor Building Sump Pump (FSV-77-17)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 120
Licensee Submittal: Page EEB-77-1004 [1]

Equipment Item No. 121
Solenoid Valve Located in the Reactor Building
ASCO Model WPLBX831636
CRD Backup SCRAM Pilot Valve B (FSV-85-35A, -35B))
Licensee Reference 712
Required Operating Time: 1 hour
TER Checksheet No. 121
Licensee Submittal: Page NEB-85-267 [1, 12]

Equipment Item No. 122
Solenoid Valve Located in the Reactor Building
ASCO Model WPHTX 8300B45F
Containment Isolation (FSV-64-17, -18, -19, -20, -21, -29, -30, -31, -32, -33, -34)
Licensee Reference 806
Required Operating Time: 1 hour
TER Checksheet No. 122
Licensee Submittal: Pages NEB-64-039, -040, -047, and -053 [1, 12, 14]

Equipment Item No. 123
Solenoid Valve Located in the NW Corner Room
ASCO Model HTX8300C61U
Core Spray Cooling System Isolation Valve (FSV-75-57)
Licensee reference not cited
Required Operating Time: 1 day
TER Checksheet No. 123
Licensee Submittal: Page EEB-75-1001 [1]

Equipment Item No. 124
Solenoid Valve Located in the NW Corner Room
ASCO Model HTX8300B61U
RCIC Steam Line Isolation (FSV-71-6A, -6B)
Licensee reference not cited
Required Operating Time: 30 days
TER Checksheet No. 124
Licensee Submittal: Pages EEB-71-1001 and -1002 [1]

Equipment Item No. 125
Motorized Valve Actuator Located in the RCIC Pump Room
Limatorque Model SMB-0, DC Motor, Class B Insulation
RCIC Steam Supply Valve (FCV-71-8)
Licensee References 662, 659, 1063, 1620, 2876
Required Operating Time: 30 days
TER Checksheet No. 125
Licensee Submittal: Page NEB-71-100 [1, 12]

Equipment Item No. 126

Motorized Valve Actuators Located in the NE and NW Core Spray Pump Rooms

Limitorque Model SMB-0

Core Spray Pumps "A" and "B" Suction Valves (FCV-75-2, -11, -30, -39)

Licensee References 662, 1620, 2876

Required Operating Time: 1 year

TER Checksheet No. 126

Licensee Submittal: Pages NEB-75-214 and -227 [1, 12, 14]

Equipment Item No. 127

Motorized Valve Actuator Located in the SE Corner Room

Limitorque Model SMB-0

RHR Pump B (FCV-74-25); RHR Pump D (FCV-74-36)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 127

Licensee Submittal: Page MEB-74-01 [1, 12]

Equipment Item No. 128

Motorized Valve Actuators Located in the SW Corner Room

Limitorque Model SMB-0

RHR Pump "A" and "C" Shutdown Cooling (FCV-74-2, -13)

Licensee Reference 662

Required Operating Time: 1 year

Checksheet No. 128

Licensee Submittal: Page MEB-74-01 [1, 12]

Equipment Item No. 129

Motorized Valve Actuator Located Within the Drywell

Limitorque Model SMB-0

Containment Isolation (FCV-69-1)

Licensee References 1620, 1064

Required Operating Time: 1 hour

TER Checksheet No. 129

Licensee Submittal: Page NEB-69-73A [1, 12, 14]

Equipment Item No. 130.

Motorized Valve Actuator Located in the HPCI Pump Room

Limitorque Model SMB-0, DC Motor, Class B Insulation

HPCI Suppression Pool Suction (FCV-73-27); HPCI, CST Suction (FCV-73-40);

HPCI Main Pump (FCV-73-30)

Licensee References 1620, 2876, 662, 1063, 659

Required Operating Time: 30 days

TER Checksheet No. 130

Licensee Submittal: Pages MEB-73-161, -169; MEB-73-02 [1, 12]

Equipment Item No. 131
Motorized Valve Actuator Located in the Reactor Building
Limitorque Model SMB-0
Actuates Reactor Water Cleanup Valves (FCV-69-2)
Licensee References 659, 662, 1063, 1620, 2876
Required Operating Time: 1 day
TER Checksheet No. 131
Licensee Submittal: Page NEB-69-074 [1]

Equipment Item No. 132
Motorized Valve Actuator Located in the Torus Room.
Limitorque Model SMB-00
RHR System Suppression Pool Valve (FCV-74-58, -72); RBCCW Discharge
Header Outlet Valve (FCV-70-47)
Licensee References 1620, 1064
Required Operating Time: 1 year
TER Checksheet No. 132
Licensee Submittal: Pages NEB-70-82 and NEB-74-194 [1, 12, 14]

Equipment Item No. 133
Motorized Valve Actuator Located in the Steam Tunnel
Limitorque Model SMB-00 Class B Insulation
RCIC Steam Line Isolation (FCV-71-3)
Licensee References 662, 659, 1063, 1620, 2876
Required Operating Time: 30 days
TER Checksheet No. 133
Licensee Submittal: Page NEB-71-96 [1, 12]

Equipment Item No. 134
Motorized Valve Actuator Located in the NW Corner Room
Limitorque Model SMB-00, DC Motor, Class B Insulation
RCIC Suppression Pool Suction (FCV-71-17, -18); RCIC CST Suction (FCV-71-19)
Licensee References 662, 659, 1063, 1620, 2876
Required Operating Time: 30 days
TER Checksheet No. 134
Licensee Submittal: Pages NEB-71-107, -108, and -109 [1, 12]

Equipment Item No. 135
Motorized Valve Actuator Located in the Corner Rooms
Limitorque Model SMB-00
Actuates Core Spray and Residual Heat Removal Valves (FCV-74-30, -96,
-97, -98, -99; FCV-75-9, -37)
Licensee References 659, 2876, 662
Required Operating Time: 1 year
TER Checksheet No. 135
Licensee Submittal: Pages MEB-74-01; NEB-75-217 and -230 [1, 12, 14]

Equipment Item No. 136
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-00
 Actuates Residual Heat Removal Valves (FCV-74-78)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 136
 Licensee Submittal: Page NEB-74-208 [1, 14]

Equipment Item No. 137
 Motorized Valve Actuator Located Inside the Drywell
 Limitorque Model SMB-00
 Actuates Reactor Core Isolation Cooling Systems Valves (FCV-71-2)
 Licensee References 1620, 1064, 659
 Required Operating Time: 30 days
 TER Checksheet No. 137
 Licensee Submittal: Page NEB-71-85 [1, 14]

Equipment Item No. 138
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Models SMB; Sizes 00 and 2
 Actuates Residual Heat Removal System Valves (FCV-74-2, -7, -13, -25, -30, -36, -98, -99, -101; FCV-74-60, -61; FCV-23-34, -40, -46, -52)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 138
 Licensee Submittal: Pages NEB-74-197A, -196; NEB-23-026; NEB-23-024;
 MEB-74-01 [1, 14]

Equipment Item No. 139
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-000
 Actuates Steam Drain Isolation Valves (FCV-1-55)
 Licensee References 1620, 1064
 Required Operating Time: 1 hour
 TER Checksheet No. 139
 Licensee Submittal: Page NEB-1-012 [14]

Equipment Item No. 140
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-000
 Actuates Residual Heat Removal System Valves (FCV-74-7)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 140
 Licensee Submittal: Page MEB-74-01 [12]

Equipment Item No. 141

Motorized Valve Actuators Located in the NW Corner Room

Limitorque Model SMB-000

Actuates Reactor Core Isolation Cooling System Valves (FCV-71-25, -34)

Licensee Reference 662

Required Operating Time: 30 days

TER Checksheet No. 141

Licensee Submittal: Page MEB-71-02 [12]

Equipment Item No. 142

Motorized Valve Actuator Located in the Steam Tunnel

Limitorque Model SMB-000, DC Motor, Class B Insulation

Actuates Steam Drain Isolation Valves (FCV-1-56)

Licensee References 662, 659, 1063, 1620, 2876

Required Operating Time: 1 day

TER Checksheet No. 142

Licensee Submittal: Page NEB-1-013 [12]

Equipment Item No. 143

Motorized Valve Actuator Located in the Drywell

Limitorque Model SMB-000

Actuates Emergency Core Cooling System Valves (FCV-67-18, -22, -26)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 143

Licensee Submittal: Page MEB-67-02 [14]

Equipment Item No. 144

Motorized Valve Actuator Located in the Reactor Building

Limitorque Model SMB-000

Actuates Emergency Core Cooling System Valves (FCV-67-17, -21, -25)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 144

Licensee Submittal: Page MEB-67-01 [14]

Equipment Item No. 145.

Motorized Valve Actuator Located in the NW Corner Room

Limitorque Model SMB-1, DC Motor, Class B Insulation

Actuates Reactor Core Isolation Cooling Valves (FCV-71-37, -38, -39)

Licensee References 662, 659, 1063, 1620, 2876

Required Operating Time: 30 days

TER Checksheet No. 145

Licensee Submittal: Pages NEB-71-117, -118, and -119 [1, 12]

Equipment Item No. 146
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-1
 Actuates Residual Heat Removal System Valves (FCV-74-1, -12, -24, -35)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 146
 Licensee Submittal: Page NEB-74-179B [1, 14]

Equipment Item No. 147
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-2
 HPCI Steam Line Isolation Valve (FCV-73-2)
 Licensee References 659, 1064, 1020
 Required Operating Time: 30 days
 TER Checksheet No. 147
 Licensee Submittal: Page NEB-73-130 [1, 12, 14]

Equipment Item No. 148
 Motorized Valve Actuator Located in the HPCI Pump Room
 Limitorque Model SMB-2, DC Motor, Class B Insulation
 HPCI Steam Supply Valve (FCV-73-16)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 Checksheet No. 148
 Licensee Submittal: Page NEB-73-149 [1, 12, 14]

Equipment Item No. 149
 Motorized Valve Actuator Located in the NE Corner Room
 Limitorque Model SMB-2
 Core Spray System II Test Bypass Valve (FCV-75-50)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 149
 Licensee Submittal: Page NEB-75-234 [1, 12, 14]

Equipment Item No. 150
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-2, DC Motor, Class B Insulation
 HPCI Steam Line Valve (FCV-73-3)
 Licensee References 662, 2876, 1620, 1063, 659
 Required Operating Time: 30 days
 TER Checksheet No. 150
 Licensee Submittal: Page NEB-73-147 [1]

Equipment Item No. 151

Motorized Valve Actuator Located in the Torus Room

Limitorque Model SMB-2

RHR Suppression Pool Valve (FCV-74-71); RHR System I (FCV-74-57);

RHR System I Test Valves (FCV-74-59, -73)

Licensee References 1620, 1064

Required Operating Time: 1 year

TER Checksheet No. 151

Licensee Submittal: Pages NEB-74-193, -195, and -204 [1, 12, 14]

Equipment Item No. 152

Motorized Valve Actuators Located in the Reactor Building

Limitorque Model SMB-2

Core Spray Discharge Control Valves (FCV-75-23, -25, -73, -75)

Licensee References 662, 659

Required Operating Time: 1 year

TER Checksheet No. 152

Licensee Submittal: Pages NEB-75-222, -224, -235, and -237 [1, 12, 14]

Equipment Item No. 153

Motorized Valve Actuators Located in the Reactor Building

Limitorque Model SMB-2

Containment Isolation (FCV-74-74, -75)

Licensee References 662, 659

Required Operating Time: 1 year

TER Checksheet No. 153

Licensee Submittal: Pages NEB-74-205A and -206B [1, 12, 14]

Equipment Item No. 154

Cable

(COAX, TRIAX, signal XLPE)

Times Wire & Cable, Brand Rex 936,

Boston Insulated Wire, Okonite, Dearborn Wire, Alpha Wire, Belden, Consolidated, Rockbestos, Anaconda 17

Cable

(CP, CPO, CPJS, PXJ)

Sumitomo Shoji, Plastic Wire & Cable, Collyer, Okonite, Triangle Conduit & Cable, Rome, Essex, PWC, Simplex, General Cable, Rockbestos

Cable

(PNN, PJJ, PN, PJ)

Plastic Wire & Cable, Brand Rex 936, Rome, Cyprus, American Insulated Wire, General Cable, Tamaqua, PWC

Various Licensee References

Required Operating Time: Continuous

TER Checksheet No. 154

Licensee Submittal: Page EEB-68-0016, Typical [1, 12, 14]

Equipment Item No. 155
 Electrical Cable Located in the Drywell
 Anaconda, Silicone Rubber Insulation
 Low Voltage Power and Control Cable
 Licensee Reference 17
 Required Operating Time: Continuous
 TER Checksheet No. 155
 Licensee Submittal: Page EEB-68-0016, Typical [1]

Equipment Item No. 156
 Pressure Switches Located in the NW Corner and HPCI Pump Rooms
 Static-O-Ring Model 6N-AA21
 Monitors HPCI and RCIC Pumps Suction Pressure (PS-71-21-1; PS-73-29-1)
 Licensee Reference 4215
 Required Operating Time: 30 days
 TER Checksheet No. 156
 Licensee Submittal: Pages NEB-71-112 and NEB-73-162 [1]

Equipment Item No. 157
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-00
 RCIC/HPCI Turbine Exhaust Vacuum Relief Line Isolation (FCV-71-59)
 Licensee References 662, 2876, 1620
 Required Operating Time: 30 days
 Checksheet No. 157
 Licensee Submittal: Page NEB-71-126 [1, 12, 14]

Equipment Item No. 158
 Motorized Valve Actuators Located in the RWCU Heat Exchange Room
 Limitorque Model SMB-0
 Containment Isolation (FCV-69-2)
 Licensee References 662, 659, 1063, 1620, 2876
 Required Operating Time: 1 year
 TER Checksheet No. 158
 Licensee Submittal: Page NEB-69-74 [1, 12]

Equipment Item No. 159
 Solenoid Valves Located in the Reactor Building
 Atkomatic Model 15830WP-VPI
 RHR Service Water (FSV-23-56)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 159
 Licensee Submittal: Page EEB-23-1001 [1]

Equipment Item No. 160
Penetration Assembly
GE Model NS04
Electrical Distribution
Licensee References 25, 812
Required Operating Time: Continuous
TER Checksheet No. 160
Licensee Submittal: Page EEB-76-0024 [1]

Equipment Item No. 161
Motorized Valve Actuators Located in the SW Corner Room
Limatorque Model SMB-0, DC Motor Class B Insulation
HPCI Suppression Pool Suction Valve (FCV-73-26)
Licensee References 662, 1620, 2876, 1063, 659
Required Operating Time: 1 year
TER Checksheet No. 161
Licensee Submittal: Page NEB-73-160 [1, 12, 14]

APPENDIX C - PLANT SAFETY-RELATED SYSTEMS AND DISPLAY INSTRUMENTATION

C.1 LIST OF SAFETY-RELATED SYSTEMS

In accordance with IE Bulletin 79-01B or NUREG-0588, the Licensee was required to (1) establish a list of systems and equipment required to mitigate the consequences of a loss-of-coolant accident (LOCA) and a high energy line break (HELB) and (2) identify components needed to perform the functions of safety-related display information, post-accident sampling and monitoring, and radiation monitoring.

The list of safety-related systems provided by the Licensee was reviewed by the NRC staff against a staff-developed master list. The NRC staff had developed a generic master list based upon a review of plant safety analyses and emergency procedures. The systems list was established on the basis of functions that must be performed for accident mitigation (without regard to location of equipment relative to hostile environments). The instrumentation selected included that needed to monitor overall plant performance as well as to monitor the performance of systems on the list.

Based upon information in the Licensee's submittal, the equipment location references, and in some cases conversations with the Licensee, the NRC staff verified that the systems included in the Licensee's submittal were those required to achieve or support: (1) emergency reactor shutdown, (2) containment isolation, (3) reactor core cooling, (4) containment heat removal, (5) core residual heat removal, and (6) prevention of significant release of radioactive material to the surrounding environment. With the exception of items deferred for later review (cold-shutdown equipment and TMI Lessons-Learned modifications), the staff concluded that the systems identified by the Licensee were acceptable. The list of systems identified by the Licensee and accepted by the NRC staff is presented in this appendix.

<u>Function</u>	<u>System¹</u>
Emergency Reactor Shutdown	Engineered Safeguards Actuation Reactor Protection Standby Liquid Control Control Rod Drive
Containment Isolation	Main Steam Feedwater Control Air Sampling Reactor Recirculation Reactor Water Cleanup Reactor Building Closed Cooling Water Reactor Core Isolation Cooling Residual Heat Removal Core Spray Containment Inerting Radwaste Containment Air Dilution Primary Containment
Reactor Core Cooling	High Pressure Coolant Injection Low Pressure Coolant Injection (RHR) Core Spray Automatic Depressurization Reactor Core Isolation Cooling
Containment Heat Removal	Residual Heat Removal Emergency Equipment Cooling Water
Core Residual Heat Removal	Main Steam Residual Heat Removal Reactor Core Isolation Cooling Residual Heat Removal Cooling Water

¹The NRC staff recognized that there are differences in nomenclature of systems because of plant vintage and engineering design; consequently, some systems performing identical or similar functions may have different names. In those instances it was necessary to verify the system(s) function with the responsible IE regional reviewer and/or the Licensee.

Function

System¹

Core Residual Heat Removal

Reactor Building Closed Cooling
Water
Raw Cooling Water

Prevention of Significant Release
of Radioactive Material to Environment

Standby Gas Treatment
Containment Air Dilution
Radwaste
Reactor Water Cleanup
Radiation Monitoring
Neutron Monitoring
Containment Inerting
Sampling

Supporting Systems

Auxiliary Power
Air Conditioning
Ventilating
Fuel Oil

G.2 SAFETY-RELATED INSTRUMENTATION

In Section 3.1 of the NRC SER dated June 3, 1981 [13], the NRC made the following statement:

"Display instrumentation which provides information for the reactor operators to aid them in the safe handling of the plant was not specifically identified by the licensee. A complete list of all display instrumentation mentioned in the LOCA and HELB emergency procedures must be provided. Equipment qualification information in the form of summary sheets should be provided for all components of the display instrumentation exposed to harsh environments. Instrumentation which is not considered to be safety related but which is mentioned in the emergency procedure should appear on the list. For these instruments, (1) justification should be provided for not considering the instrument safety related and (2) assurance should be provided that its subsequent failure will not mislead the operator or adversely affect the mitigation of the consequences of the accident. The environmental qualification of post-accident sampling and monitoring and radiation monitoring equipment is closely related to the review of the TMI Lessons-Learned modifications and will be performed in conjunction with that review."

In Reference 14, the Licensee provided the following response:

A listing of display instrumentation, located in the harsh environment, which provides information for the reactor operators to aid them in the safe handling of the plant, is given below. The parameters selected were based on a review of present emergency operating instructions and the new symptomatic emergency instructions. Also included is the number of the Evaluation Work Sheet (EWS) associated with each device.

COMPONENTS OF DISPLAY INSTRUMENTATION LOCATED IN HARSH ENVIRONMENTS

<u>Monitored Parameter</u>	<u>Instrument</u>	<u>E.W.S Number</u>
Reactor Water Level	LITS-3-46A	NEB-3-016
	LITS-3-46B	NEB-3-016
	LITS-3-52	NEB-3-24
	LITS-3-62	NEB-3-24
Reactor Pressure	PT-3-22A	NEB-3-015
	PT-3-22B	NEB-3-015
	PT-3-22C	NEB-3-015
	PT-3-22D	NEB-3-015
	PT-3-54	
	PT-3-64	

Drywell Pressure

PT-64-50
 PT-64-67
 PT-64-160A
 PT-64-160B

NEB-64-058
 NEB-64-068
 *
 *

Drywell Temperature

TE-64-52A
 TE-64-52C

EEB-64-1039
 EEB-64-1040

Torus Water Temperature

TE-64-55A
 TE-64-55B
 TE-64-55C
 TE-64-55D

NEB-64-062
 NEB-64-062
 NEB-64-062
 NEB-64-062

Torus Water Level

LT-64-54
 PX-64-54
 LT-64-66
 PX-64-66
 LT-64-159A
 LT-64-159B

NEB-64-061
 NEB-64-060
 NEB-64-067
 NEB-64-060
 *
 *

Torus Pressure

PT-64-51

NEB-64-059

Conclusion

It is considered that the Licensee has provided a satisfactory response to the concern of the SER regarding safety-related display instruments.

*These instruments are not presently installed."



APPENDIX D - REVIEW OF LICENSEE'S RESPONSE TO NRC EEQ
SER CONCERNING JUSTIFICATION FOR INTERIM OPERATION

1. BACKGROUND

The NRC Safety Evaluation Report (SER) concerning equipment environmental qualification (EEQ) states [13]:

"Subsection 4.2 identified deficiencies that must be resolved to establish the qualification of the equipment; the staff requires that the information lacking in this category be provided within 90 days of receipt of this SER. Within this period, the licensee should either provide documentation of the missing qualification information which demonstrates that such equipment meets the DOR guidelines or NUREG-0588 or commit to a corrective action (requalification, replacement, relocation, and so forth) consistent with the requirements to establish qualification by June 30, 1982. If the latter option is chosen, the licensee must provide justification for operation until such corrective action is complete."

On January 19, 1982, FRC representatives met with NRC Division of Licensing personnel at NRC offices to discuss the potential for FRC to assist the staff in the technical review of licensees' statements regarding justification for interim plant operation submitted in response to outstanding qualification deficiencies in the NRC EEQ SERs. The results of the meeting were as follows: (1) FRC was requested to proceed immediately with the technical review of licensees' justification for interim operation, (2) the format was established, and (3) the criteria for the review were established. These criteria are presented in Section 2 of this appendix.

On January 21, 1982, the NRC provided the following modification to Final Assignment 13 concerning this subject:

"The FRC review will consist of:

- o Review the licensee's justification of interim operation and provide FRC independent analysis which shows whether or not licensee provided technically sound rationale as a basis for justification for continued plant operation.

- o On January 27, 1982, FRC shall provide a list of those power reactors that have provided technically sound justification for continued operation. FRC shall also provide a list of those power reactors which have not provided technically sound justification for continued operation. In addition to the lists, FRC may provide any additional information which in FRC's judgment is necessary to support the conclusions regarding justification for continued operation."

On January 25, 1982, the NRC was provided with the completed review of the licensees' statements presented as a basis for justification for interim operation in response to the NRC EEQ SER.* On February 5, 1982, at the NRC's request, the NRC was provided with actual examples of licensees' responses to the NRC EEQ SER that provide adequate rationale as a basis for justification for interim operation.**

2. GENERAL DISCUSSION

In general, licensee-submitted justifications for interim operation are based on systems considerations, equipment operability evaluations, or failure-modes-and-effects analyses.

Systems considerations often involve the availability of backup equipment capable of performing the particular safety function of concern. The backup equipment is either environmentally qualified, unqualified but not exposed to a harsh environment at the same time as the primary equipment, or located so that it is unlikely that both the primary and backup equipment would be simultaneously exposed to a severe environment. In general, these systems discussions should consider (1) the possibility of a single-active failure

* C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of FRC Review of Licensees' Responses to NRC EEQ SER Concerning Justification for Interim Operation
FRC, 25-Jan-82

** C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of Actual Examples of Licensees' Responses to NRC EEQ SER Which Provide Adequate Rationale as a Basis for Justification of Interim Operation
FRC, 5-Feb-82

Qualifying the backup equipment, (2) any major differences in the characteristics of the primary and backup equipment (unless it is obvious that the equipment is essentially identical), (3) the possibility of electrical failure of the primary equipment causing an adverse effect on other safety-related equipment or power supplies, and (4) in the case of display instrumentation, the possibility of an operator being misled by the failed primary equipment. Where equipment has not been demonstrated to be qualified, some justifications discuss administrative procedures or revised operating procedures in effect. Depending upon the specific equipment involved, each of the above considerations need not be discussed in every instance, but, in general, a complete systems discussion would consider the above points.

Where equipment qualification evaluations were used, licensees generally (1) received additional information from manufacturers, (2) applied engineering judgment, (3) performed material analysis, and/or (4) used partial test data in support of the original qualification documentation. Where these evaluations were performed, the licensees determined that, although full qualification was not documented, there was sufficient evidence to suggest that the equipment would perform its intended safety function, thereby justifying interim operation until qualified equipment is installed.

Some licensees provided detailed failure-modes-and-effects analyses of electrical circuitry to demonstrate that, under all identified failure modes, the safety function of the equipment could still be accomplished.

Other justifications involved a combination of qualification information and systems information. For example, if a licensee has qualification information (such as a generic test report or other partial qualification documentation) that tends to confirm the ability of the equipment to remain operable for a specified period of time, justification for interim operation often was based upon a discussion of the required safety function being performed prior to the potential failure. This type of discussion often applies to equipment which performs a short-term trip or isolation function in the early stages of an accident.

3. PLANT-SPECIFIC REVIEW

As a result of the review, this plant was evaluated and the results documented on the "Summary of Review of Licensee's 90-Day Response" form reproduced below:

"EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)
Review of Licensees' Resolution of Outstanding Issues
From NRC Equipment Environmental Qualification
Safety Evaluation Reports

SUMMARY OF REVIEW OF LICENSEE 90-DAY RESPONSE

Utility: Tennessee Valley Authority
Plant Name: Browns Ferry Unit 1
NRC Docket No. 50-259
NRC TAC No. 42-481
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469

References:

- a. L. M. Mills
Letter to H. R. Denton (NRC)
Subject: Response to Safety Evaluation Report for the Environmental Qualification of Safety-Related Electrical Equipment at Browns Ferry Plant
Tennessee Valley Authority, September 29, 1981
- b. Office of Nuclear Reactor Regulation
Safety Evaluation Report for Browns Ferry Units 1, 2, and 3
Environmental Qualification of Safety-Related Electrical Equipment
NRC, June 3, 1981
- c. L. M. Mills
Letter to J. P. O'Reilly (NRC)
Subject: Revisions and Updates to Response to IE Bulletin 79-01B, dated October 31, 1980
Tennessee Valley Authority, March 3, 1981

The Licensee has submitted technical information in Reference a in response to the NRC SER [b] on environmental qualification. FRC has reviewed these documents [a, b, c]. As a result of this review, FRC concludes that the Licensee has stated that the equipment items are environmentally qualified; or has provided a technically sound rationale as a basis for justification for continued plant operation; or has provided a technically sound rationale or other additional information which in FRC's judgment provides a basis for justification for continued operation; with the following exceptions:

<u>Equipment Item</u>	<u>Equipment Description/ Function</u>	<u>SCEW Sheet No.</u>	<u>Status Code</u>	<u>Basis for Deficiency</u>
-----------------------	--	-----------------------	--------------------	-----------------------------

None

The Licensee's response to the SER addressed and provided resolution of deficiencies identified in the SER and provided adequate rationale as a basis for justification for interim operation. However, schedules for corrective actions have not been provided for most of the equipment."



APPENDIX E - REQUEST FOR ADDITIONAL INFORMATION

This appendix contains the Request for Additional Information (RAI) that was developed during the course of the review and issued to the NRC for forwarding to the Licensee. The RAI was revised throughout the review to reflect the Licensee's response(s) to the initial RAI.

The reader is cautioned that the numbers in brackets refer to citations found in the list of references at the end of this appendix and not to the citations listed in Section 6, References, of the TER.

REQUEST FOR ADDITIONAL INFORMATION

EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)
REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES
FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY
EVALUATION REPORTS (SER) AND TMI ACTION PLAN INSTALLED EQUIPMENT

Tennessee Valley Authority
Browns Ferry Unit 1

NRC Docket No. 50-259

November 19, 1981

NRC TAC No. 42481

Rev. 1, April 7, 1982
Rev. 2, May 20, 1982

BACKGROUND

Franklin Research Center (FRC) of Philadelphia, Pa. is providing assistance to the U.S. Nuclear Regulatory Commission (NRC) for the equipment environmental qualification (EEQ) review of operating reactors. FRC will perform an EEQ review of the Licensee's 90-day response to outstanding issues from the NRC Equipment Environmental Qualification Safety Evaluation Report (SER) and the installed TMI Action Plan equipment. The review will be limited to safety-related equipment potentially exposed to a harsh environment. The results will be presented in the form of a technical evaluation report for each plant.

This request for additional information (RAI) is the result of an evaluation of the information provided by letters dated March 3, 1981 [1] and September 29, 1981 [2].* FRC previously requested TMI Action Plan information by a telephone memorandum dated October 7, 1981 [3].

By letter dated March 4, 1982 [6], the Licensee stated that non-proprietary documents will be transmitted by April 8, 1982 and proprietary documents will be forwarded by May 10, 1982 if a release can be obtained. (1)**

On April 6, 1982 [7], the Licensee transmitted the qualification documents requested. (2)

A. FRC REVIEW OF THE LICENSEE'S 90-DAY RESPONSE TO THE NRC EEQ SER

INFORMATION REQUESTED

DATE RECEIVED BY FRC***

1. In reference to the Licensee's 90-day response [2] to the NRC SER [4], a legible single copy of each of the following qualification documents is requested in order that the FRC evaluation may proceed:

*Numbers in brackets refer to citations found in the list of references.

**Throughout the text, superscript numbers in parentheses indicate the revision in which the underlined material preceding the superscript was added.

This column will be completed by FRC as the requested information is received.

DATE RECEIVED BY FRC**

- | | |
|---|------------------------|
| 1. TVA Engineering Report 1943. | <u>4/13/82</u> [7] (2) |
| 2. Wyle Lab Report 43854-1. | <u>4/13/82</u> [7] (2) |
| 3. TVA Engineering Report 1946. | <u>4/13/82</u> [7] (2) |
| 4. TVA Engineering Report 1944. | <u>4/13/82</u> [7] (2) |
| 5. Parkinson and Sisman, October 1970. | <u>4/13/82</u> [7] (2) |
| 6. Anaconda-Continental Test Report No. 79117. | <u>4/13/82</u> [7] (2) |
| 7. TVA Engineering Report 1942. | <u>4/13/82</u> [7] (2) |
| 8. TVA Engineering Report 1928. | <u>4/13/82</u> [7] (2) |
| 9. TVA Engineering Report 1923. | <u>4/13/82</u> [7] (2) |
| 10. TVA Engineering Report 1945. | <u>4/13/82</u> [7] (2) |
| 11. TVA Engineering Report 1947. | <u>4/13/82</u> [7] (2) |
| 12. TVA Engineering Report 1950A. | <u>4/13/82</u> [7] (2) |
| 13. TVA Engineering Report 1950B. | <u>4/13/82</u> [7] (2) |
| 14. Deleted (same as 2) (1) | |
| 15. TVA Engineering Report 1926. | <u>4/13/82</u> [7] (2) |
| 16. TVA Engineering Report 1921. | <u>4/13/82</u> [7] (2) |
| 17. GE Letter, February 3, 1978 to H. J. Green. | <u>4/13/82</u> [7] (2) |
| 18. BWR Owners Group Report 081-A-01, September 23, 1980. | <u>4/13/82</u> [7] (2) |
| 19. Target Rock Report 1827A, November 4, 1976. | <u>4/13/82</u> [7] (2) |
| 20. NMC Test Report NMC-PT-7630 Rev. 0. | <u>4/13/82</u> [7] (2) |
| 21. NMC Drawing 0082445 Rev. D, February 9, 1978. | <u>4/13/82</u> [7] (2) |

DATE RECEIVED BY FRC***

- | | |
|---|------------------------|
| 22. Target Rock Test Report 2199A. | <u>4/13/82</u> [7] (2) |
| 23. Fenwal Engineering Report 6350. | <u>4/13/82</u> [7] (2) |
| 24. Wyle Lab Report QSR-018-A012. | <u>4/13/82</u> [7] (2) |
| 25. Barksdale Qualification Procedure 9993. | <u>4/13/82</u> [7] (2) |
| 26. Barton Engineering Report R3288A-1. | <u>4/13/82</u> [7] (2) |
| 27. Wyle Summary Report QSR-027-A-02. | <u>4/13/82</u> [7] (2) |
| 28. Conax Test Report TR-39. | <u>Deleted</u> [7] (2) |
| 29. Wyle Summary Report QSR-146-A-01. | <u>Deleted</u> [7] (2) |
| 30. <u>Deleted (same as 26)</u> (1) | |
| 31. Wyle Summary Report QSR-029-A-01. | <u>Deleted</u> [7] (2) |
| 32. Wyle Summary Report E12-3. | <u>Deleted</u> [7] (2) |
| 33. Wyle Summary Report E12-N010. | <u>Deleted</u> [7] (2) |
| 34. Rosemount Test Report 37327B. | <u>4/13/82</u> [7] (2) |
| 35. Rosemount Test Report 127227. | <u>4/13/82</u> [7] (2) |
| 36. Wyle Report QSR-048-A-01. | <u>4/13/82</u> [7] (2) |
| 37. Louis Allis Document S40EJ4-099-630,
October 10, 1979. | <u>4/13/82</u> [7] (2) |
| 38. TVA Engineering Report 1927. | <u>4/13/82</u> [7] (2) |
| 39. Wyle Lab Report QSR-002-A-02. | <u>4/13/82</u> [7] (2) |
| 40. Rotork Report, "A" Range Nuclear
Qualification. | <u>4/13/82</u> [7] (2) |
| 41. Wyle Lab Report QSR-040-A-01. | <u>4/13/82</u> [7] (2) |
| 42. <u>Deleted (same as 2)</u> (1) | |
| 43. <u>Deleted (same as 27)</u> (1) | |

DATE RECEIVED BY FRC**

44. Insulation Class for All Limitorque Motor Operators.

4/13/82 [7] (2)

45. Wyle Report QSR-097-A-01.

4/13/82 [7] (2)

46. Wyle Report QSR-097-A-02.

4/13/82 [7] (2)

47. Rockwell Report 2792-03-02 Rev. 1 Type Test of 8300 Type Valve.

4/13/82 [7] (2)

B. FRC REVIEW OF INSTALLED TMI ACTION PLAN ITEMS

INFORMATION REQUESTED

DATE RECEIVED BY FRC***

1. Reference 1 does not provide adequate detail with respect to identification of TMI Action Plan equipment installed as of 1/1/81.

a. Identification of all TMI Action Plan equipment installed as of 1/1/81 is requested.

b. Identification of TMI Action Plan equipment installed with implementation dates after 1/1/81 is requested.

c. The correlation of these equipment items with the specific sections of NUREG-0737 [5] presented below (as applicable) is requested.

IIE4.2, IID3, IIB3, IIE4.1, IIK3.13,
IIK3.15, IIK3.19, IIK3.21, IIK3.27.

[The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and terminal blocks associated with the device also identified?]

d. For all installed TMI Action Plan equipment identified, a System Component Evaluation Worksheet (SCEW) (in accordance with 79-01B format) is requested.

DATE RECEIVED BY FRC***

- e. The approximate installation date for the TMI Action Plan equipment items is requested so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
2. The qualification documents, e.g., the actual test reports and associated correspondence cited as evidence of qualification listed on the SCEW sheets, for all identified TMI Action Plan equipment are requested. [The identification of those reports considered to be proprietary is requested so that proper control of documents can be maintained.]
3. Where the Licensee has a standard Owners' Group position with respect to a NUREG-0737 technical area or has requested extensions of implementation dates, this information is requested in order to incorporate it into the review.

C. INSTRUCTIONS FOR TRANSMITTING INFORMATION REQUESTED

1. The schedule for completion of the FRC assignment requires that the Licensee provide the requested information within 3 weeks of the date of the RAI.
2. The Licensee may transmit the requested information as follows:
 - o complete package directly to the NRC project manager
 - or
 - o copy of cover letter to NRC project manager and complete package to FRC.

REFERENCES

1. L. M. Mills
Letter to J. P. O'Reilly (NRC)
Subject: Revisions and Updates to Response to IE Bulletin 79-01B,
dated October 31, 1980
Tennessee Valley Authority, March 3, 1981
2. L. M. Mills
Letter to H. R. Denton (NRC)
Subject: Response to Safety Evaluation Report for the Environmental
Qualification of Safety-Related Electrical Equipment at Browns Ferry
Plant
Tennessee Valley Authority, September 29, 1981
3. Telephone Memorandum
C. J. Crane, R. Garrison, and D. Schmitz (FRC) with H. Walker(NRR/EQB)
and R. Reeves, J. Willis, R. Rogers, J. Edwards, and S. Stout (TVA).
October 7, 1981
4. Office of Nuclear Reactor Regulation
Safety Evaluation Report for Browns Ferry Units 1, 2, and 3
Environmental Qualification of Safety-Related Electrical Equipment
NRC, June 3, 1981
5. NUREG-0737
"Clarification of TMI Action Plan Requirements"
NRC, November 1980
6. L. M. Mills
Letter to D. B. Vassalo, NRC. Subject: Requested Reports for
Environmental Qualification of Electrical Equipment
Tennessee Valley Authority, March 4, 1982(1)
7. L. M. Mills
Letter to D. B. Vassalo, NRC. Subject: Transmittal of Qualification
Documents,
Tennessee Valley Authority, April 6, 1982(2)

CONTAINS PROPRIETARY INFORMATION

TECHNICAL EVALUATION REPORT

**REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES
FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION
SAFETY EVALUATION REPORTS (F-11 and B-60)**

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT UNIT 3

VOL. 2 OF 2

NRC DOCKET NO. 50-296

FRC PROJECT C5257

NRC TAC NO. 42483

FRC ASSIGNMENT 13

NRC CONTRACT NO. NRC-03-79-118

FRC TASK 471

Prepared by

Franklin Research Center
20th and Race Streets
Philadelphia, PA 19103

FRC Group Leader: C. J. Crane

Prepared for

Nuclear Regulatory Commission
Washington, D.C. 20555

Lead NRC Engineer: N. B. Le
P. Shemanski

July 26, 1982

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Reviewed by:

Approved by:

C. J. Crane
Group Leader

C. J. Crane
Project Manager
P. Shemanski
Department Director



Franklin Research Center
A Division of The Franklin Institute

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

Equipment Item No. 82
 Motor Control Center Located in Open Area
 GE Model 7700 Series
 Power Distribution (MOV BD 3C)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 82
 Licensee Submittal: Page EEB-APS-007 Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

Equipment Item No. 83
 Motor Generator Set Located in Open Area
 Louis Allis Model 8-127033
 LPCI M-G Sets (3DN, 3DA, 3EN, 3EA)
 Licensee References 4661
 Required Operating Time: 1 year
 TER Checksheet No. 83
 Licensee Submittal: Pages EEB-APS-0191, Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), QT, (RT), (P), (H), CS, (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|---------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV. Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u>X</u>
o Peak Pressure Adequate	<u>X</u>
o Duration Adequate	<u>X</u>
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/471

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3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

NOTES:

- The licensee has provided an analysis that establishes an ^{extremely conservative} qualified life of 11.5 yrs. for the entire motor generator set. However the licensee has not provided the documentation that substantiates the data provided.

: The licensee has not provided evidence of qualification:

For the motor to lead splice.

- The licensee has provided an analysis that establishes a radiation exposure threshold value of approximately 10^5 R. However the licensee has not provided the qualification documentation that presents a material list for the motor generator set and radiation damage threshold values for these materials.

- The licensee has not provided qualification documentation for operating time, temperature and pressure. The motor and generator are totally enclosed fan cooled units not requiring qualification for 100% humidity.

- Reference 4661 is a Louis Allis Engineering report of routine tests performed on various induction motors. This document is not applicable as qualification documentation for time, temperature or pressure. These tests were run merely to establish satisfactory performance in a room temperature (23° - 26° C) environment. (not 40° C)



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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 1a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

Equipment Item No. 84
 Solenoid Valve Located in Open Area
 Target Rock Model 1/2 SMS-A-01-1
 Actuates Main Steam Relief Valve (PSV-1-179, -180)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 84
 Licensee Submittal: Pages EEB-1-1001 and -1002 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 24

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

Equipment Item No. 85
 Terminal Block Located in the Drywell
 General Electric Model EB-5
 Electrical Distribution/Wire Termination
 Licensee References 4652
 Required Operating Time: Continuous
 TER Checksheet No. 85
 Licensee Submittal: Page EEB-01-0101, Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

NOTES:

The reference cited by the licensee is a letter from General Electric which describes a test on terminal blocks and indicates qualitatively some of the test results. The information presented is reproduced below. As noted by DOR guidelines, letters, COC's and similar documents are not evidence of qualification by themselves. The actual test report showing quantitative data together with the licensee evaluation of the significance of the data to the specific plant application is necessary to demonstrate qualification. Therefore this equipment is assigned to NRC category Ib because the licensee has committed to test this item for which qualification is not yet established for Browns Ferry.

The insulation resistance was measured between the 2 terminals with 500 vdc power supply at ambient condition. The terminal blocks were then subjected to the LOCA condition as shown in Table 1. The insulation resistance was recorded at least once a day and at each significant temperature condition during the test. After completion of the 10 day test the cover was removed and the vessel was left open for 36 hours before final insulation resistance measurements were recorded.

what were they?

TABLE 1

Temperature °F	260	320	340	320	260
Pressure PSIG	21	75	103	75	21
Relative Humidity %	100	100	100	100	100
Duration	1.5 days	1.5 hrs	3 hrs	4.5 hrs	8 days

this is a decision to be made by the systems engineer when he knows the situation.

Sub

The results of this test showed that the insulation resistance dropped but remained at a sufficient level to assure the continued function of electrical equipment without circuit overload. Once the steam environment was removed the terminal block insulation resistance recovered almost fully to pretest values. Each type showed no deterioration after testing except for some slight discoloration of the phenolic material.

It should be noted that while this test was evaluated for unprotected terminal blocks, the terminal blocks provided with General Electric penetrations are mounted in sealed boxes mounted on the penetration thus making the test more conservative than the actual field application of the equipment. [4452]



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 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

Equipment Item No. 86
 Terminal Block Located Outside Containment
 General Electric Model EB-5
 Electrical Distribution/Wire Termination
 Licensee References 4652
 Required Operating Time: Continuous
 TER Checksheet No. 86
 Licensee Submittal: Page EEB-01-0102, Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

NOTES:

The reference cited by the licensee is a letter from General Electric which describes a test on terminal blocks and indicates qualitatively some of the test results. The information presented is reproduced below. As noted by DOR guidelines, letters, COC's and similar documents are not evidence of qualification by themselves. The actual test report showing quantitative data together with the licensee evaluation of the significance of the data to the specific plant application is necessary to demonstrate qualification. Therefore this equipment is assigned to NRC category Ib because the licensee has committed to test this item for which qualification is not yet established for Browns Ferry.

The test was conducted with two adjacent terminals of each terminal block connected to an IR rack with #16AWG wire passing through two sealed ports in the pressure vessel. (See Test Circuit Diagram attached)

The insulation resistance was measured between the 2 terminals with 500 vdc power supply at ambient condition. The terminal blocks were then subjected to the LOCA condition as shown in Table 1. The insulation resistance was recorded at least once a day and at each significant temperature condition during the test. After completion of the 10 day test the cover was removed and the vessel was left open for 36 hours before final insulation resistance measurements were recorded.

what were they?

TABLE 1

Temperature °F	260	320	340	320	260
Pressure PSIG	21	75	103	75	21
Relative Humidity %	100	100	100	100	100
Duration	1.5 days	1.5 hrs	3 hrs	4.5 hrs	8 days

this is a decision to be made by the systems engineers when he knows the situation

The results of this test showed that the insulation resistance dropped but remained at a sufficient level to assure the continued function of electrical equipment without circuit overload. Once the steam environment was removed the terminal block insulation resistance recovered almost fully to pretest values. Each type showed no deterioration after testing except for some slight discoloration of the phenolic material.

It should be noted that while this test was evaluated for unprotected terminal blocks, the terminal blocks provided with General Electric penetrations are mounted in sealed boxes mounted on the penetration thus making the test more conservative than the actual field application of the equipment.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

Equipment Item No. 87
 Electrical Penetration Located in the Drywell
 General Electric Model Series 100
 Electrical Distribution
 Licensee Reference 25
 Required Operating Time: Continuous
 TER Checksheet No. 87
 Licensee Submittal: Page EEB-01-0090, Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QI), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a Qualification Not Established</u> | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied X _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied X _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
(If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established X _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

LICENSEE RESPONSE TO NRC SER

1. All noted deficiencies for this component identified in the SER have been adequately addressed in the November (R0), and/or February (R1), submittal of the BFN EEPQR to NRC and no other information is required.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines ___; NUREG-0588, Cat. I ___; NUREG-0588, Cat. II ___.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	Electrical Penetration	Electrical Penetration	
Manufacturer's Name (5.2.2/-/-)	GE	General Electric	
Model Number (5.2.2/-/-)	Series 100	Series 100	
Serial Number	various	various	
Features/Mounting (5.2.6/-/-)	in containment	Horizontal in Autoclave	
Connections/Interfaces (5.2.6/-/-)	Not explicitly stated	Crimp with splice sleeve	
Location/Elevation	Containment	Not Applicable	
Equipment ID No.	various	Npt Applicable	
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number	100 Series Penetration	100 Series Containment Penetration	
Report Date	Not stated	March 1974	
Issued by	Not stated	General Electric	
Prepared for	Not stated	General Electric	
Referenced Reports	Not stated	N074-502-3 San Jose	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	N/A	Sequential Test	
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)	N/A	Leakage and Insulation Resistance/ Carry Current	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.	Not stated	N04-95A@460Vac N010-3A @ 460Vac N016-1A@125Vac	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	Not stated	< 10 ⁷ ccHe/sec @15psig	
Accuracy (5.2.5/-/-)	Not stated	Not Applicable	
Number of Specimens	N/A	6	
Test Instruments Calibrated	N/A	Before and After each part of test	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active	Not Stated	
Test Duration (5.2.1/-/-)	N/A	7 days	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	> 24 hrs	Not Applicable	
Required Function Time	1 year	Not Applicable	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	N/A	Thermal Cycle Irradiation LOCA Simulation Post LOCA Inspection	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	N/A		
1. Representative Sample 2. Baseline Data 3. Performance Extremes 4. Thermal Aging 5. Radiation Aging 6. Wear Aging 7. Vibration/Seismic 8. DBE Exposure 9. Post-DBE Exposure 10. Inspection	↓	N/A	
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	N/A	Analysis and tests of Subcomponents	
Material Aging Evaluation (7.0/-/-)	N/A	Each Material evaluated	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	N/A	"O" ring seal Limiting	
Radiation Aging, Type	Gamma	Gamma	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	<i>Not stated</i>	See Accident Dose	
Radiation Aging, Dose Rate	<i>Not stated</i>	See Accident Dose	
Radiation Aging, Method	<i>N/A</i>	Test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	<i>N/A</i>	Not Stated	
Operational Aging (-/4.2/-)	<i>N/A</i>	Not Applicable	
Other Age Conditioning (-/4.2/-)	<i>N/A</i>	Thermal Cycle	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	<i>40 years</i>	40 Years	
Normal Ambient Temperature	<i>} Not stated</i>	Not Applicable	
Normal Ambient Radiation		Not Applicable	
Normal Ambient Humidity		Not Applicable	
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	<i>Brown's Ferry Program</i>	Not Applicable	
On-Going Analysis of Failures and Degradation (7.0/-/-)	↓	Not Applicable	
Margin (General) (6.0/3.0/3.0)	<i>N/A</i>	Not Applicable	
Margin (NUREG-0588, Cat. I) (-/3.2/-)	↓	Not Applicable	
1. Temperature (+15°F)		Not Applicable	
2. Pressure (+10%, 10 psig max)			
3. Radiation (not required)			
4. Time (+10%, +1 hour + function time minimum)	↓		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA/MSLB	LOCA	
Radiation Type	Gamma + Beta	Gamma	
Radiation Dose (rd) (4.1.2/1.4/1.4)	6.5×10^7 γ 4×10^9 β	5×10^7	Note 2 X
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	Not stated	3Mrd/hr Test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	Not stated	Not Applicable	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	*	Not Applicable	
Radiation Dose (Normal + Accident) (4.1.2/-/-)		Not Applicable	
Plateout Dose Considered (-/1.48/1.48)	*	Not Applicable	
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	*	Not Applicable	

* The licensee stated

The junction boxes are fabricated from 0.104-inch-thick steel. This thickness is sufficient to essentially completely shield the box contents from beta radiation and to reduce the total gamma dose by about 25 percent. Therefore, the integrated 40-year normal operation plus one LOCA dose seen by the box contents will be approximately 1.05×10^8 rads gamma. The penetration epoxy seals, the Vulkene cable, and Raychem WCSF-N heat shrink splice insulation are documented to be qualified for this level of radiation

See note 2 - p-5f



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase	~15°/sec	Not Stated	
Peak: °F/psig/RH/Time	325/60/100/30M	340/103/100/3hrs	
Decrease To: °F/psig/RH/Time	320/3/100/30M	320/81/100/3hrs	
Decrease To: °F/psig/RH/Time	230/20/100/4hr	260/25/100/18hrs	
Decrease To: °F/psig/RH/Time	230-150/20-4/100/20 hrs	250/16/100/168hrs	
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)		Not Applicable	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	N/A	None	Note 1 X
Spray Composition (4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)	Demin. Water	None	
Spray Density (gpm/ft ²)	Not stated	None	
Spray Duration	N/A	None	
Submergence Duration (4.1.3/2.2.5/2.2.5)	N/A	None	
In-Leakage Considered (5.2.6, 5.3.2/-/-)	Not stated	Not Applicable	
Time to Submergence	N/A	Not Applicable	
Dust Environment (-/2.2.11/2.2.11)	N/A	Not Applicable	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

NOTES:

Note 1. The Penetrations were not qualification tested for either demineralized water spray or Chemical spray (Boric Acid and NaOH).

The Licensee should evaluate the possible effects of spray on the penetrations in their installed configuration for the specific plant applications.

The licensee has not addressed the possible effects of spray except to state that spray is minimal.

Note 2. The test irradiation is less than identified by the licensee

SCEW sheet for Gamma and the effect of Beta plateout was not considered.

TVA report states that the equivalent Gamma dose for 40 years operation plus accident is 1.05×10^8 rd and that the effect of beta is shielded

out because of a 0.104 inch thick junction box. However, unless the box is sealed, beta plate-out on internals may occur.

Conclusion: qualification has not adequately been established for spray and radiation



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

Equipment Item No. 88
 Limit Switch Located in the Steam Tunnel
 NAMCO Model EA-740-50100
 Outboard MSIV Position Indication (ZS-1-15, -27, -38, -52)
 Licensee Reference 1530
 Required Operating Time: 1 day
 TER Checksheet No. 88
 Licensee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (Q1), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a Qualification Not Established</u> | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u> _____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u> _____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*For detailed evaluation see
 item 42 pages 5a thru 5f.
 (also see p-5f attached)*



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 669/420/971

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

NOTES:

1. The report states " The switch was mounted in the chamber in a horizontal position such that the lever shaft pointed upwards. The switch was attached by means of a threaded pipe. Teflon tape was used for sealing the pipe threads. +

+No attempt is made to qualify the connection method. These test procedures are based on the assumption that the user will ensure that no steam enters the unit via this connection during an actual LOCA. "

The licensee has not identified whether the unit has a seal and whether the seal is qualified. Therefore relationship between installed and tested equipment has not been demonstrated E!

2. The report states

"Heat aging: The heat aging test consisted of holding the unit suspended over water in a tank at a temperature of 200°F for 200 hours. +

+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.

The licensee analysis for the qualified life is ~ 8 years



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

Equipment Item No. 89
 Switches Located in the Drywell
 General Electric Model CR2940
 Control Circuit
 Licensee Reference 4662
 Required Operating Time: Not stated
 TER Checksheet No. 89
 Licensee Submittal: Page EEB-74-0402 [1].

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QT) RT, (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b
Equipment Summary	
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/analysis)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action see Section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u> </u>
Aging Degradation Evaluated Adequately	<u> </u>
Qualified Life or Replacement Schedule Established (If Required)	<u> </u>
Program Established to Identify Aging Degradation	<u> </u>
Criteria Regarding Aging Simulation Satisfied (If Required)	<u> </u>
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u> </u>
o Peak Pressure Adequate	<u> </u>
o Duration Adequate	<u> </u>
o Required Profile Enveloped Adequately	<u> </u>
o Steam Exposure (If Required) Adequate	<u> </u>
Criteria Regarding Spray Satisfied	<u> </u>
Criteria Regarding Submergence Satisfied	<u> </u>
Criteria Regarding Radiation Satisfied	<u> </u>
Criteria Regarding Test Sequence Satisfied	<u> </u>
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	<u> </u>
Criteria Regarding Functional Testing Satisfied	<u> </u>
Criteria Regarding Instrument Accuracy Satisfied	<u> </u>
Test Duration Margin (1 hour + Function Time) Satisfied	<u> </u>
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	<u> </u>

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	<u> </u>
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	<u> </u>
II.b	Equipment Not Qualified	<u> </u>
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u> </u>
III.a	Equipment Exempt From Qualification	<u> </u>
III.b	Equipment Not in the Scope of the Qualification Review	<u> </u>
IV	Documentation Not Made Available	<u> </u>

Reference 4662 does not constitute evidence of qualification.



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

Equipment Item No. 90
 Limit Switch Located in the Drywell
 NAMCO Model EA-740-50100
 Inboard MSIV Position Indication (ZS-1-14, -26, -37, -51)
 Licensee Reference 3746
 Required Operating Time: 1 day
 TER Checksheet No. 90
 Licensee Submittal: Pages EEB-1-1004, -1005, -1007, and -1009 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (L), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN) EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u> _____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u> _____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*For detailed evaluation
 see item 42 pages 5a thru 5f.*



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FRC Project No. C5257

FRC Assignment No. 13

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 5 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

NOTES:

1. The report states " The switch was mounted in the chamber in a horizontal position such that the lever shaft pointed upwards. The switch was attached by means of a threaded pipe. Teflon tape was used for sealing the pipe threads. +

+No attempt is made to qualify the connection method. These test procedures are based on the assumption that the user will ensure that no steam enters the unit via this connection during an actual LOCA. "

The licensee has not identified whether the unit has a seal and whether the seal is qualified. Therefore relationships between installed and tested equipment has not been demonstrated EL

2. The report states

"Heat aging. The heat aging test consisted of holding the unit suspended over water in a tank at a temperature of 200°F for 200 hours. +

+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.

The licensee analysis for the qualified life is 2.8 to 7 years



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

Equipment Item No. 91
 Flow Transmitter Located in the Reactor Building
 GE/MAC Model 555
 EECW Pump D Discharge Flow Indication (FT-67-12A, -12B)
 Licensee reference not cited
 Required Operating Time: 1 hour
 TER Checksheet No. 91
 Licensee Submittal: Pages EEB-67-1012 and -1013 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QI), (RT), (P), (H) CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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FRC Assignment No. 13
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

Equipment Item No. 92
 Limit Switches Located in the Reactor Building
 Micro Model BZE6-2RN
 EECW Header Valve Position Signal (FCV-67-50, -51, -53)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 92
 Licensee Submittal: Pages EEB-67-1015, -1016, and -1017 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (M), (RT), (P), (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Checksheet Page No.

Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c , 3d
System Consideration Review	4a, 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a, 5b , 5c , 5d , 5e , 5f , 5g, 5h , 5i , 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt |
| <input type="checkbox"/> I.c Qualification Not Established | III.b Not in Scope |
| <input type="checkbox"/> I.d Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93-

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

Equipment Item No. 93
 Flow Switch Located in the Reactor Building
 GE/MAC Model 560130AAAC1
 EECW Pump D Discharge Flow (FS-67-12B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 93
 Licensee Submittal: Page EEB-67-1018 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

Equipment Item No. 94
 Pressure Transmitter Located in the SW Corner Room
 Rosemount Model 1151
 HPCI System Pressure Measurement (PT-73-65)
 Licensee reference not cited
 Required Operating Time: 30 days
 TER Checksheet No. 94
 Licensee Submittal: Page EEB-73-1002 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (Q) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3e, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 961

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

Equipment Item No. 95
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-3, AC Motor Class H Insulation
 Actuates Reactor Water Recirculation Pump Isolation Valve (FCV-68-3, -79)
 Licensee References 659, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 95
 Licensee Submittal: Page NEB-68-070 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QI), RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c , 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	_____
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	_____X
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

Equipment Item No. 96
 Limit Switch Located in the Torus Room
 Micro Model OP-AR
 RHR System Flush Vent Valve Position Indication (FCV-74-102, -103, -119, -120)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 96
 Licensee Submittal: Pages EEB-74-1005 through -1008 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (Y), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b
Equipment Summary	
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 21

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

Equipment Item No. 97
 Solenoid Valve Located in the Reactor Building
 Atkomatic Model 15820-WP
 Core Spray Vent Valve (FSV-75-71, -72)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 97
 Licensee Submittal: Pages EEB-75-1005 and -1006 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 917

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	X
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	X
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

Equipment Item No. 98
 Level Switch Located in the Torus Room
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25F)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 98
 Licensee Submittal: Page EEB-77-1002 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c , 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level.
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 50

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEDQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

Equipment Item No. 99
 Level Switch Located in the HPCI Pump Room
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25E)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 99
 Licensee Submittal: Page EEB-77-1003 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QI), (RT), (P), (H), CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS), None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 3c , 3d
System Consideration Review	4a , 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a , 5b , 5c , 5d , 5e , 5f , 5g , 5h , 5i , 5j
Installed TMI Lessons Learned Implementation	6a , 6b
Equipment Summary	
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
 - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
 - The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
 - The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o . Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 58

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

Equipment Item No. 100
 Solenoid Valve Located in the Reactor Building
 Valcor Model 526D
 Drywell H₂ and O₂ Analyzer Valves (FSV-76-52, -50)
 Licensee Reference 4760
 Required Operating Time: 1 year
 TER Checksheet No. 100
 Licensee Submittal: Pages EEB-76-1022 and -1023 [12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QT) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="radio"/> I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____ X
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

SEE DETAILED REVIEW FOR EQUIPMENT ITEM NO. 13



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

Equipment Item No. 101
 Level Switch Located in the NE and NW Corner Rooms
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25A, -25B, -17A, -17B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 101
 Licensee Submittal: Pages EEB-77-1007, -1001 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

Equipment Item No. 102
 Level Switch Located in the SW Corner Room
 Robertshaw Model 351A
 Radwaste Fluid Level Detection (LS-77-25C, -25D)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 102
 Licensee Submittal: Pages EEB-77-1008 and -1009 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Checksheet Page No.

Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103

Equipment Item No. 103
 Limit Switch Located in the Reactor Building
 Micro Model EX-AR30
 Actuates Containment Exhaust Valve (FCV-84-19, -20)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 103
 Licensee Submittal: Pages EEB-84-1014 and -1015 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents

Checksheet Page No.

Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 469

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1A3

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

Equipment Item No. 104
 Flow Control Valve Located in the Reactor Building
 RAMCON Model 25B4
 Radiation Monitoring Drywell Leak Detection (FCV-90-254A, B; -257A, -257B, -255)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 104
 Licensee Submittal: Pages EEB-90-1001, -1002, -1003, -1004, and -1005 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QT) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

Equipment Item No. 105
 Acoustic Accelerometer Located in the Drywell
 ENDEVCO Model 2273A
 Safety Relief Valve Position Indication (XT-1-4, -5, -18, -19, -22, -23
 -30, -31, -34, -41, -42, -179, -180)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 105
 Licensee Submittal: Pages EEB-1-1011 through -1023 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QI, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c , 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a ~~corrective~~ action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (^{has}~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action February 1981.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

Licensee Response

Appendix 1, Sheet 1 of 1

EEB-1-1011

Accelerometer

1. The accelerometers are required to operated in the environment as specified on the system component evaluation work sheet.
2. The manufacturer's specifications for the accelerometers are as follows:

Temperature: 700°
Pressure: Atmospheric
Relative Humidity: 100%
Radiation: Gamma Flux 6.2×10^{10}
 Neutron Flux 3.7×10^{18}
3. The accelerometer enclosure provides adequate shielding; therefore, beta radiation need not be considered.
4. The accelerometers are being tested to be qualified in accordance with IEEE Standard 323-1974. Documentation should be available by February 1, 1981.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

Equipment Item No. 106
 Pump Motor Located in the NE Corner Room
 General Electric Models 5K series
 Drives Reactor Building Equipment Drain Pumps (SP-B, SP-B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 106
 Licensee Submittal: Page MEB-77-03, MEB-77-02, MEB-77-05, MEB-77-07 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (Q1) (RT) (P) (H) CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS), None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 469

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

Equipment Item No. 107
 Pressure Switches Located in the NE and NW Corner Rooms
 Mercoid Model DA-7043-804
 Core Spray Pumps A & B Discharge Pressure (PS-75-7, -16, -35, -44)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 107
 Licensee Submittal: Pages NEB-75-216 and -229 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QT), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b
Equipment Summary	
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1071

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 16

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

Equipment Item No. 108
 Flow Switch Located in the HPCI Room
 Barton Model 289A
 Monitors RHR Flow (FIS-74-50)
 Licensee References 4266
 Required Operating Time: 1 year
 TER Checksheet No. 108
 Licensee Submittal: Page NEB-74-188 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	X
Qualified Life or Replacement Schedule Established (If Required)	X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	X
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	X
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	X
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	X
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

See equipment item 64 for full evaluation details.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
--	-----------------------	--------------------------------	----------------------------------

ENVIRONMENTAL PROFILE
OF ACCIDENT CONDITIONS

Rate of Temp./Press.
Increase

Peak: °F/psig/RH/Time

Decrease To: °F/psig/RH/Time

Decrease To: °F/psig/RH/Time

Decrease To: °F/psig/RH/Time

Equipment Surface Tempera-
ture (MSLB) (-/1.2.5.C,
2.2.6/1.2.5.C, 2.2.6)

Spray Qualification Method
(5.3.2/1.3, 2.2.8/1.3,
2.2.8)

Spray Composition
(4.1.4/1.3, 2.2.8/
1.3, 2.2.8)

Spray Density (gpm/ft²)

Spray Duration

Submergence Duration
(4.1.3/2.2.5/2.2.5)

In-Leakage Considered
(5.2.6, 5.3.2/-/-)

Time to Submergence

Dust Environment
(-/2.2.11/2.2.11)

Radiation dose
(Normal + accident) Rate

		[4266]	[3252]	
	BF unit 2/3	Test No. 1		
	300°F/13/10/30 ac.	156/0/90/1hr		
	228°F/0/100/2 min	Test No. 2		X - see
	BF unit 1	212/0/100/1h.		note 8
	153/0/100/2 min			and 9
	duration not set			item 64
	—	—	—	
	—	—	—	
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	—	—	—	
	—	—	—	
	5 x 10 ⁴	3 x 10 ⁶	3 x 10 ⁶	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

Equipment Item No. 109
 Flow Switch Located in the NW Corner Room
 Barton Model 289
 Monitors Core Spray Flow (FIS-75-21)
 Licensee References 4266
 Required Operating Time: 1 year
 TER Checksheet No. 109
 Licensee Submittal: Page NEB-75-219 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS) None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 109

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

For full evaluation details, see equipment item 6.4. It is concluded that model 289 has not been analyzed or tested and therefore lacks qualification documentation.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

Equipment Item No. 110
 Flow Switch Located in the High Pressure Coolant Injection Room
 Barton Model 289
 Monitors High Pressure Coolant Injection Flow (FS-73-33)
 Licensee References 4266
 Required Operating Time: 1 year
 TER Checksheet No. 110
 Licensee Submittal: Page NEB-73-164 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T) (QA) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

*For full evaluation details, see equipment item
 6:4. It is concluded that model 289
 has not been analyzed or tested and therefore
 lacks qualification documentation.*



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEDQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

Equipment Item No. 111
 Solenoid Valve Located in the Reactor Building
 ASCO Model 8000 series
 Containment Isolation Valves (FSV-67-53, -50; FSV-64-10, -44, -45, -43, -36, -42))
 Licensee reference not cited
 Required Operating Time: 1 hour to 1 year
 TER Checksheet No. 111
 Licensee Submittal: Pages EEB-67-001, -003; EEB-64-1032, -1029, -1030, -1023 -1024, 1013 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (Q1), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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NRC Contract No. NRC-03-79-118
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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

Equipment Item No. 112
 Solenoid Valve Located in the Torus Room
 ASCO Model 8000 series
 Containment Inserting System Valves (FSV-76-41A, -41B, -37A, -37B), Main Steam
 Isolation Valve Pilot (Plant I.D. not given)
 Licensee reference not cited.
 Required Operating Time: 1 year
 TER Checksheet No. 112
 Licensee Submittal: Pages EEB-76-1018, -1019, -1026, -1027 [12],
 NEB-1-002A [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QA) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS), None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

LICENSEE RESPONSE TO NRC SER.

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEDQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

Equipment Item No. 113
 Solenoid Valve Located in the Reactor Building
 ASCO Model HB830081F
 Containment Isolation Valve Pilot (FSV-64-32)
 Licensee Reference 712
 Required Operating Time: 1 hour
 TER Checksheet No. 113
 Licensee Submittal: Page NEB-64-053A [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), Q1, (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, (RPS) None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113.

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <input checked="" type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____
- II.a Equipment Qualification Not Established X
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I ; NUREG-0588, Cat. II .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	SOLENOID VALVE	Solenoid Valve	
Manufacturer's Name (5.2.2/-/-)	ASCO	Automatic Switch Company	
Model Number (5.2.2/-/-)	HB830081F	HVA-206-381-6F	X NOTE 1
Serial Number	WPL8X831616	NP8344A71E XFT831654V	
Features/Mounting (5.2.6/-/-)		HVA-206-308-3RF NP8320A184E NP831665E	
Connections/Interfaces (5.2.6/-/-)		HV-202-300-2RF NP8321A5E NP8323A39E	
Location/Elevation	REACTOR BUILDING		
Equipment ID No.			
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number	AQS21678/TR (REV. A)	AQS21678/TR (REV. A)	
Report Date		March 1978 July, 1978	
Issued by	—	Isomedix Inc.	
Prepared for		ASCO	
Referenced Reports	—		
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	—	Type Test	
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)		Coil excitation Voltage Seat leakages, noise, IR test.	
Operating Conditions (-/2.2.10/2.2.10)		Samples energized and deenergized at high and	
Load/Cycles/Voltage/ Current/Freq.		low pressure	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	:	: Operate at -15% & + 10% :(Short Period)	:
Accuracy (5.2.5/-/-)	:	: Rate VAC, 90-140 VDC : Max & Min. D/P.	:
Number of Specimens	:	: IR Coil > 1.0 Megohm at 500 : VDC. C-L < 0.5 MA @ 2x..	:
Test Instruments Calibrated	:	: rated Voltage + 1000 V for : 1 min.	:
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	: CONT. ISOL. - : VALVE; BACKUP : SCRAM PILOT : VALVE	: 30 days	:
Test Duration (5.2.1/-/-)	:	:	:
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	:	:	:
Required Function Time	: 1 HR.	:	:
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	:	: Baseline functional tests : Thermal Aging : Radiation Aging : Operational Aging	:
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	:	: Seismic/Vibration DBE : radiation exposure STM + : CHSP Exposure	:
1. Representative Sample	:	:	:
2. Baseline Data	:	:	:
3. Performance Extremes	:	:	:
4. Thermal Aging	:	:	:
5. Radiation Aging	:	:	:
6. Wear Aging	:	:	:
7. Vibration/Seismic	:	:	:
8. DBE Exposure	:	:	:
9. Post-DBE Exposure	:	:	:
10. Inspection	:	:	:
Aging (5.2.4, 7.0/4.0/4.0)	:	: 268 deg. F/288 hr.	:
Thermal Aging/Basis	:	: 4.4 yr @ 140 deg. F	:
Material Aging Evaluation (7.0/-/-)	:	:	:
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	:	: Solenoid Coils & : Elastomeric parts	:
Radiation Aging, Type	:	: GAMMA	:



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	1×10^5 rd	50×10^6 rd	
Radiation Aging, Dose Rate		1.0 Mrd/hr.	
Radiation Aging, Method		Test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)			
Operational Aging (-/4.2/-)		40,000 cycles @ MOPD	
Other Age Conditioning (-/4.2/-)			
Qualified Life Claimed/ Established (5.2.4/4.10/-)		4.4 yr./ND	
Normal Ambient Temperature	!NOT STATED!		
Normal Ambient Radiation	!NOT STATED!		
Normal Ambient Humidity	!NOT STATED!		
On-Going Surveillance and Preventive Maintenance (7.0/-/-)			
On-Going Analysis of Failures and Degradation (7.0/-/-)			
Margin (General) (6.0/3.0/3.0)			
Margin (NUREG-0588, Cat. I) (-/3.2/-)			
1. Temperature (+15°F)			
2. Pressure (+10%, 10 psig max)			
3. Radiation (not required)			
4. Time (+10%, +1 hour + function time minimum)			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA	LOCA	
Radiation Type		GAMMA	
Radiation Dose (rd) (4.1.2/1.4/1.4)	2.1×10^7	150 Mrd	
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)		<1 Mrd/hr.	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)		--	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)		--	
Radiation Dose (Normal + Accident) (4.1.2/-/-)		200 Mrd	
Plateout Dose Considered (-/1.48/1.48)		--	
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	2.1×10^7 rd.	--	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase		28.8 deg. F/min/9.1 psig/min	
Peak: °F/psig/RH/Time	157°F	346/110/100/3 HR	
Decrease To: °F/psig/RH/Time	15.0 psia 100% rh	320/75/100/3 HR 250/15/100/85 HR 200/10/100/26 days	
Decrease To: °F/psig/RH/Time			
Decrease To: °F/psig/RH/Time	—		
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	—	—	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		TEST H ₂ BO ₃ (3000ppm boron)	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	NA	0.064m Sodium Thiosulfate NaOH ph= 10.0	
Spray Density (gpm/ft ²)		0.306	
Spray Duration		30 days	
Submergence Duration (4.1.3/2.2.5/2.2.5)	—		
In-Leakage Considered (5.2.6, 5.3.2/-/-)	—		
Time to Submergence	—		
Dust Environment (-/2.2.11/2.2.11)	—		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

NOTES:

Results of this test show that low Insulation resistance values were demonstrated at the end of the LOCA test for the coils. It was concluded that the solenoid enclosure interface degraded to the point where spray solution entered the enclosure, degrading the coil insulation, resulting in current leakage to ground. The test report also indicates that even though the coil enclosure became filled with spray solution, the valves functioned for the duration of the LOCA test. It is recommended that the licensee provide a suitable seal for the cable entry to the solenoid enclosure.

1. The licensee has not established similarity between the installed and tested equipment. The licensee should verify that the installed valves are NP series.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

Equipment Item No. 114
 Solenoid Valve Located in the Drywell
 ASCO Model X8300B61F
 Sampling System Isolation Valve (FSV-43-13)
 Licensee Reference 806
 Required Operating Time: 1 hour
 TER Checksheet No. 114
 Licensee Submittal: Page NEB-43-030 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T) (QT) (RT) (P) (H) CS, (A) S, (R), M, I, QM, (RPN) EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5a, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

NOTES:

Reference 806 is a test performed by Rockwell mfg. co. on MSIV pilot valve assemblies. One valve set consisted of 2 Norgren company valves and 2 ASCO solenoid valves (model HTX8320).

Testing consisted of steam exposure and operational cycling at 340 to 344 °F. Sluggish operation of the Norgren valves caused by the ASCO solenoids was noted.

This test does not establish qualification for this equipment. The test does demonstrate that the equipment is operable at temperatures around 340 °F.

The test program did not include any thermal or radiation aging, and no baseline and functional test data was presented. Vendor data presented below indicates that this equipment is rated for an ambient temperature range of 32 to 77 °F.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

NOTES:

As can be seen from the preceeding pages, the solenoid valves are suitable for a normal maximum ambient temperature of 77°F.

The materials of construction vary according to the type of internals specified for the application. The referenced report does not take into account all of the possible materials. The submittal does not contain any information regarding the valve internals or other materials of construction.

One of the more significant items that affect the valve life and suitability for temperatures beyond the 77°F identified on the preceeding pages is the insulation system used for the solenoid coil. If the materials used were identified, it would be possible for the licensee to perform an analysis which would provide a determination of the suitability of the installed valve for the conditions described on the SCEW sheet. However, the licensee has not provided documentation to establish the environmental qualification of the equipment installed in the plant.

In addition no radiation capability is provided by the manufacturer for these valves. The licensee has not provided a radiation analysis for the actual materials used in the valves.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

Equipment Item No. 115
 Solenoid Valve Located in the Reactor Building
 ASCO Model HVA-90-405-2A
 Control Rod Drive Systems Solenoids (FSV-85-37A, -37B, -39A, -39B)
 Licensee Reference 4674, 4673
 Required Operating Time: 1 hour
 TER Checksheet No. 115
 Licensee Submittal: Pages NEB-85-268 and -274 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO 1

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT-ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

NOTES:

Reference 4673 (G.E. summary report 097-A-01) documents testing performed on an ASCO solenoid valve (model no. HVA-90-405).

Testing consisted of exposure to 212°F, 100% rh for 6 hours. The valve was

also subjected to seismic testing. The test summary does not contain auditable data,

and information regarding test results. This does not constitute qualification

for this equipment.

Reference 4674 (G.E. summary report 097-A-02) is a summary of vendor data and does not provide qualification for this equipment.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

Equipment Item No. 116
 Solenoid Valve Located in the Reactor Building
 ASCO Model X8300-B61F
 Sampling System Isolation Valves (FSV-43-14)
 Licensee Reference 806
 Required Operating Time: 1 day
 TER Checksheet No. 116
 Licensee Submittal: Page NEB-43-032 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), T, QT, RT, P, H, CS, (A) S, (R), M, I, (QM) RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <input checked="" type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

See review of equipment item 114



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEDQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEDQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEDQR to NRC.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

Equipment Item No. 117
 Solenoid Valve Located in the Torus Room
 ASCO Model 8300C61U
 RHR Vent Valves (FSV-74-119, -120, -102, -103)
 Licensee reference not cited
 Required Operating Time: 1 hour, 1 year
 TER Checksheet No. 117
 Licensee Submittal: Pages EEB-74-1004, -1003, -1002, and -1001 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| <input checked="" type="checkbox"/> I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure: _____
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

Equipment Item No. 118
 Solenoid Valve Located in the Reactor Building
 ASCO Model HT8211C94
 Actuates Drywell or Suppression Chamber Exhaust Valve (FSV-84-19, -20)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 118
 Licensee Submittal: Page EEB-84-1006, -1005 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j,
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7e



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input checked="" type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input checked="" type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 118

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

Equipment Item No. 119
 Solenoid Valve Located in the Reactor Building
 ASCO Model 8300 series
 Containment Purge Makeup Isolation Valves (FSV-76-17, -18, -19, -24)
 Licensee Reference 806
 Required Operating Time: 1 day
 TER Checksheet No. 119
 Licensee Submittal: Pages NEB-76-240, -241, and -242 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input checked="" type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

See review of equipment item 114



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

Equipment Item No. 120
 Solenoid Valve Located in the NE Corner Room
 ASCO Models 8300 series
 Containment Isolation Reactor Building Sump Pump (FSV-77-17)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 120
 Licensee Submittal: Page EEB-77-1006 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(B), (T), (Q1), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> III.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> III.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

Equipment Item No. 121
 Solenoid Valve Located in the Reactor Building
 ASCO Model WPLBX831636
 CRD Backup SCRAM Pilot Valve B (FSV-85-35A, B)
 Licensee Reference 712
 Required Operating Time: 1 hour
 TER Checksheet No. 121
 Licensee Submittal: Page NEB-85-267 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QT) (RT) (P) (H) CS, (A) S, (R), M, I, QM, (RPN) EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Installed TMI Lessons Learned Implementation Equipment Summary.	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____X_____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____X_____
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____

SEE DETAILED REVIEW ON EQUIPMENT ITEM 113



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

Equipment Item No. 122
 Solenoid Valve Located in the Reactor Building
 ASCO Model WPHTX8300B45F
 Containment Isolation (FSV-64-17, -18, -19, -20, -21, -29, -30,
 -31, -32, -33, -34)
 Licensee Reference 806
 Required Operating Time: 1 hour
 TER Checksheet No. 122
 Licensee Submittal: Pages NEB-64-039, -040, -047, and -053 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) T, (QT) RT, P, H, CS, (A) S, (R), M, I, (QM) RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input checked="" type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

See review of equipment item 114



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 5 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

Equipment Item No. 123
 Solenoid Valve Located in the NW Corner Room
 ASCO Model HB830081F
 Core Spray Cooling System Isolation Valve (FSV-75-57)
 Licensee reference not cited
 Required Operating Time: 1 day
 TER Checksheet No. 123
 Licensee Submittal: Page NEB-64-49A [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has/has not~~) provided a response to the SER concerns.
- The Licensee (~~has/has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has/has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has/has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has/has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replaced Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

Equipment Item No. 124
 Solenoid Valve Located in the NW Corner Room
 ASCO Model HTX8300B61U
 RCIC Steam Line Isolation (FSV-71-6A, -6B)
 Licensee reference not cited
 Required Operating Time: 30 days
 TER Checksheet No. 124
 Licensee Submittal: Pages EEB-71-1001 and -1002 [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QT) (RT) (P) (H) CS, (A) S, (R), M, I, QM, (RPN) EXN, SEN, (QT) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3e, 3d
System Consideration Review	4a, 4b, 4e, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b
<u>Equipment Summary</u>	
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12.4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>I.b</u> Modification | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

Equipment Item No. 125
 Motorized Valve Actuator Located in the RCIC Pump Room
 Limatorque Model SMB-0, DC Motor Class B Insulation
 RCIC Steam Supply Valve (FCV-71-8)
 Licensee reference 662, 659, 1063, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 125
 Licensee Submittal: Page NEB-71-100 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T) (QT) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.c Qualification Not Established | III.b Not in Scope |
| I.d Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 175

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

Equipment Item No. 126
 Motorized Valve Actuators Located in the NE and NW
 Core Spray Pump Rooms
 Limitorque Model SMB-0
 Core Spray Pumps "A" and "B" Suction Valves (FCV-75-2, -11, -30, -39)
 Licensee References 662, 2876, 1620
 Required Operating Time: 1 year
 TER Checksheet No. 126
 Licensee Submittal: Pages NEB-75-214 and -227 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT) RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 3c , 3d
System Consideration Review	4a , 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a , 5b , 5c , 5d , 5e , 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a , 6b
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has/has not~~) provided a response to the SER concerns.
- The Licensee (~~has/has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has/has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has/has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has/has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>II.a Qualification NOT Established</u> | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u> _____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies .. (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u> _____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION ON PAGE 5f



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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEDQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEDQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEDQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this MVA incorporates a motor brake.

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

Equipment Item No. 127
 Motorized Valve Actuator Located in the SE Corner Room
 Limitorque Model SMB-0
 RHR Pump B (FCV-74-25); RHR Pump D (FCV-74-36)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 127
 Licensee Submittal: Page MEB-71-01 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b <u>Modification</u> | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.c Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.d Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

Equipment Item No. 128
 Motorized Valve Actuators Located in the SW Corner Room
 Limatorque Model SMB-0
 RHR Pump "A" Shutdown Cooling (FCV-74-2); RHR Pump "C" Shutdown Cooling
 (FCV-74-13)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 128
 Licensee Submittal: Page MEB-74-01 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|---------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV. Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

Equipment Item No. 129
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-0
 Containment Isolation (FCV-69-1)
 Licensee References 1620, 1064
 Required Operating Time: 1 hour
 TER Checksheet No. 129
 Licensee Submittal: Page NEB-69-73 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T) (QT) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other .(_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input checked="" type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> II.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input checked="" type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate
X
- Adequate Similarity Between Equipment and Test Specimen Established
X
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
X
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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FRC Project No. C5257
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FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

Equipment Item No. 130
 Motorized Valve Actuator Located in the HPCI Pump Room
 Limatorque Model SMB-0, DC Motor Class B Insulation
 HPCI Suppression Pool Suction (FCV-73-27); HPCI, CST Suction (FCV-73-40);
 HPCI Main Pump (FCV-73-30)
 Licensee References 2876, 1620, 662, 1063, 659
 Required Operating Time: 30 days
 TER Checksheet No. 130
 Licensee Submittal: Pages NEB-73-161, -169; MEB-73-02 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T), Q1, RT, (P), H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

- Equipment replacement with qualified equipment
- Equipment modification
- Equipment relocation above submergence level
- Relocate or shield equipment from radiation source
- Verify qualification by additional (testing/~~analysis~~)
- Equipment relocation to a mild environment
- Qualification testing of equipment in progress
- Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action see Section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

Equipment Item No. 131
 Motorized Valve Actuator Located in the Reactor Building
 Limatorque Model SMB-0
 Actuates Reactor Water Cleanup Valves (FCV-69-2)
 Licensee References 659, 662, 1063, 1620, 2876
 Required Operating Time: 1 day
 TER Checksheet No. 131
 Licensee Submittal: Page NEB-69-074 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.c Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.d Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate _____
- Adequate Similarity Between Equipment and Test Specimen Established _____X_____
- Aging Degradation Evaluated Adequately _____X_____
- Qualified Life or Replacement Schedule Established (If Required) _____X_____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification _____X_____
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132

Equipment Item No. 132
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-00
 RHR System Suppression Pool Valve (FCV-74-58, -72); RBCCW Discharge Header
 Outlet Valve (FCV-70-47)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 132
 Licensee Submittal: Pages NEB-70-82 and NEB-74-194 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, (Q1) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function when exposed to the applicable DBE environmental service conditions.~~
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132-

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	<u>X</u>
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *Modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

Equipment Item No. 133
 Motorized Valve Actuator Located in the Steam Tunnel
 Limitorque Model SMB-00, Class B Insulation
 RCIC Steam Line Isolation (FCV-71-3)
 Licensee References 659, 662, 2876, 1620, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 133
 Licensee Submittal: Page NEB-71-96 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.c Qualification Not Established | III.b Not in Scope |
| I.d Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

Equipment Item No. 134
 Motorized Valve Actuator Located in the NW Corner Room
 Limatorque Model SMB-00, DC Motor Class B Insulation
 RCIC Suppression Pool Suction (FCV-71-17, -18); RCIC CST Suction (FCV-71-19)
 Licensee References 659, 662, 2876, 1620, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 134
 Licensee Submittal: Pages NEB-71-107, -108, and -109 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (Q1), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|---------------------------------|
| I.a. Qualified | II.c. Qualified Life Deficiency |
| <u>I.b. Modification</u> | III.a. Exempt |
| II.a. Qualification Not Established | III.b. Not in Scope |
| II.b. Not Qualified | IV. Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1341

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

"X" DENOTES APPROPRIATE EVALUATION

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE Tested FOR THIS testing HAS NOT BEEN PROVIDED. AN EXACT COMPLETION DATE

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 135

Equipment Item No. 135
 Motorized Valve Actuator Located in the Corner Rooms
 Limitorque Model SMB-00
 Actuates Core Spray and Residual Heat Removal Valves (FCV-74-30, -96, -97, -98, -99); FCV-75-9, -37)
 Licensee References 659, 662, 2876
 Required Operating Time: 1 year
 TER Checksheet No. 135
 Licensee Submittal: Pages MEB-74-01; NEB-75-217, -230 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 135

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See section 5.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 135

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

Equipment Item No. 136
 Motorized Valve Actuator Located in the Drywell
 Limatorque Model SMB-00
 Actuates Residual Heat Removal Valves (FCV-74-78)
 Licensee References 1064, 1620
 Required Operating Time: 1 year
 TER Checksheet No. 136
 Licensee Submittal: Page NEB-74-208 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) (T) (QT) (RT) (P) (H) CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j,
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o . Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *Modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 137

Equipment Item No. 137
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-00
 Actuates Reactor Core Isolation Cooling Systems Valves (FCV-71-2)
 Licensee References 1064, 1620, 659
 Required Operating Time: 30 days
 TER Checksheet No. 137
 Licensee Submittal: Page NEB-71-85 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (Q1) RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c , 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 137

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function~~ when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 178

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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FRC Task No. 464/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 137

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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NRC Contract No. NRC-03-79-118
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 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

Equipment Item No. 138
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB; Sizes 00 and 2
 Actuates Residual Heat Removal System Valves (FCV-74-2, -7, -13, -25, -30, -36, -96, -97, -100; FCV-74-60, -61; FCV-23-34, -40, -46, -52)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 138
 Licensee Submittal: Pages NEB-74-197, -196A, NEB-23-026, NEB-23-029, MEB-74-01
 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____ <u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____ <u>X</u>
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE PAGE 5f for EVALUATION



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 430

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

EVALUATION:

1. The licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The licensee has not identified the motor manufacturer or the class of insulation for these MVA's

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

Equipment Item No. 139
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-000
 Actuates Steam-Driven Isolation Valves (FCV-1-55)
 Licensee References 1064, 1620
 Required Operating Time: 1 hour
 TER Checksheet No. 139
 Licensee Submittal: Page NEB-1-012 [14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c , 3d
System Consideration Review	4a , 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a , 5b , 5c , 5d , 5e , 5f , 5g , 5h , 5i , 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a , 6b
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> <u>II.b Modification</u> | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.c Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o . Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	<u>X</u>
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 47

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *Modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

Equipment Item No. 140
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-000
 Actuates Residual Heat Removal System Valves (FCV-74-7)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 140
 Licensee Submittal: Page MEB-74-01 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (Q1), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
 - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	<u>X</u>
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

Equipment Item No. 141
 Motorized Valve Actuator Located in the NW Corner Room
 Limitorque Model SMB-000
 Actuates Reactor Core Isolation Cooling System Valves (FCV-71-25, -34)
 Licensee Reference 662
 Required Operating Time: 30 days
 TER Checksheet No. 141
 Licensee Submittal: Page MEB-71-02 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (~~has~~/~~has not~~) provided a response to the SER concerns.
- The Licensee (~~has~~/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (~~has~~/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (~~has~~/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 142

Equipment Item No. 142
 Motorized Valve Actuator Located in the Steam Tunnel
 Limatorque Model SMB-000, DC Motor, Class B Insulation
 Actuates Steam Drain Isolation Valves (FCV-1-56)
 Licensee Reference 659, 662, 2876, 1620, 1063
 Required Operating Time: 1 day
 TER Checksheet No. 142
 Licensee Submittal: Page NEB-1-013 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3. of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 3c , 3d,
System Consideration Review	4a , 4b , 4c , 4d , 4e , 4f
Equipment Environmental Qualification Review	5a , 5b , 5c , 5d , 5e , 5f, 5g , 5h , 5i , 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a , 6b
Maintenance and Replacement Schedule Summary	7a , 7b , 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1418

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	<u>X</u>
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 142

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *tested* AN EXACT COMPLETION DATE FOR THIS *testing* HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

Equipment Item No. 143
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-000
 Actuates Emergency Core Cooling System Valves (FCV-67-18, -22, -26)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 143
 Licensee Submittal: Page MEB-67-02 [14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
(If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified. _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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Q EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

Equipment Item No. 144
 Motorized Valve Actuator Located in the Reactor Building
 Limatorque Model SMB-000
 Actuates Emergency Core Cooling System Valves (FCV-67-17, -21, -25)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 144
 Licensee Submittal: Page MEB-67-01 [14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1469/470/471

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (has/~~has not~~) provided a response to the SER concerns.

The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified.	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____X
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION on PAGE 5f



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this unit incorporates a motor brake.

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

Equipment Item No. 145
 Motorized Valve Actuator Located in the NW Corner Room
 Limitorque Model SMB-1, DC Motor, Class B Insulation
 Actuates Reactor Core Isolation Cooling Valves (FCV-71-37, -38, -39)
 Licensee References 659, 662, 2876, 1620, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 145
 Licensee Submittal: Pages NEB-71-117, -118, and -119 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, ^(N)(T), ^(Q)(T) RT, P, H, CS, ^(A)(A), S, (R), M, I, QM, RPN, EXN, SEN, ^(Q)(I) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|---|--------------------------------|
| <input checked="" type="checkbox"/> I.a Qualified | II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b <u>Modification</u> | III.a Exempt |
| <input type="checkbox"/> I.a Qualification Not Established | III.b Not in Scope |
| <input type="checkbox"/> I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified. _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

Equipment Item No. 146
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-1
 Actuates Residual Heat Removal System Valves (FCV-74-1, -12, -24, 35)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 146
 Licensee Submittal: Page NEB-74-179 [1, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT), RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI) RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

The Licensee (~~has/has not~~) provided a response to the SER concerns.

The Licensee (~~has/has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.

The Licensee has presented information which shows there are no outstanding qualification deficiencies.

The Licensee (~~has/has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.

Justification for interim operation (~~has/has not~~) been provided by the Licensee for this equipment item.

Corrective action specified by the Licensee:

Equipment replacement with qualified equipment

Equipment modification

Equipment relocation above submergence level

Relocate or shield equipment from radiation source

Verify qualification by additional (testing/analysis)

Equipment relocation to a mild environment

Qualification testing of equipment in progress

Other (_____)

The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.

The Licensee (~~has/has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

I.a Qualified

I.b Modification

II.a Qualification Not Established

II.b Not Qualified

II.c Qualified Life Deficiency

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____X_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION ON PAGE 5f.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this MVA incorporates a motor brake.

Conclusion:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

Equipment Item No. 147
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-2
 HPCI Steam Line Isolation Valve (FCV-73-2)
 Licensee References 659, 1064, 1020
 Required Operating Time: 30 days
 TER Checksheet No. 147
 Licensee Submittal: Page NEB-73-130 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (Q1), RT, P, H, CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b <
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.a Qualification Not Established</u> | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	_____X
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

SEE EVALUATION ON PAGE 5f



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

EVALUATION:

1. The Licensee has not provided documentation from the manufacturer which states that the cited test report(s) are applicable to this equipment item.
2. The Licensee has not identified the motor manufacturer, the class of insulation, or whether this MVA incorporates a motor brake.

CONCLUSION:

This equipment item is assigned to NRC Qualification Category II.a because traceability has not been established.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

Equipment Item No. 148
 Motorized Valve Actuator Located in the HPCI Pump Room
 Limatorque Model SMB-2, DC Motor, Class B Insulation
 HPCI Steam Supply Valve (FCV-73-16)
 Licensee References 659, 662, 2876, 1620, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 148
 Licensee Submittal: Page NEB-73-149 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (Q), (R), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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FRC Assignment No. 13
FRC Task No. 469/470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1118

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION-REVIEW OF EQUIPMENT ITEM NO. 149

Equipment Item No. 149
 Motorized Valve Actuator Located in the NE Corner Room
 Limatorque Model SMB-2
 Core Spray II Test Bypass Valve (FCV-75-50)
 Licensee References 662, 659
 Required Operating Time: 1 year
 TER Checksheet No. 149
 Licensee Submittal: Page NEB-75-234 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R) T, (QT), RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
 - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| <u>I.a</u> Qualified | II.c Qualified Life Deficiency |
| <u>II.b</u> Modification | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| III.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
(If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 3 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE *modified* WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

Equipment Item No. 150
 Motorized Valve Actuator Located in the Torus Room
 Limatorque Model SMB-2, DC Motor, Class B Insulation
 HPCI Steam Line Valve (FCV-73-3)
 Licensee References 662, 2876, 1620, 1063, 659
 Required Operating Time: 30 days
 TER Checksheet No. 150
 Licensee Submittal: Page NEB-73-147 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, Q1, RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (QI), RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

Equipment Item No. 151
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-2
 RHR Suppression Pool Valve (FCV-74-71); RHR System I' (FCV-74-57); RHR System I
 Test Valves (FCV-74-59, -73)
 Licensee Reference 1620, 1064.
 Required Operating Time: 1 year
 TER Checksheet No: 151
 Licensee Submittal: Pages NEB-74-193, -195, and -204 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT RT, P, H, CS, A S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/ has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> <u>II.b Modification</u> | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> III.a Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> III.b Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

Equipment Item No. 152
 Motorized Valve Actuator Located in the Reactor Building
 Limatorque Model SMB-2
 Core Spray Discharge Control Valves (FCV-75-23, -25, -73, -75)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 152
 Licensee Submittal: Pages NEB-75-222, -224, -235, and -237 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b,
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _____

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEDQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE MODIFIED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM.



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 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

Equipment Item No. 153
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-2
 Containment Isolation (FCV-74-74)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 153
 Licensee Submittal: Page NEB-74-205 [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (QT) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment.
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-------------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>II.b Modification</u> | III.a Exempt |
| III.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established X
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies
 (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life
 or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 163

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

X THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE MODIFIED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED.

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

Equipment Item No. 154

Cable
 (COAX, TRIAX, signal XLPE)

Times Wire & Cable, Brand Rex 936,
 Boston Insulated Wire, Okonite, Dearborn Wire,
 Alpha Wire, Belden, Consolidated, Rockbestos,
 Anaconda 17

Cable
 (CP, CPO, CPJS, PXJ)

Sumitomo Shoji, Plastic Wire & Cable, Collyer,
 Okonite, Triangle Conduit & Cable, Rome, Essex,
 PWC, Simplex, General Cable, Rockbestos

Cable
 (PNN, PJJ, PN, PJ)

Plastic Wire & Cable, Brand Rex 936, Rome,
 Cyprus, American Insulated Wire, General Cable,
 Tamaqua, PWC

Various Licensee References

Required Operating Time: Continuous

TER Checksheet No. 154

Licensee Submittal: EEB-68-0016, Typical [1, 12, 14]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, (T), (RT), RT, (P), (H), CS, (A), S, (R), M, I, (QM) RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration, Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 251

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u> X </u>
Adequate Similarity Between Equipment and Test Specimen Established	<u> X </u>
Aging Degradation Evaluated Adequately	<u> X </u>
Qualified Life or Replacement Schedule Established (If Required)	<u> X </u>
Program Established to Identify Aging Degradation	<u> </u>
Criteria Regarding Aging Simulation Satisfied (If Required)	<u> </u>
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u> </u>
o Peak Pressure Adequate	<u> </u>
o Duration Adequate	<u> </u>
o Required Profile Enveloped Adequately	<u> </u>
o Steam Exposure (If Required) Adequate	<u> </u>
Criteria Regarding Spray Satisfied	<u> </u>
Criteria Regarding Submergence Satisfied	<u> </u>
Criteria Regarding Radiation Satisfied	<u> </u>
Criteria Regarding Test Sequence Satisfied	<u> </u>
Criteria Regarding Test Failures or Severe Anomalies - (If Any) Satisfied	<u> </u>
Criteria Regarding Functional Testing Satisfied	<u> </u>
Criteria Regarding Instrument Accuracy Satisfied	<u> </u>
Test Duration Margin (1 hour + Function Time) Satisfied	<u> </u>
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	<u> </u>

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	<u> </u>
I.b	Equipment Qualification Pending Modification	<u> X </u>
II.a	Equipment Qualification Not Established	<u> </u>
II.b	Equipment Not Qualified	<u> </u>
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	<u> </u>
III.a	Equipment Exempt From Qualification	<u> </u>
III.b	Equipment Not in the Scope of the Qualification Review	<u> </u>
IV	Documentation Not Made Available	<u> </u>



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS4

NOTES:

The licensee EEQ evaluation sheets for the cables identified on page 1a do not provide sufficient information (Insulation thickness, Insulation material ie specific compound, jacket thickness, Jacket material ie specific compound, sizes and types of conductors etc) to provide a correlation between installed cables and test reports. In the test program to be conducted on the installed Browns Ferry Cable the licensee should ensure adequate description of cable characteristics to demonstrate Type testing which satisfies DOR guideline requirements or IEEE-383-74 requirements.

The licensee should also provide evidence of test and analysis to establish the qualified life of the cable.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

Equipment Item No. 155
 Electrical Cable Located in the Drywell
 Anaconda, Silicone Rubber Insulation
 Low Voltage Power and Control Cable
 Licensee Reference 17
 Required Operating Time: Continuous
 TER Checksheet No. 194
 Licensee Submittal: Page EEB-68-0016, Typical [1]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QI, RT, (P), H, CS, (A), S, (R), M, I, (QM), RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS5

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| I.b Modification | III.a Exempt |
| <u>I.c Qualification Not Established</u> | III.b Not in Scope |
| I.d Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 469

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	<u>X</u> _____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	<u>X</u> _____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	<u>X</u> _____*
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____
II.a	Equipment Qualification Not Established	<u>X</u> _____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____

* inside drywell only.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies circled in attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEQR to NRC.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. [REDACTED]

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I ; NUREG-0588, Cat. II .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	Electrical Cable	Electrical Cable	
Manufacturer's Name (5.2.2/-/-)	Anaconda	Anaconda	
Model Number (5.2.2/-/-)	N/A	see page 5f.	Note 1
Serial Number	N/A	N/A	
Features/Mounting (5.2.6/-/-)	N/A	N/A	
Connections/Interfaces (5.2.6/-/-)	Not stated		
Location/Elevation	Containerment	N/A	
Equipment ID No.	WLO, CPSS	N/A	
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number	79117	79117	
Report Date	4/79	4/79	
Issued by	Anaconda	Anaconda	
Prepared for	Brown Ferry	TVA	
Referenced Reports			
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	NA	Test	
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)	NA	Insulation Resistance Hi Pot Current Loading	
Operating Conditions (-/2.2.10/2.2.10)			
Load/Cycles/Voltage/ Current/Freq.	Not Stated	see page 5f.	Note 1



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	N/A	Not started	
Accuracy (5.2.5/-/-)	N/A	N/A	
Number of Specimens	N/A	21 see page 5 f	(N/A 1)
Test Instruments Calibrated	N/A	yes	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active	N/A	
Test Duration (5.2.1/-/-)	NA	16 days	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	> 24 hrs	NA	
Required Function Time	1 year	N/A	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	N/A	aging	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	N/A	irradiation LOCA Simulator	
1. Representative Sample			
2. Baseline Data			
3. Performance Extremes			
4. Thermal Aging			
5. Radiation Aging			
6. Wear Aging			
7. Vibration/Seismic			
8. DBE Exposure			
9. Post-DBE Exposure			
10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0)			
Thermal Aging/Basis	N/A	7 day @ 210°C 28 day @ 210°C	
Material Aging Evaluation (7.0/-/-)	N/A	yes anneal	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	N/A		
Radiation Aging, Type	NA	Gamma	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. [REDACTED]

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	<i>Not stated</i>	<i>see accident</i>	
Radiation Aging, Dose Rate	<i>Not stated</i>	<i>Dose</i>	
Radiation Aging, Method	<i>N/A</i>	↓	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	<i>Not stated</i>	↓	
Operational Aging (-/4.2/-)	<i>Not stated</i>	<i>Not stated</i>	
Other Age Conditioning (-/4.2/-)	<i>N/A</i>	<i>Not stated</i>	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	<i>40 years</i>	<i>> 40 years</i>	
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	<i>Not stated</i>	<i>N/A</i>	
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	<i>Business Ferry Program</i>	<i>N/A</i>	
On-Going Analysis of Failures and Degradation (7.0/-/-)	↓	<i>N/A</i>	
Margin (General) (6.0/3.0/3.0)	<i>N/A</i>	<i>N/A</i>	
Margin (NUREG-0588, Cat. I) (-/3.2/-)	↓	↓	
1. Temperature (+15°F)	↓	↓	
2. Pressure (+10%, 10 psig max)	↓	↓	
3. Radiation (not required)	↓	↓	
4. Time (+10%, +1 hour + function time minimum)	↓	↓	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA/MSLB	LOCA	
Radiation Type	Gamma & Beta	Gamma	
Radiation Dose (rd) (4.1.2/1.4/1.4)	1x10 ⁸ * 2x10 ⁶ **	1.2x10 ⁵	
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	N/A	0.56 rd/hr	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	N/A	N/A	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	Not stated	Not Stated	
Radiation Dose (Normal + Accident) (4.1.2/-/-)	N/A	↓	
Plateout Dose Considered (-/1.48/1.48)	yes		
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	2x10 ⁹ *	Not Stated	X Note 2

* in Containment
* in Compartments - steam valve vents



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase.	~15°/sec	18° F	
Peak: °F/psig/RH/Time	325/60/100/10M	280/35/100 | 3 hrs	X Note 3.
Decrease To: °F/psig/RH/Time	320/3/100/50M	240/11 | 100 | 3 hrs	
Decrease To: °F/psig/RH/Time	230/2/100/4hr	215/0-5/100 | 4 hr	
Decrease To: °F/psig/RH/Time	230-150/2-1/100 ~20 hrs	203/0/100 | 3.5 d. 180/0/100 | 12 d.	
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)		NA	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	N/A	Test	
Spray Composition (4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)	Demin. Water	2000ppm (Surr) (H ₃ BO ₃) pH - 8.2	
Spray Density (gpm/ft ²)	Not stated	0.15	
Spray Duration	N/A	16 days	
Submergence Duration (4.1.3/2.2.5/2.2.5)	N/A	N/A	
In-Leakage Considered (5.2.6, 5.3.2/-/-)	Not stated	N/A	
Time to Submergence	N/A	N/A	
Dust Environment (-/2.2.11/2.2.11)	N/A	N/A	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

NOTES:

Note-1,

B. SPECIMEN DESCRIPTION

Description of the cable specimens and their required energizing potentials and currents are present in Table I:

TABLE I

CABLE SPECIMEN DESCRIPTION & ELECTRICAL LOADING

CABLE SPECIMEN NUMBER	DESCRIPTION	NOMINAL DESIGN DIAMETER	MEASURED OUTSIDE DIAMETER	REQUIRED ELECTRICAL LOADING VAC/AMPS
49.1.1-49.1.3 49.2.1-49.2.3 49.3.1-49.3.3 49.4.1-49.4.3 49.5.1-49.5.3 49.6.1-49.6.3 49.7.1-49.7.3	Low voltage power and control cable, NSG 1/C 12 AWG (7/0305), tinned copper conductor, 45 mil wall of CC-2193, Nuclezil silicone rubber insulation, 6 mil wall of glass braid covering.	.198	.200	480/25

Note 2. The radiation testing envelope the Gamma dose for applications inside and outside primary containment. However beta effects inside containment would exceed the tested values. Therefore qualification



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

NOTES:

Note 2 (cont'd)

for radiation has not been established.

If the cable is installed in conduit or covered cable tray, the beta effects could be eliminated.

Note 3. The test does not envelop the in-containment profile particularly the peak temperature and pressure.

The reviewer stated:

"Silicone rubber insulated cables were tested under Anaconda Continental Test Report No. 79117, and Franklin Institute Test Report No. F-C2935. TVA cable types are designated SROJ, SROAJ, SROJJ, and SROJH on requisition 83999, 85112, and 8586.

The tests are adequate for the LOCA and SLB in containment. The Anaconda test addressed aging: 7 days at 210C (410F), and 28 days at 210C (410F), and a radiation dose of 1.2×10^8 R. The worst HELB valves outside the containment are even exceeded by this thermal aging and further the FIRC test (peak 340F for 2 hours), exceeded the HELB valves also.

Because of the conservatism of these tests including the mandrel bend and dielectric tests in water after the Temperature-Pressure profile, thermal aging and radiation, it is our engineering judgement that there is sufficient margin to warrant continued operation of more than a year in the post-LOCA environment."

[1]

Since traceability between installed cable and the cable tested in F-C2935, it is not considered evidence of qualification. (see item 154)

The peak temperature in the Steen result



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LS-5

NOTES:

Note 3 (cont'd)

is identified by the licensee as 308°F. This temperature is not enveloped by the Anasconda test. The use of aging data (accelerated air oven testing) cannot be used for establishing steam exposure qualification. The oven aging test would establish a qualified life, after which the design basis accident must be superimposed.

It is therefore concluded that the required profile and peak temperature were not enveloped by the Anasconda test conducted for TVA.



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 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

Equipment Item No. 156
 Pressure Switch Located in the HPCI Pump Room and NW Corner Room
 Static-O-Ring Model 6N-AA21
 Monitors Pump Suction Pressure (PS-71-21-1, PS-73-29-1)
 Licensee Reference 4215
 Required Operating Time: 30 days
 TER Checksheet No. 156
 Licensee Submittal: Pages NEB-71-112 and NEB-73-162 [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), RT, P, H, CS, (A), S, (R), M, I, (QM), (RPN), EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or will function when exposed to the applicable DBE environmental service conditions.~~
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
 - Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
 - Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
 - The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____X
o Peak Pressure Adequate	_____X
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____X
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____X
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

I.a Equipment Qualified	_____
I.b Equipment Qualification Pending Modification	_____X
II.a Equipment Qualification Not Established	_____
II.b Equipment Not Qualified	_____
II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a Equipment Exempt From Qualification	_____
III.b Equipment Not in the Scope of the Qualification Review	_____
IV Documentation Not Made Available	_____



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I ; NUREG-0588, Cat. II .

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>EQUIPMENT DESCRIPTION</u>			
Equipment Type	Pressure Switch	Pressure Switch	
Manufacturer's Name (5.2.2/-/-)	Statis-O-Ring	Statis-O-ring	X
Model Number (5.2.2/-/-)	GN-AA21	12N/AA4	Note 3
Serial Number	N/A	N/A	
Features/Mounting (5.2.6/-/-)	Not stated	Horizontal	
Connections/Interfaces (5.2.6/-/-)	Not stated	Not stated	
Location/Elevation	Reader Building	N/A	
Equipment ID No.	varies	N/A	
<u>QUALIFICATION REPORT</u> (8.0/5.0/5.0)			
Report ID Number	30203-2	30203-2	
Report Date	N/A	20 November 1973	
Issued by	N/A	Viking Lab.	
Prepared for	N/A	Belilore Co.	
Referenced Reports	N/A	N/D.	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	N/A	test	
<u>QUALIFICATION TEST PROGRAM</u>			
Functional Test Description (5.2.5/2.2.9/2.2.9)	N/A	Set point cycling	
Operating Conditions (-/2.2.10/2.2.10)	Not stated	N/A	
Load/Cycles/Voltage/ Current/Freq.			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	N/A	Not stated	
Accuracy (5.2.5/-/-)	N/A	Not stated	
Number of Specimens	N/A	2	
Test Instruments Calibrated	N/A	Yes	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active	N/A	
Test Duration (5.2.1/-/-)	N/A	6 hours	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	Not stated by	N/A	
Required Function Time	> 120 sec. 30 days	N/A	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	N/A	Functional	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	N/A	stem	
1. Representative Sample 2. Baseline Data 3. Performance Extremes 4. Thermal Aging 5. Radiation Aging 6. Wear Aging 7. Vibration/Seismic 8. DBE Exposure 9. Post-DBE Exposure 10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	Not stated	Not stated	X
Material Aging Evaluation (7.0/-/-)	Not stated	↓	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	Not stated		
Radiation Aging, Type	Not stated		



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	<i>Not stated</i>	<i>none</i>	
Radiation Aging, Dose Rate	↓	↓	
Radiation Aging, Method	↓	↓	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	<i>Not stated</i>	↓	
Operational Aging (-/4.2/-)	↓	↓	
Other Age Conditioning (-/4.2/-)	↓	↓	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	<i>Not stated</i>	<i>not stated</i>	X
Normal Ambient Temperature	} <i>Not stated</i>	<i>N/A</i>	
Normal Ambient Radiation			
Normal Ambient Humidity			
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	<i>Beavers Ferry Program</i>	<i>N/A</i>	
On-Going Analysis of Failures and Degradation (7.0/-/-)	↓	↓	
Margin (General) (6.0/3.0/3.0)	<i>N/A</i>	↓	
Margin (NUREG-0588, Cat. I) (-/3.2/-)	<i>N/A</i>	↓	
1. Temperature (+15°F)		↓	
2. Pressure (+10%, 10 psig max)		↓	
3. Radiation (not required)		↓	
4. Time (+10%, +1 hour + function time minimum)		↓	



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
<u>ACCIDENT CONDITIONS</u>			
LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA/ MSLB	none	
Radiation Type	Normal		
Radiation Dose (rd) (4.1.2/1.4/1.4)	3x10 ⁷		* X note 2
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	Not stated		
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	Not stated		
Equipment Susceptible to Beta Radiation (4.1.2/-/-)			
Radiation Dose (Normal + Accident) (4.1.2/-/-)			
Plateout Dose Considered (-/1.48/1.48)			
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)			

* The licensee stated that a material
 evaluation had been conducted
 but did not provide any data.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
<u>ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS</u>			
Rate of Temp./Press. Increase	N/D	not stated	
Peak: °F/psig/RH/Time	300/1.3/100%/3 sec	212/0.25/100%/10 hrs	Note 1
Decrease To: °F/psig/RH/Time	228 / 0 / 100 / 24	ambient	X
Decrease To: °F/psig/RH/Time	direction not stated		
Decrease To: °F/psig/RH/Time			
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	N/A	N/A	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)			
Spray Composition (4.1.4/1.3, 2.2.8/ 1.3, 2.2.8)			
Spray Density (gpm/ft ²)			
Spray Duration			
Submergence Duration (4.1.3/2.2.5/2.2.5)			
In-Leakage Considered (5.2.6, 5.3.2/-/-)			
Time to Submergence			
Dust Environment (-/2.2.11/2.2.11)			



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 156

NOTES:

1. The test profile does not envelope the environmental service conditions specified by the licensee.

2. The licensee EQWS states:

"2. The radiation dose of 1×10^6 rad is based upon a materials analysis of the pressure switch. The material in the device which limits the allowable radiation dose are the seals (Buna-N) which, according to several studies including the guidelines furnished in bulletin 79-01B, are acceptable up to a dose of 1×10^6 rad."

specific details of the analysis were not provided. The EQWS sheet indicates a required dose of 3×10^7 rad which is not enveloped by the analysis. Therefore radiation qualification has not been established.

3. The licensee should provide evidence of similarity of the test specimen to that which is installed.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

Equipment Item No. 157
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-000
 Actuates Turbine Exhaust Valves (RCIC/HPIC) (FCV-71-59, FCV-73-64)
 Licensee Reference 662
 Required Operating Time: 30 days
 TER Checksheet No. 157
 Licensee Submittal: Pages MEB-71-01 and MEB-73-01 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment is ~~is~~ qualified and/or will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action see Section 5.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|-----------------------------------|--------------------------------|
| <u>I.a Qualified</u> | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| I.a Qualification Not Established | III.b Not in Scope |
| I.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	_____
Adequate Similarity Between Equipment and Test Specimen Established	_____X
Aging Degradation Evaluated Adequately	_____X
Qualified Life or Replacement Schedule Established (If Required)	_____X
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	_____
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	_____
I.b	Equipment Qualification Pending Modification	_____X
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4701471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan, submitted to NRC in February 1981 with the revised BFN EEEQR (RL).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 157

"X" DENOTES APPROPRIATE EVALUATION

— THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

— THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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NRC Contract No. NRC-03-79-118
 FRC Project No. C5257
 FRC Assignment No. 13
 FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

Equipment Item No. 158
 Motorized Valve Actuator Located in the SE Corner Room
 Limatorque Model SMB-0, DC Motor, Class B Insulation
 HPCI Suppression Pool Suction Valve (FCV-73-26)
 Licensee References 659, 1063, 662, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 158
 Licensee Submittal: Page NEB-73-160A [1, 12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

R, T, QT, RT, P, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,
 Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/~~analysis~~)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Established	<u>X</u>
Aging Degradation Evaluated Adequately	_____
Qualified Life or Replacement Schedule Established (If Required)	_____
Program Established to Identify Aging Degradation	_____
Criteria Regarding Aging Simulation Satisfied (If Required)	_____
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	_____
o Peak Pressure Adequate	_____
o Duration Adequate	_____
o Required Profile Enveloped Adequately	_____
o Steam Exposure (If Required) Adequate	_____
Criteria Regarding Spray Satisfied	_____
Criteria Regarding Submergence Satisfied	_____
Criteria Regarding Radiation Satisfied	_____
Criteria Regarding Test Sequence Satisfied	_____
Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	_____
Criteria Regarding Functional Testing Satisfied	_____
Criteria Regarding Instrument Accuracy Satisfied	_____
Test Duration Margin (1 hour + Function Time) Satisfied	_____
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	_____

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	<u>X</u>
II.a	Equipment Qualification Not Established	_____
II.b	Equipment Not Qualified	_____
II.c	Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified	_____
III.a	Equipment Exempt From Qualification	_____
III.b	Equipment Not in the Scope of the Qualification Review	_____
IV	Documentation Not Made Available	_____



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

LICENSEE RESPONSE TO NRC SER

3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on the EWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEDQR contained in attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan, submitted to NRC in February 1981 with the revised BFN EEDQR (R1).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

"X" DENOTES APPROPRIATE EVALUATION

X THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED.

THE LICENSEE HAS NOT PROVIDED DOCUMENTATION FROM THE MANUFACTURER WHICH STATES THAT THE CITED TEST REPORT IS APPLICABLE TO THIS EQUIPMENT ITEM. THE LICENSEE SHOULD IDENTIFY THOSE MOTORIZED VALVE ACTUATORS WHICH INCORPORATE A MOTOR BRAKE. FOR THE MOTORIZED VALVE ACTUATORS AND MOTOR BRAKES (IF APPLICABLE), THE CLASS OF THE INSULATION SYSTEM MUST BE IDENTIFIED. HOWEVER, DUE TO THE RELATIVELY NON-HARSH ENVIRONMENT AT THE INSTALLED LOCATION AND THE EXTENSIVE RADIATION TESTING PERFORMED ON LIMITORQUE MOTORIZED VALVE ACTUATORS, QUALIFICATION CAN BE ESTABLISHED BY EXPERIENCE WITH THE EXCEPTION OF QUALIFIED LIFE.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE REPLACED WITH A QUALIFIED REPLACEMENT COMPONENT. AN EXACT COMPLETION DATE FOR THIS REPLACEMENT HAS NOT BEEN PROVIDED. THE LICENSEE HAS STATED,

"WORK IS IN PROGRESS TO PURCHASE QUALIFIED REPLACEMENT COMPONENTS. AFTER THEY HAVE BEEN RECEIVED ONSITE, THEY WILL BE INSTALLED AT THE NEXT REFUELING OUTAGE."

THE LICENSEE SHOULD OBTAIN THE APPROPRIATE DOCUMENTATION FROM THE MANUFACTURER WHICH ESTABLISHES TRACABILITY BETWEEN THE INSTALLED AND TESTED EQUIPMENT. THE LICENSEE SHOULD IDENTIFY THE CLASS OF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 159

Equipment Item No. 159
 Pressure Switches Located in the Reactor Building
 Meletron Model 2121-32A
 RECCW Inlet Header Pressure Switch (PS-24-133A, -133B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 159
 Licensee Submittal: Pages EEB-24-1001 and -1002 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 159

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that "the equipment is ~~qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|------------------------------------|--------------------------------|
| I.a Qualified | II.c Qualified Life Deficiency |
| <u>I.b Modification</u> | III.a Exempt |
| II.a Qualification Not Established | III.b Not in Scope |
| II.b Not Qualified | IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 158

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
X = DEFICIENCY

- Documented Evidence of Qualification Adequate X
- Adequate Similarity Between Equipment and Test Specimen Established _____
- Aging Degradation Evaluated Adequately _____
- Qualified Life or Replacement Schedule Established (If Required) _____
- Program Established to Identify Aging Degradation _____
- Criteria Regarding Aging Simulation Satisfied (If Required) _____
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate _____
 - o Peak Pressure Adequate _____
 - o Duration Adequate _____
 - o Required Profile Enveloped Adequately _____
 - o Steam Exposure (If Required) Adequate _____
- Criteria Regarding Spray Satisfied _____
- Criteria Regarding Submergence Satisfied _____
- Criteria Regarding Radiation Satisfied _____
- Criteria Regarding Test Sequence Satisfied _____
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied _____
- Criteria Regarding Functional Testing Satisfied _____
- Criteria Regarding Instrument Accuracy Satisfied _____
- Test Duration Margin (1 hour + Function Time) Satisfied _____
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) _____

NRC QUALIFICATION CATEGORY

DESIGNATION:
X = CATEGORY

- I.a Equipment Qualified _____
- I.b Equipment Qualification Pending Modification X
- II.a Equipment Qualification Not Established _____
- II.b Equipment Not Qualified _____
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified _____
- III.a Equipment Exempt From Qualification _____
- III.b Equipment Not in the Scope of the Qualification Review _____
- IV Documentation Not Made Available _____



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NRC Contract No. NRC-03-79-118
FRC Project No. G5257
FRC Assignment No. 13
FRC Task No. 471

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ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 159

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

Equipment Item No. 160
 Limit Switch Located in the Reactor Building
 NAMCO Model EA-170-11100
 Compressor Valve Position Indication (FCV-64-140, -141, -139)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 160
 Licensee Submittal: Pages EEB-64-1043, -1044, and -1045 [12]

DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:
 (See Section 3 of this TER for Legend)

(R), (T), (QT), (RT), (P), (H), CS, (A), S, (R), M, I, (QM), RPN, EXN, SEN, (QI), RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

<u>Contents</u>	<u>Checksheet Page No.</u>
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Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:

- The Licensee (has/~~has not~~) provided a response to the SER concerns.
- The Licensee (has/~~has not~~) specifically stated that the equipment ~~is qualified and/or~~ will function when exposed to the applicable DBE environmental service conditions.
- The Licensee has presented information which shows there are no outstanding qualification deficiencies.
- The Licensee (has/~~has not~~) proposed a corrective action for this equipment item whose qualification has not been fully established.
- Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- Corrective action specified by the Licensee:
 - Equipment replacement with qualified equipment
 - Equipment modification
 - Equipment relocation above submergence level
 - Relocate or shield equipment from radiation source
 - Verify qualification by additional (testing/analysis)
 - Equipment relocation to a mild environment
 - Qualification testing of equipment in progress
 - Other (_____)
- The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- The Licensee (~~has~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)
- The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.

DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)

- | | |
|--|---|
| <input type="checkbox"/> I.a Qualified | <input type="checkbox"/> II.c Qualified Life Deficiency |
| <input checked="" type="checkbox"/> I.b Modification | <input type="checkbox"/> III.a Exempt |
| <input type="checkbox"/> I.c Qualification Not Established | <input type="checkbox"/> III.b Not in Scope |
| <input type="checkbox"/> I.d Not Qualified | <input type="checkbox"/> IV Documentation Not Available |



EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS

DESIGNATION:
 X = DEFICIENCY

- Documented Evidence of Qualification Adequate
- Adequate Similarity Between Equipment and Test Specimen Established
- Aging Degradation Evaluated Adequately
- Qualified Life or Replacement Schedule Established (If Required)
- Program Established to Identify Aging Degradation
- Criteria Regarding Aging Simulation Satisfied (If Required)
- Criteria Regarding Temperature/Pressure Exposure:
 - o Peak Temperature Adequate
 - o Peak Pressure Adequate
 - o Duration Adequate
 - o Required Profile Enveloped Adequately
 - o Steam Exposure (If Required) Adequate
- Criteria Regarding Spray Satisfied
- Criteria Regarding Submergence Satisfied
- Criteria Regarding Radiation Satisfied
- Criteria Regarding Test Sequence Satisfied
- Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied
- Criteria Regarding Functional Testing Satisfied
- Criteria Regarding Instrument Accuracy Satisfied
- Test Duration Margin (1 hour + Function Time) Satisfied
- Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)

NRC QUALIFICATION CATEGORY

DESIGNATION:
 X = CATEGORY

- I.a Equipment Qualified
- I.b Equipment Qualification Pending Modification
- II.a Equipment Qualification Not Established
- II.b Equipment Not Qualified
- II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified
- III.a Equipment Exempt From Qualification
- III.b Equipment Not in the Scope of the Qualification Review
- IV Documentation Not Made Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

LICENSEE RESPONSE TO NRC SER

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



5. CONCLUSIONS

The tabulations in Section 4.2 represent a summary of the results of the equipment environmental qualification (EEQ) assessment conducted in accordance with the methodology presented in Section 3. The evaluations are based on the available qualification documentation provided by the Licensee, complemented in several cases by other relevant technical information. The major qualification deficiencies that have been identified and the results of the evaluation are shown in the Equipment Environmental Qualification Summary Forms (Tables 4-1, 4-2, 4-3, and 4-4).

Although Sections 4.3, 4.4, and Appendix C of this report present a detailed evaluation of (1) the Licensee's qualification methodology, (2) the equipment environmental qualification of each equipment item, and (3) the Licensee's response to the NRC SER, it is appropriate to highlight for the Licensee and the NRC certain conclusions and concerns reached as a result of the review which require special attention. These concerns are summarized below.

- o The Licensee has not provided a schedule, in its response to the NRC SER, for accomplishing corrective actions for equipment whose qualification has not been established. With respect to "testing," the Licensee stated [14] that the schedule was detailed in "Wyle Laboratories Qualification Program Plan" submitted to the NRC (as Enclosure 1) in TVA's March 3, 1981 submittal [12]. FRC does not have this enclosure to Reference 12 and therefore cannot provide details with respect to schedule.
- o The Licensee has committed to replace many major electrical equipment items which are located outside the drywell potentially exposed to moderately harsh post-accident conditions. It is noted that, in many cases, an appropriate analysis to establish qualification would be a cost-effective method.
- o It appears that the Licensee has many SCEW sheets associated with equipment which provides no safety function. The Licensee should review this matter.

The Licensee has provided the following information with respect to TMI Action Plan items [14]:

"In the development of the list of safety-related electrical equipment required for LOCA/HELB accident mitigation inside and/or outside primary containment (EEEQR Table 5.2) which was submitted to NRC in November 1980 (RO), and February 1981 (R1), TVA addressed the requirement of cold shutdown. TVA also addressed, in their November 1980 (RO), and February 1981 (R1) reports, all TMI devices that were installed in the plant at that time. TVA will address in future revisions of the EEEQR the TMI devices that will be installed in the plant at that time. TVA will address in future revisions of the EEEQR the TMI devices that will be installed when the detail design has been completed and procurement has defined the exact devices to be installed."

The Licensee has provided the following generic responses to the NRC SER [14]:

"TVA has performed a detailed environmental evaluation for that equipment noted as having deficiencies which has a present status of Category I or II as defined in the BFN EEEQR (Table 5.2). Equipment, with deficiencies noted, that has a present status of Category III and IV was not addressed further when (1) the status category has not changed, (2) the planned test for category III equipment covers all deficiencies, and (3) an acceptable justification for continued operation has been given on the EWS. These components will be addressed after testing or replacement is complete. TVA has also corrected all errors contained in Appendixes B and C made by NRC in transferring the equipment from Table 5.2 in the BFN EEEQR to Appendixes B and C.

The method of identifying that all the deficiencies noted for each device listed in Appendix B and C are resolved is shown by the code marked in the column to the right of the deficiencies on Attachment 2. The code legend is as follows:

1. All noted deficiencies for this component identified in the SER have been adequately addressed in the November (RO), and/or February (R1), submittal of the BFN EEEQR to NRC and no other information is required.
2. Those noted deficiencies circled in Attachment 2 have been addressed in the newly revised portion(s) of the EEEQR; those deficiencies marked with an "X" have not been addressed, but will be addressed in the next revision of the EEEQR, and those deficiencies not marked have been previously addressed adequately in TVA's November (RO) or February (R1) submittal of the BFN EEEQR to NRC.
3. This device has a present status of Category III (to be tested) and an acceptable justification for continued operation has been given on

the BWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in Attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (R1).

4. This device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the EEEQR; therefore, the deficiencies noted will not be addressed until the component is replaced. This status is reflected on the Evaluation Work Sheet and Table 5.2 or is reflected in Revision 2 of the EEEQR contained in Attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).
5. Components have been removed from Table 5.2 which was contained in the November 1980 EEEQR submittal per the notes on Table 5.2 (R2) which was contained in the February 2, 1981, revision of the BFN EEEQR (R1).
6. Component has been removed from Table 5.2 which is being submitted with this revision of the BFN EEEQR per the notes on Table 5.2 (R3) or per notes one through four given in Section 4.2 of the SER.
7. Those deficiencies circled have been addressed in Revision 2 of the EEEQR contained in Attachment 3. The device is lacking full qualification due to an unqualified sub-assembly or component in the unit. The unqualified part(s) will be replaced with a qualified replacement to provide full qualification. A justification for continued operation has been given on the EWS."



6. REFERENCES

The references listed in this section of the report were used to develop the Equipment Environmental Qualification evaluation for this plant. The references have been separated into two lists: (1) Plant-Specific References and (2) Plant Generic References. All non-generic documents are listed on the "Plant-Specific References" list. All qualification documents that could be applicable to equipment installed in several plants were listed on the "Plant Generic References" list. These documents include topical reports, test reports, component and material analyses, etc. cited by the Licensee as evidence of qualification in accordance with the documentation reference instructions established by IE Bulletin 79-01B. Since these documents were compiled by a computer data base, the citation numbering was computer generated and the same document has the same generic reference number in all Technical Evaluation reports prepared under this equipment qualification program.

Throughout the text of the report, references are designated by a bracketed number; the reference numbers are not presented in sequential order.

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APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

This appendix contains design basis event (DBE) temperature/pressure profiles (tables) that are referenced by the Licensee in the "Environment Specifications" column on the equipment work sheets (EWS). Three tables in this appendix are used to locate the appropriate figure or table which defines the accident temperature/pressure values for each room. The temperatures/pressures given in either figures or tables are assumed to linearly return to ambient in 24 hours. The three tables are as follows:

- o Table A-1 [Licensee Table B.0 (1,2,3)] - Room Number, Name, and Plant Location

This table relates the room number to a room name and the corresponding plant location (see plant arrangement drawings, sheets 1-6 for plant locations).

- o Table A-2 [Licensee Table B.00 (1,2,3)] - DBE Environmental Temperature/Pressure Curves - Room Number Designation

This table relates various room numbers to the specific Licensee-numbered figures for the DBE temperature and pressure profiles contained in this appendix.

- o Table A-3 (Licensee Table 1) - Summary of Operational Environmental Conditions

This table presents peak temperature, pressure, and integrated radiation doses for various plant locations and operational conditions.

- o Table A-4 [Licensee Table B.1 (1,2,3)] - Temperature/Pressure

This table presents peak accident pressure/temperature values for areas 1 through 16 (identified in Table A-1).

Based on these considerations, each equipment item was evaluated with respect to the environmental service conditions presented in this appendix.

With respect to environmental service conditions, the Licensee has stated:

A. Service Conditions

The environmental conditions present in plant areas that can affect safety-related equipment have been established. The following categories were used to bound anticipated plant conditions.

1. Normal - The temperature, pressure, humidity, and radiation ranges that are expected to be present when the plant is in any of the technical specification modes of operation.
2. Abnormal- Conditions that could exist for all areas for a short period of time that may occur once or more a year.
3. Accident- Environmental conditions that would be experienced as a result of high energy pipe breaks outside containment, or a large, intermediate or small LOCA or main stream line break inside containment.

All analyses performed to determine the service conditions were performed consistent with the guidelines of IE Bulletin 79-01B and NUREG-0588 and in accordance with either TVA quality assurance procedure EP 3.03 or General Electric's internal quality assurance program.

B. Temperature and Pressure Inside Containment

The controlling breaks for the pressure response of the drywell and wetwell and the temperature response of the wetwell are the large LOCA Design Basis Accident (DBA) and the Intermediate Break Accident (IBA). The DBA and a 0.5 ft² steam leak produce the most severe temperature transient in the drywell. The containment pressure and temperature response for all breaks were evaluated by the methods discussed in General Electric Report No. NEDO-20533, June 1974. Mass and energy releases were calculated using the methods also discussed in the above General Electric report. Details of the analyses are provided in FSAR Section 14 and General Electric Report NEDO-24580.

In response to the NRC SER, the Licensee stated [14]:

"SER Section 3.2 Service Conditions - Containment Spray System (Single Failure)"

A discussion of the operation of the containment spray system as it is related to its source of demineralized water and the concept of single failure is given below.

The torus serves as the water source for the containment spray. It contains demineralized water. No chemical spray is used at BFN.

The primary containment airspace at BFN can be sprayed using the RHRS containment spray mode. In this mode, the unit operator manually aligns the RHR system to inject torus water through the drywell and torus spray headers. Per BFN FSAR Vol. 7 question response 12.2.16, it is necessary to spray the containment to mitigate the effects of various small steam-line breaks inside containment. Redundant and fully divisionalized instruments are used to notify the operator of drywell/torus conditions that require containment spray. The two RHR loops are redundant and fully divisionalized. All equipment necessary to spray the containment is required to be environmentally qualified.

SER Section 3.5 Submergence - Inside and Outside Primary Containment

A discussion of the issue of submergence both inside and outside primary containment is given below.

Water released from a LOCA/HELB inside primary containment will drain to the drywell sumps. For large prolonged releases the drywell sumps will be filled and water will accumulate in the drywell base. If the water level reaches plant elevation 552 feet, the water will spill over into the downcomer connections between the drywell and torus. Any further water accumulation will drain into the torus and increase the torus water level. The torus contains sufficient free volume to accommodate the entire inventory of the reactor coolant and one condensate storage tank. Based on this, the submergence level inside the drywell is plant elevation 552 feet, and the maximum submergence level inside the torus has been conservatively calculated to be plant elevation 542 feet.

SER Section 3.6 Chemical Spray

The effects of demineralized water upon equipment qualification for that equipment located inside primary containment is addressed on the attachments of the EWS for all equipment evaluated as qualified to the DOR guidelines. For that equipment to be tested or replaced, this will be addressed in the EWSs after testing or replacement. Chemical spray has been considered in the evaluations of generic devices such as cables, junction boxes, terminal blocks, etc., but the results will not be placed on the EWS attachments until the next revision of the EEEQR."

C. Outside Containment

High Energy Line Breaks

Plant areas outside containment were reviewed to determine areas where high energy piping was located and could potentially produce effects that would impact safety-related equipment. The areas affected by high energy line breaks are the reactor building and the main steam valve vaults.

1. Reactor Building

The high energy lines located in the reactor building are:

- (1) High Pressure Coolant Injection (HPCI) steam supply to the pump turbine - 547°F, 1020 psia, quality - 1.
- (2) Reactor Core Isolation Cooling (RCIC) supply to the RCIC pump turbine - 547°F, 1020 psia, quality - 1.
- (3) Reactor Water Cleanup (RCU) system - 547°F, 1020 psia, quality - 0.

Single-ended circumferential ruptures at the fluid conditions listed above were postulated. Mass and energy releases for all steam supply lines except one break of the RCU were generated using the Moody critical flow correlation assuming an FL/D equal to zero. Upstream pressure and temperature, and therefore mass flow rates, were assumed to remain constant until the line was isolated. These steam supply lines isolate automatically on high temperature in the reactor building. Temperature sensors are located in the vicinity of the line to assure rapid detection and isolation. Isolation times include signal process time, valve stroke time, and break detection time. The sensors used are redundant, class 1E, and electrically trained.

Mass and energy release of the remaining RCU break was generated using the RETRAN computer code. Only this break requires operator action for isolation. Isolation was assumed to occur 10 minutes after the break. Detection is based on high fluid temperature at the discharge of the nonregenerative heat exchangers.

The steam valve vault was modeled using three nodes and were input into the COMPARE-MOD1 computer code. No heat sinks were considered.

The valve vaults at Browns Ferry were constructed with large blowout panels to provide pressure relief to the turbine building in the event of a pipe break. These paths were included in the model.

2. Radiation Environment

The radiation environments inside the drywell and in the reactor building after a design basis LOCA were calculated consistent with the requirements of IE Bulletin 79-01B and NUREG-0588.

Initial airborne sources in the drywell were calculated assuming an instantaneous release of 100 percent of the core inventory of iodine. Transfer of iodine from the drywell free volume to the water in the torus was conservatively calculated as a function of time until the airborne concentration was reduced by a factor of 200 (considered to be at equilibrium). Sources in the water in the torus were calculated assuming an instantaneous release of 1 percent of the core inventory of the solid fission products and the iodine transferred from the drywell. Airborne activity in the reactor building was calculated based on a design basis leak rate from the primary containment and design flow of the SGTs.

Source terms were calculated at various time after an accident allowing for decay and dose rates were calculated with a point-kernel-with-buildup computer code. Radiation exposures in the reactor building due to recirculation of the torus water through the RHR and containment spray systems were also calculated. These dose rates were then integrated over the duration of the accident.

3. Main Steam Valve Vaults

The high energy lines in the valve vaults are the main steam lines and the main feedwater lines. Breaks in the main steam line are controlled from an environmental standpoint due to the large line size and the high energy associated with the steam. Conditions of the main steam are 550°F, 1050 psia, quality - 1.

A double-ended rupture of the main steam coincident with a break of the 4-inch RCIC steam line was evaluated. Mass and energy releases were provided by General Electric. Break flow was terminated by isolation of the main steam lines based on signals from safety-related sensors.

4. Operation Environmental Conditions

An environmental listing of service conditions are tabulated in Table 1. The service conditions considered were pressure, temperature, humidity, and radiation. Normal and abnormal space ambient temperatures for nonaccident conditions were obtained from information used in the initial design phase of the plant in conjunction with data accumulated at the plant site in various spaces, for all units, under extreme outside temperature conditions (100°F outside atmosphere). Pressures and temperatures for accident conditions were obtained from transient curves and analysis which studied the effects of a LOCA on reactor zone spaces. Environmental service and conditions were only considered in the reactor zone and primary containment. The control bay and electrical board room were not considered since their atmospheres did not interface with the reactor zone environment. The environmental table of service conditions was developed for various plant conditions including the following: normal average day, abnormal conditions (outside temperature 96-100° and maximum river water temperature exists), LOCA/HELB inside primary containment, HELB outside primary containment, and tornado (sudden pressure drop by 3 pounds per square inch).

Table A-1. Licensee Table B.0 (1,2,3)

Room Number, Name, and Plant Location

<u>Room No.</u>	<u>Room Name</u>	<u>Plant Location*</u> <u>(Sheet 1-6)</u>
0	Inside Primary Containment (Drywell)	Sheet 2
00	Inside Primary Containment (Wetwell)	Wetwell
1	HPCI Pump (or Turbine) Room; elevation 519.0'	Sheet 1
2	S.W. RHR Pump Room; elevation 519.0'	Sheet 1
3	N.W. RICI and Core Spray Pump Room; elevation 519.0'	Sheet 1
4	N.E. Core Spray Pump Room; elevation 519.0'	Sheet 1
5	S.E. RHR Pump Room; elevation 519.0'	Sheet 1
6	Pressure Suppression Chamber (HPCI Torus Room); elevation 519.0'	Sheet 1
7	Main Steam Vault Room	Sheet 2
8	Open Area; elevation 565.0'	Sheet 3
9	Open Areas; elevation 593.0'	Sheet 3
10	RWCU Pump Room; elevation 593.0'	Sheet 3
11	RWCW Heat Exchange Room; elevation 593'	Sheet 3
12	Open Areas; elevation 621.25'	Sheet 4
13	South Open Areas; elevation 639.0'	Sheet 5

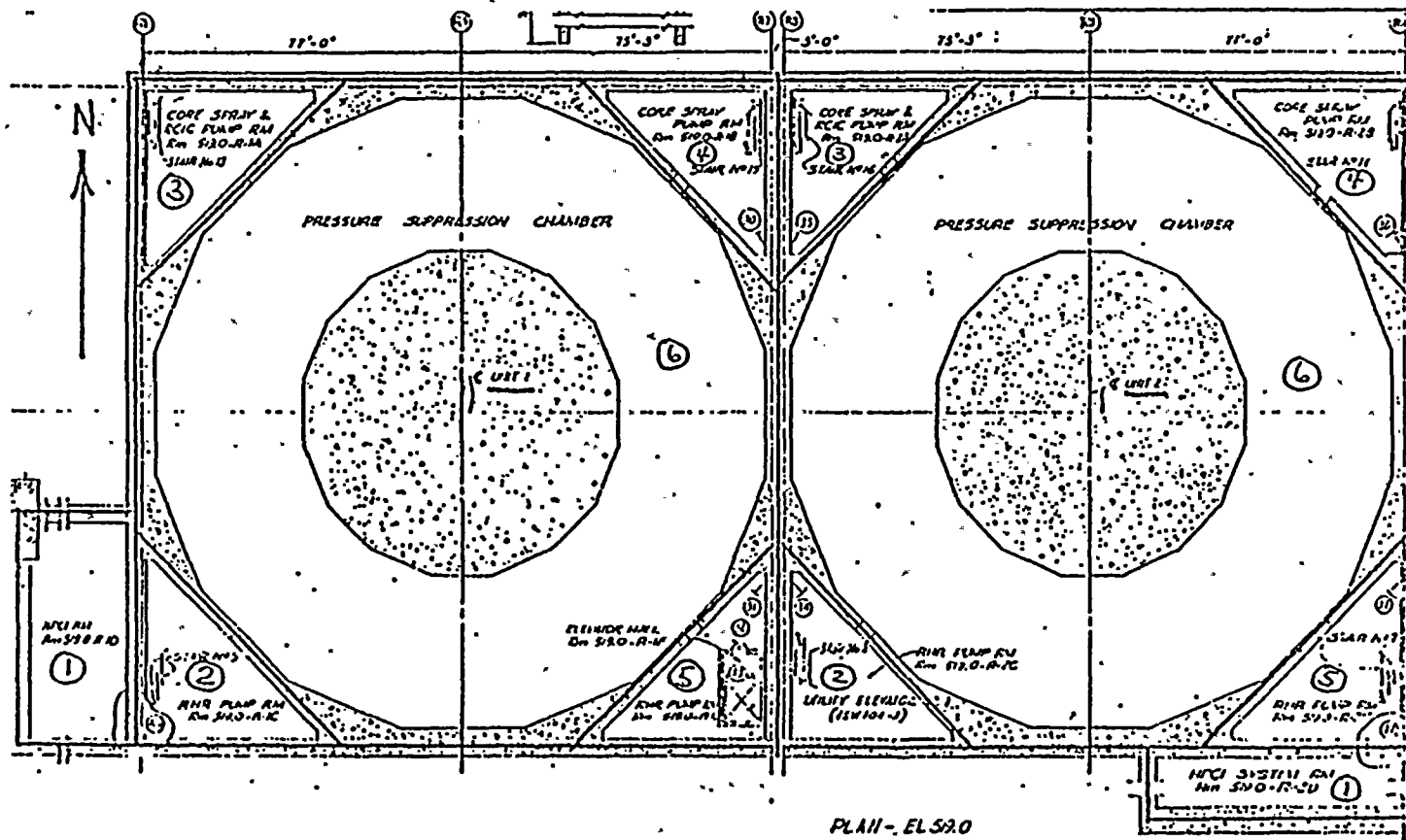
* Unit 2 locations same as Unit 3.

Table A-1 (Cont.) Licensee Table B.0 (1,2,3)

<u>Room No:</u>	<u>Room Name</u>	<u>Plant Location*</u> <u>(Sheet 1-6)</u>
14	North Open Area; elevation 639.0'	Sheet 5
15	Units 1-3 Refueling Floor; elevation 664.0'	Sheet 6
16	Unit 1-3; elevation 593; RWCU BW receiving tank rm	Sheet 3
17A	Unit 1-3; elevation 639; RWCU Demineralizer A	Sheet 5
17B	Unit 1-3; elevation 639; RWCU Demineralizer B	Sheet 5
18	Unit 1-3; elevation 621.25; Cleanup Demin Vlv Rm	Sheet 4

* Unit 2 locations same as Unit 3.

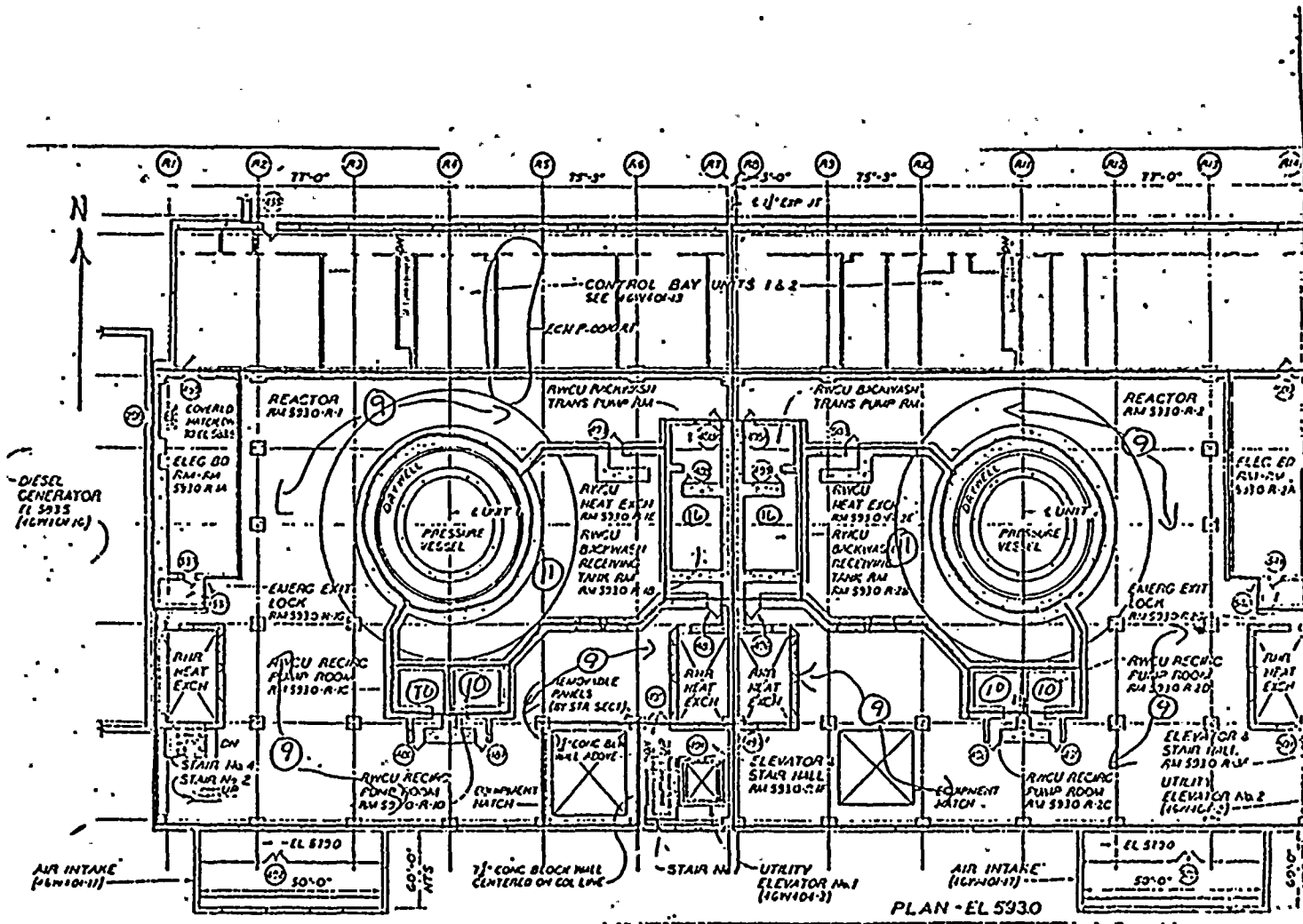
A-9



Sheet 1 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
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A-11



PLAN - EL 5930

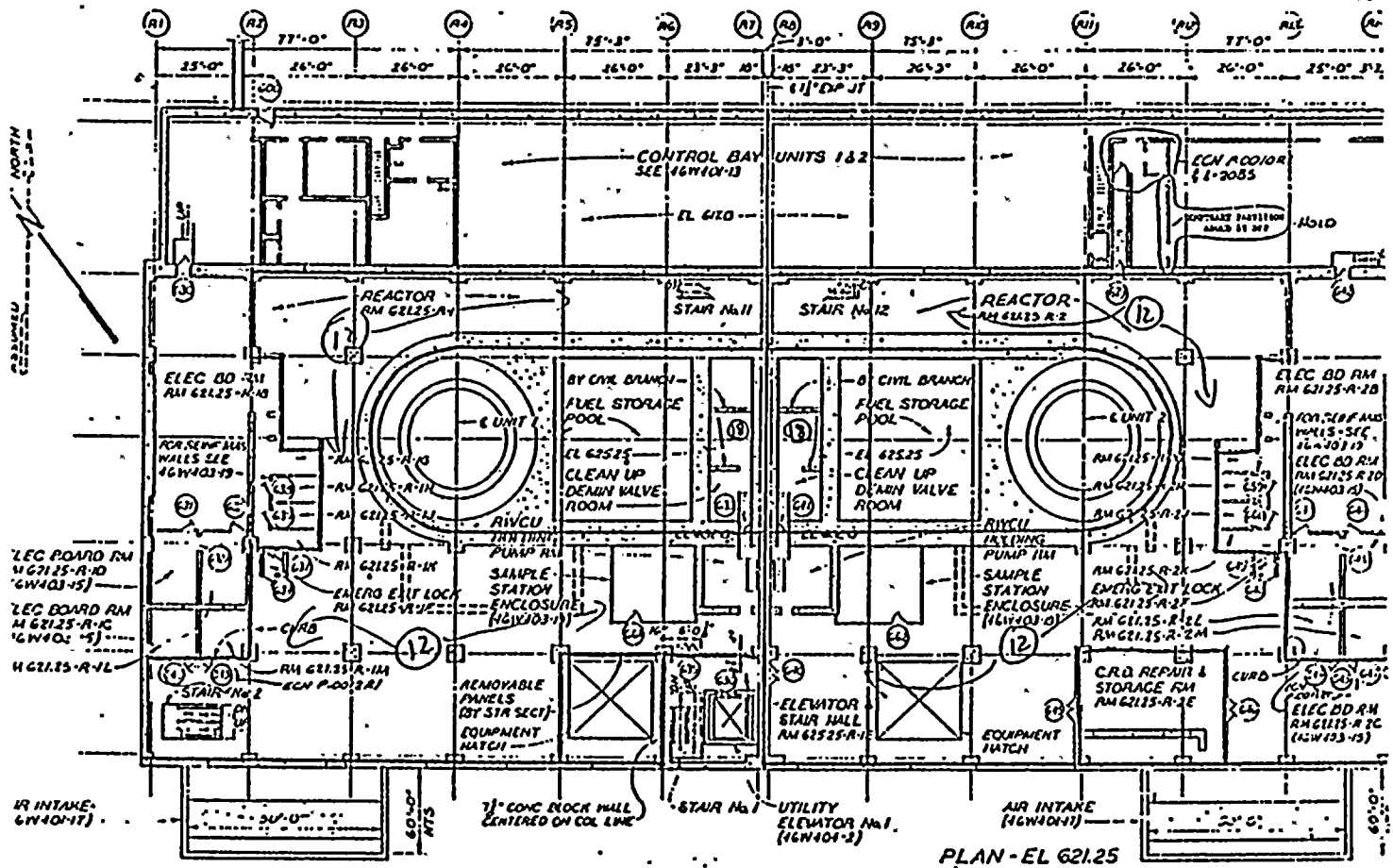
FIGURE SUPPLIED
BY THE LICENSEE

Sheet 3 of 6
Appendix B
TABLE B.0 (1,2,3)

TRR-C5257-471

Table A-1 (Cont.). Licensee Table B.0 - Sheet 4 of 6

A-12



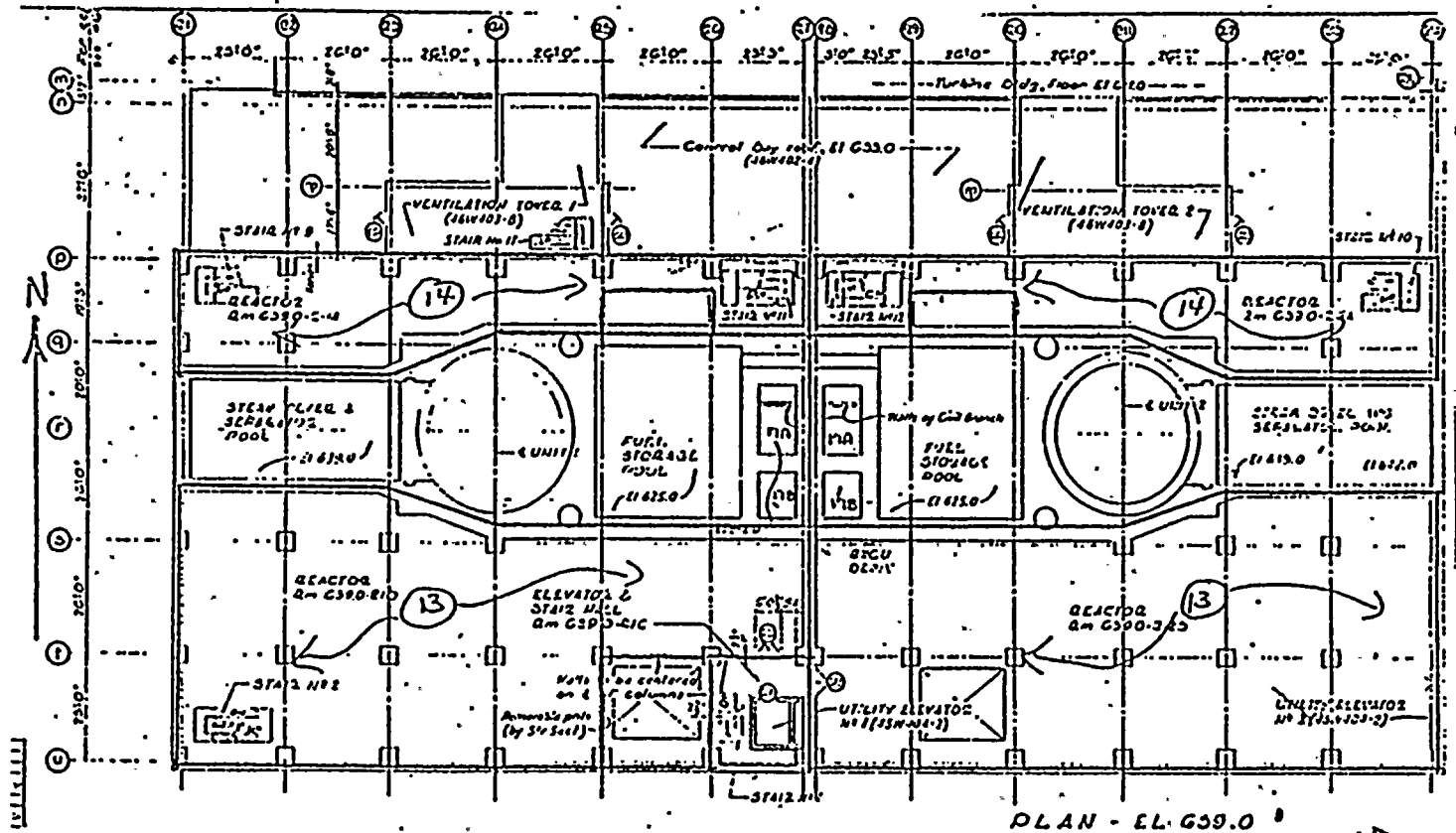
PLAN - EL 621.25

Sheet 4 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
BY THE LICENSEE

Table A-1 (Cont.). Licensee Table B.0 - Sheet 5 of 6

A-13

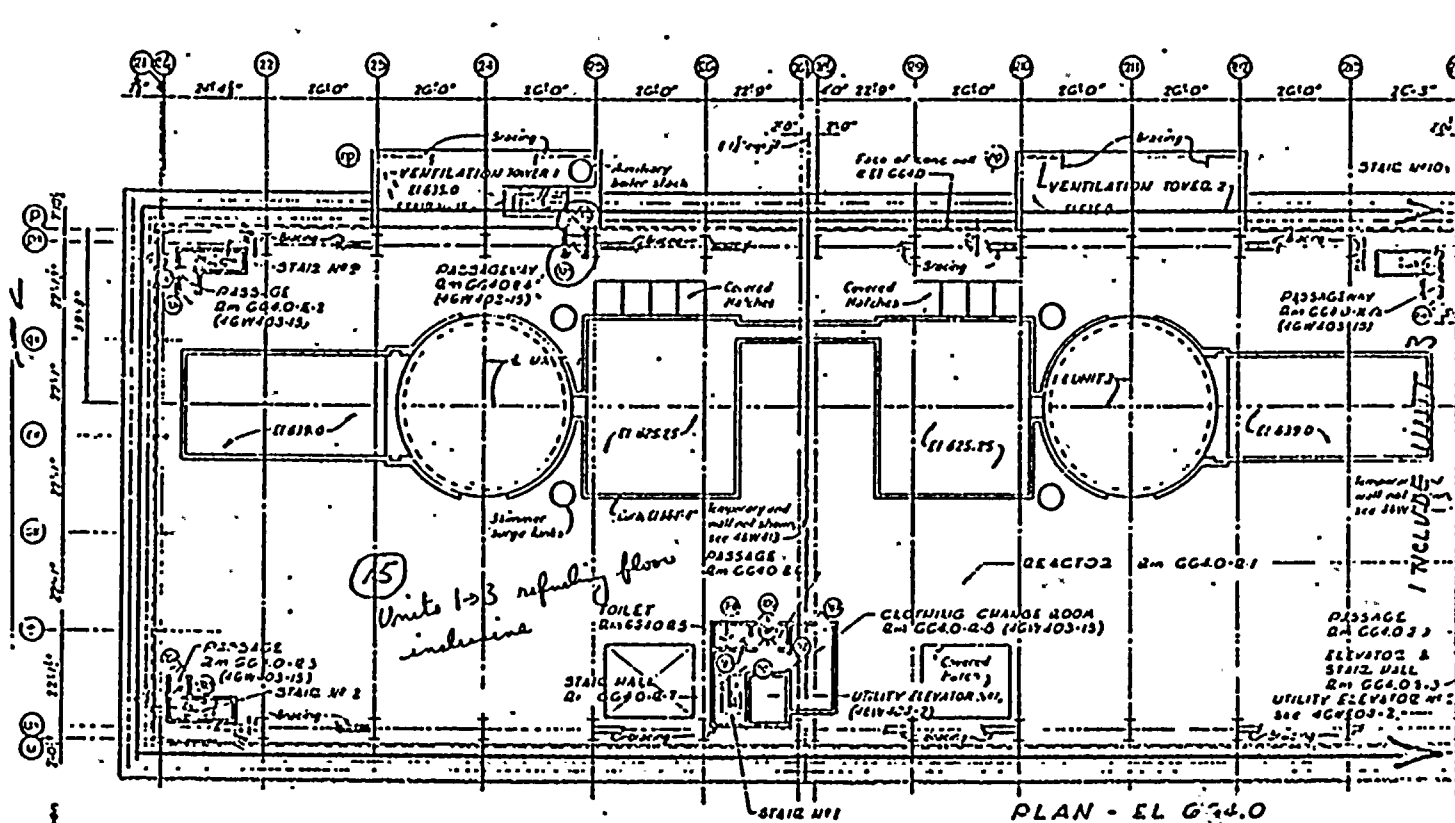


Sheet 5 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
BY THE LICENSEE

Table A-1 (Cont.). Licensee Table B.0 - Sheet 6 of 6

A-14



PLAN - EL G4.0

Sheet 6 of 6
Appendix B
TABLE B.0 (1,2,3)

FIGURE SUPPLIED
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TABLE B.00 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS*

Room No. Designation	Unit 1		Units 2 and 3	
	Temperature	Pressure	Temperature	Pressure
0	Figure B.0 (1,2,3)	Figure B.0 (1,2,3)	Figure B.0 (1,2,3)	Figure B.0 (1,2,3)
00 (Metwell)	B.00 (1,2,3)	B.00.0 (1,2,3)	B.00 (1,2,3)	B.00.0 (1,2,3)
1	B.1 (1)	↓ Table B.1 (1,2,3)	B.1 (2,3)	↓ Table B.1 (1,2,3)
2	B.2 (1)		B.2 (2,3)	
3	B.3 (1)		B.3 (2,3)	
4	B.4 (1)		B.4 (2,3)	
5	B.5 (1)		B.5 (2,3)	
6	B.6 (1)		B.6 (2,3)	
7	B.7 (1)		B.7 (2,3)	
8	B.8 (1)		B.8 (2,3)	
9	B.9 (1)		B.9 (2,3)	
10	B.10 (1)		B.10 (2,3)	
11	B.11 (1)		B.11 (2,3)	
12	B.12 (1)		B.12 (2,3)	
13	B.13 (1)		B.13 (2,3)	
14	B.14 (1)		B.14 (2,3)	
15	Table B.1 (1,2,3)		Table B.1 (1,2,3)	
16	B.16 (1)**		B.16 (2,3)**	

**Same as room 9 for units 1, 2, and 3

FIGURE SUPPLIED
BY THE LICENSEE

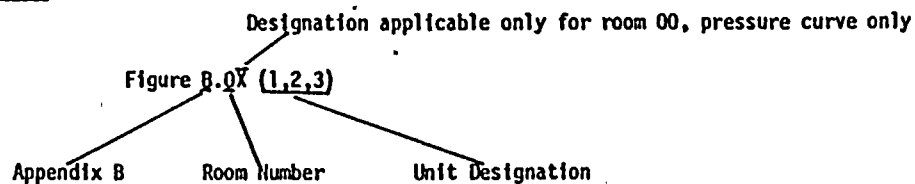
Table A-2. Licensee Table B.00 (Cont.)

TABLE B.00 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS* (Continued)

Room No. Designation	Unit 1		Units 2 and 3	
	Temperature	Pressure	Temperature	Pressure
17A	Table B.1 (1,2,3)	Table B.1 (1,2,3)	Table B.1 (1,2,3)	Table B.1 (1,2,3)
17B				
18				

*Figure Designation:



*Table Designation:

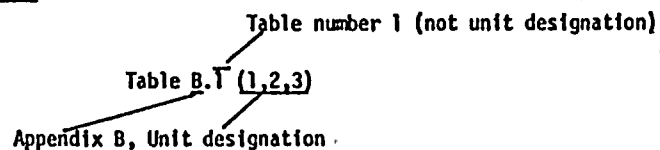


FIGURE SUPPLIED
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Table A-3. Licensee Table 1

TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (°F)	Peak Humidity (%)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Outside	--	--	2	ATM	96-100	100	5 x 10 ²	NA
			5	11.4	NA	NA	NA	NA
Reactor Building	541.5	Drywell	1	15.6	140	100	1 x 10 ⁸	NA
			2	15.6	150	100	1 x 10 ⁸	NA
			3	69.4	325	100	NA	Center 1 x 10 ⁸ 2 x 10 ⁹ Edge 4 x 10 ⁷ 4 x 10 ⁹
			4	NA	NA	NA	NA	NA
			5	15.6	NA	NA	NA	NA
			519.0	Wetwell	1	ATM	95	100	NA	NA
	2	ATM	105		100	NA	NA	
	3	43.2	158		100	NA	2 x 10 ⁸	
	4	NA	NA		NA	NA	NS	
	5	ATM	NA		NA	NA	NA	
	519.0	HPCI Room	1	ATM ^a	95	98	2 x 10 ⁴	NA
			2	ATM ^a	105	98	2 x 10 ⁴	NA
			3	ATM ^a	150	100	NA	3 x 10 ⁴
			4	15.7	300	100	NA	NS
			5	11.4	NA	NA	NA	NA
519.0	SW Pump Room	1	ATM ^a	95 ^{***}	98	2 x 10 ⁴	NA	
		2	ATM ^a	105 ^{***}	98	2 x 10 ⁴	NA	
		3	ATM ^a	160	100	NA	3 x 10 ⁷	
		4	15.0	292(U1) 158(U2&3)	100	NA	NS	
		5	11.4	NA	NA	NA	NA	

FIGURE SUPPLIED
BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

<u>Plant Location</u>	<u>Elevation</u>	<u>Building Location</u>	<u>Operational Condition</u>	<u>Pressure Extreme (PSIA)</u>	<u>Peak Temperature (°F)</u>	<u>Peak Humidity (%)</u>	<u>Total 40-Yr Integrated Dose (Rads)</u>	<u>Integrated Accident Dose (Rads)</u>
Reactor Building	519.0	NW Pump Room	1	ATM ^a	95	98	2 x 10 ⁴	NA
			2	ATM ^a	105	98	2 x 10 ⁴	NA
			3	ATM ^a	160	100	NA	3 x 10 ⁷
			4	15.0	297	100	NA	NS
			5	11.4	NA	NA	NA	NA
	519.0	NE Pump Room	1	ATM ^a	95	98	2 x 10 ⁴	NA
			2	ATM ^a	105	98	2 x 10 ⁴	NA
			3	ATM ^a	160	100	NA	3 x 10 ⁷
			4	15.0	171(U1) 160(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	519.0	SE Pump Room	1	ATM ^a	95	98	2 x 10 ⁴	NA
			2	ATM ^a	105	98	2 x 10 ⁴	NA
			3	ATM ^a	160	100	NA	3 x 10 ⁷
			4	15.0	139(U1) 294(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	519.0	Pressure Suppression Chamber	1	ATM ^a	95 ^{***}	98	1.5 x 10 ⁵	NA
			2	ATM ^a	105 ^{***}	98	1.5 x 10 ⁵	NA
			3	ATM ^a	170	100	NA	3 x 10 ⁷
			4	15.0	217(U1) 220(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
565	Main Steam Valve Vault	1	ATM ^a	140	98	2 x 10 ⁶	NA	
		2	ATM ^a	160	98	2 x 10 ⁶	NA	
		3	ATM ^a	140	100	NA	3 x 10 ⁴	
		4	21.5	308	100	NA	NS	
		5	11.4	NA	NA	NA	NA	

FIGURE SUPPLIED
 BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (°F)	Peak Humidity (%)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor Building	565	General Floor Area	1	ATM ^a	90	98	1 x 10 ⁵	NA
			2	ATM ^a	100	98	1 x 10 ⁵	NA
			3	ATM	140	100	NA	2.1 x 10 ⁷ _{NS}
			4	15.0	147(U1) 157(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	593	General Floor Area	1	ATM ^a	90	98	2 x 10 ⁴	NA
			2	ATM ^a	100	98	2 x 10 ⁴	NA
			3	ATM	135	100	NA	2.1 x 10 ⁷ _{NS}
			4	15.0	214(U1) 211(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	593	Reactor Water Cleanup Pump Rooms	1	ATM ^a	120	98	1.4 x 10 ⁷	NA
			2	ATM ^a	130	98	1.4 x 10 ⁷	NA
			3	ATM	135	100	NA	3 x 10 ⁴
			4	15.9	220	100	NA	NS
			5	11.4	NA	NA	NA	NA
	593	Heat Exchanger Room	1	ATM ^a	125	98	1.4 x 10 ⁷	NA
			2	ATM ^a	135	98	1.4 x 10 ⁷	NA
			3	ATM	135	100	NA	3 x 10 ⁷
			4	18.2	227(U1) 221(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
621	General Floor Area	1	ATM ^a	90	98	1 x 10 ³	NA	
		2	ATM ^a	100	98	1 x 10 ³	NA	
		3	ATM	185	100	NA	3 x 10 ⁴	
		4	15.0	174(U1) 199(U2&3)	100	NA	NS	
		5	11.4	NA	NA	NA	NA	

FIGURE SUPPLIED
BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (°F)	Peak Humidity (%)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor Building	639	General Floor Area (South)	1	ATM [#]	90	98	1 x 10 ³	NA
			2	ATM [#]	100	98	1 x 10 ³	NA
			3	ATM	130	100	NA	3 x 10 ⁴
			4	15.0	135(U1) 178(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	639	General Floor Area (North)	1	ATM [#]	90	98	1 x 10 ³	NA
			2	ATM [#]	100	98	1 x 10 ³	NA
			3	ATM	130	100	NA	3 x 10 ⁴
			4	15.0	153(U1) 174(U2&3)	100	NA	NS
			5	11.4	NA	NA	NA	NA
	664	Refueling Floor	1	ATM [#]	90	98	1 x 10 ³	NA
			2	ATM [#]	100	98	1 x 10 ³	NA
			3	15.0	120	100	NA	3 x 10 ⁴
			4	NA	NA	NA	NA	NS
			5	11.4	NA	NA	NA	NA
	593.0	RWCU BW Receiving Tank Room	1	ATM [#]	95	98	5.3 x 10 ⁷	NA
			2	ATM [#]	105	98	5.3 x 10 ⁷	NA
			3	ATM	135	100	NA	3 x 10 ⁴
			4	15.0	214(U1) 211(U1&2)	100	NA	NS
			5	11.4	NA	NA	NA	NA
639.0	RWCU Demineralizer A	1	ATM [#]	90	90	2.1 x 10 ⁸	NA	
		2	ATM [#]	100	90	2.1 x 10 ⁸	NA	
		3	ATM	100	90	NA	3 x 10 ⁴	
		4	ATM	105	90	NA	NS	
		5	11.4	NA	NA	NA	NA	

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FIGURE SUPPLIED
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Table A-3. Licensee Table 1 (Cont.)

TABLE 1
 BROWNS FERRY NUCLEAR PLANT
 SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

<u>Plant Location</u>	<u>Elevation</u>	<u>Building Location</u>	<u>Operational Condition</u>	<u>Pressure Extreme (PSIA)</u>	<u>Peak Temperature (°F)</u>	<u>Peak Humidity (%)</u>	<u>Total 40-Yr Integrated Dose (Rads)</u>	<u>Integrated Accident Dose (Rads)</u>
Reactor Building	639.0	RHCU Demineralizer B	1	ATM [#]	90	90	2.1 x 10 ⁸	NA
			2	ATM [#]	100	90	2.1 x 10 ⁸	NA
			3	ATM	100	90	NA	3 x 10 ⁴
			4	ATM	105	90	NA	NS
			5	11.4	NA	NA	NA	NA
	621.5	Cleanup Demineralizer Valve Room	1	ATM [#]	95	90	1.7 x 10 ⁵	NA
			2	ATM [#]	105	90	1.7 x 10 ⁵	NA
			3	ATM	105	90	NA	3 x 10 ⁴
			4	ATM	110	90	NA	NS
			5	11.4	NA	NA	NA	NA

FIGURE SUPPLIED
 BY THE LICENSEE

Table A-3. Licensee Table 1 (Cont.)

NOTES:

A. Operational condition definitions:

1. Normal average day.
2. Abnormal conditions, outside temperature 96-100°F and maximum river water temperature exists. The maximum duration for this condition is 8 hours during a 24-hour period but may occur on a daily basis for a 2- or 3-week period. (Outside design temperature is 95°F.)
3. LOCA/HELB inside primary containment.
4. HELB outside primary containment.
5. Tornado (sudden pressure drop of 3.0 pounds per square inch).

B. ATM indicates a pressure equal to atmospheric pressure will be present. Normal atmospheric pressure at the Browns Ferry site is 14.4 pounds per square inch.

C. ATM[#] indicates a pressure slightly below atmospheric.

D. All dose rates and integrated dose rates shown are upper limits for the summation of the gamma and beta contributions unless otherwise indicated. All dose rates are for LOCA; HELB is not significant (denoted NS). Maximum dose rates for these elevations are indicated by [#]. Actual values may vary significantly depending on location. Total radiation dose rates can be obtained by adding the 40-year integrated and accident dose rates.

E. Normal humidity is 30 to 80 percent.

F. For operational condition 3, the drywell and wetwell pressure and temperature values are peak values. For transient conditions, see attachment 1.

G. For operational condition 4, temperatures shown are peak values for transient conditions (see attachment 2).

H. Pressure, humidity, and radiation parameters apply to units 1-3. Temperatures are applicable to all units unless otherwise indicated. ^{###} indicates space temperatures may reach 150°F during normal shutdown mode.

I. Primary containment areas are not subject to a chemical spray.

J. Reactor building equipment is not subject to submergence.

K. NA indicates not applicable for this operating condition.

E40298.20

Table A-4. Licensee Table B.1 (1,2,3)

TABLE B.1 (1,2,3)

TEMPERATURE - PRESSURE (Selected Areas)

<u>Unit 1</u>		<u>Unit 2 & 3</u>	
<u>Time</u>	<u>Compartment (1)</u>	<u>Time</u>	<u>Compartment (1),(10), & (11)</u>
2 sec	1.3 psig	Same as for unit 1	
5 "	1.1 "		
11 "	.8 "		
30 "	.1 "		
50 "	0. "		

<u>Time</u>	<u>Compartment (10)</u>	<u>Time</u>	<u>All Remaining Area</u>
.02 sec	2.4 psig	1 sec	.1 psig
.6 "	.8 "	30 "	.5 "
5 "	1.3 "	45 "	.5 "
45 "	1.3 "	50 "	.1 "
47 "	.2 "	120 "	0. "

<u>Time</u>	<u>Compartment (11)</u>	<u>All Units Compartment 7</u>	
		<u>Time</u>	<u>Steam Valve Vault</u>
1 sec	2.4 psig	.1 sec	1.7 psig
10 "	3.4 "	3 "	7.1 "
45 "	3.8 "	4 "	4.5 "
47 "	.4 "	5 "	2.7 "
55 "	.1 "	6 "	2.0 "
120 "	0. "	10 "	1.8 "
		150 "	1.8 "

<u>Time</u>	<u>All Remaining Areas</u>
1 "	.1 psig
30 "	.5 "
45 "	.6 "
50 "	.2 "
120 "	0. "

Temperature-Pressure (Compartment 15, 17A, 17B, 18) - All Units

<u>Room No.</u>	<u>Temperature (° F)</u>	<u>Pressure (PSIA)</u>
15	120	15.0
17A	105	Atm.
17B	105	Atm.
18	110	Atm.

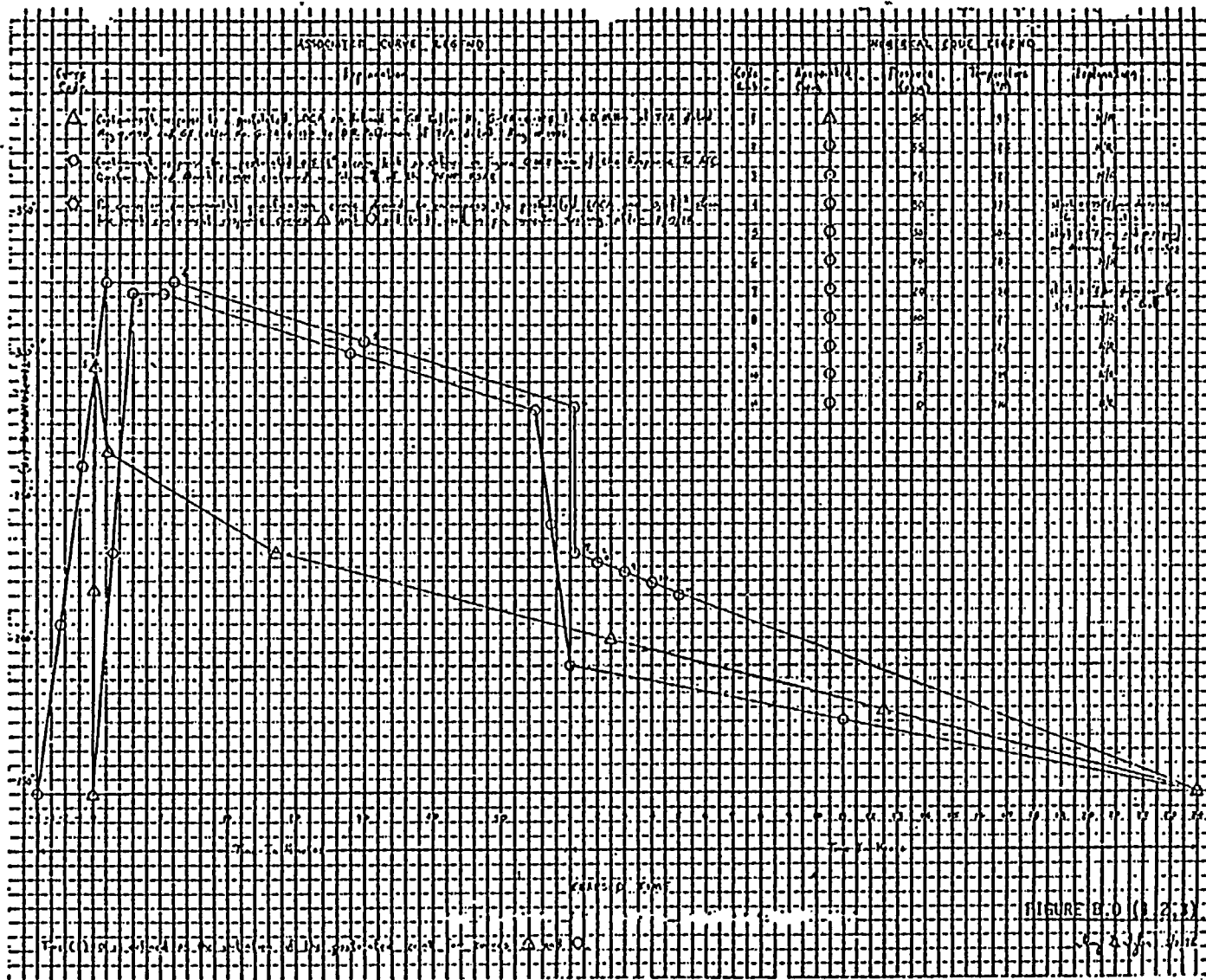


Figure A-1. DBA/IBA Dry Temperature Response Environmental Test Curve (after 1/17/78). (Licensee Figure C.1-3)

FIGURE SUPPLIED BY THE LICENSEE

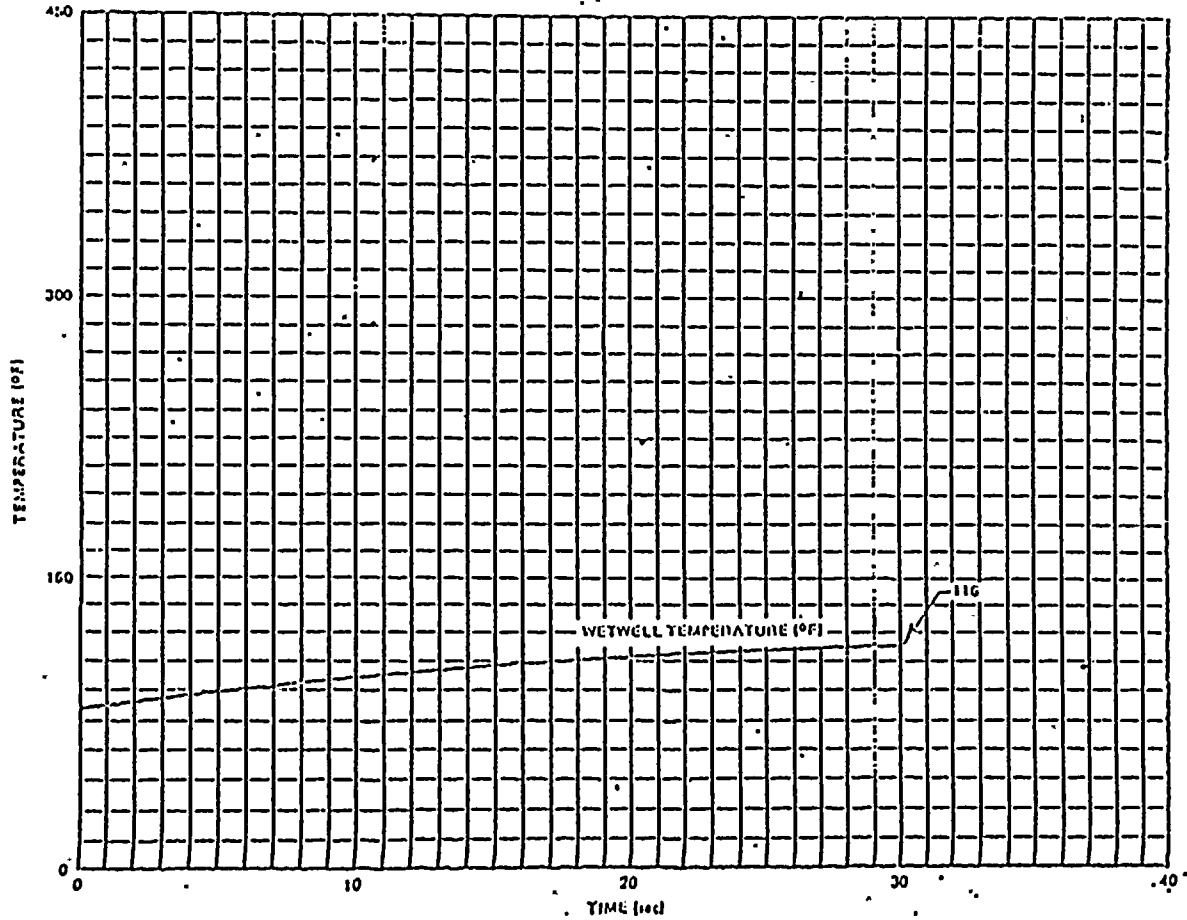


Figure A-2. DBA Wetwell Temperature Response (Licensee Figure C.1-1)

FIGURE SUPPLIED
BY THE LICENSEE

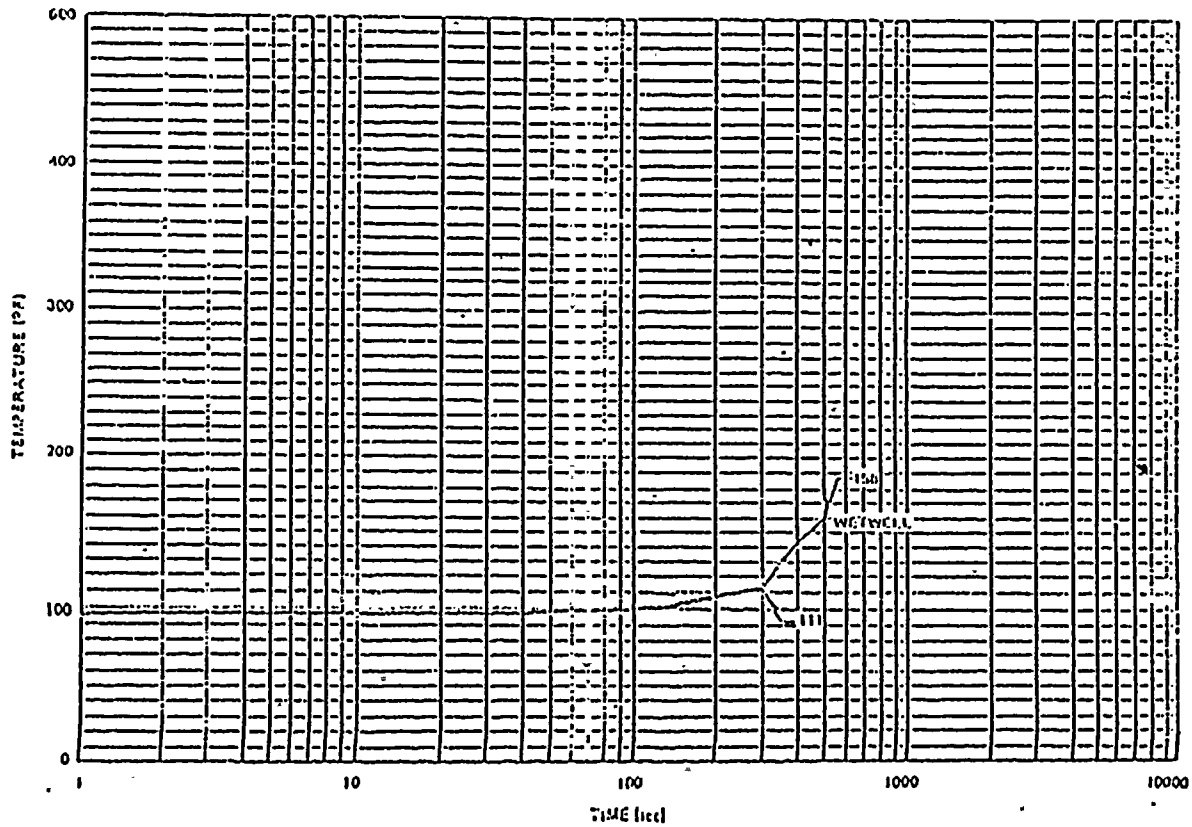


Figure A-3. IBA Wetwell Temperature Response (Licensee Figure C.1-2)

FIGURE SUPPLIED
BY THE LICENSEE

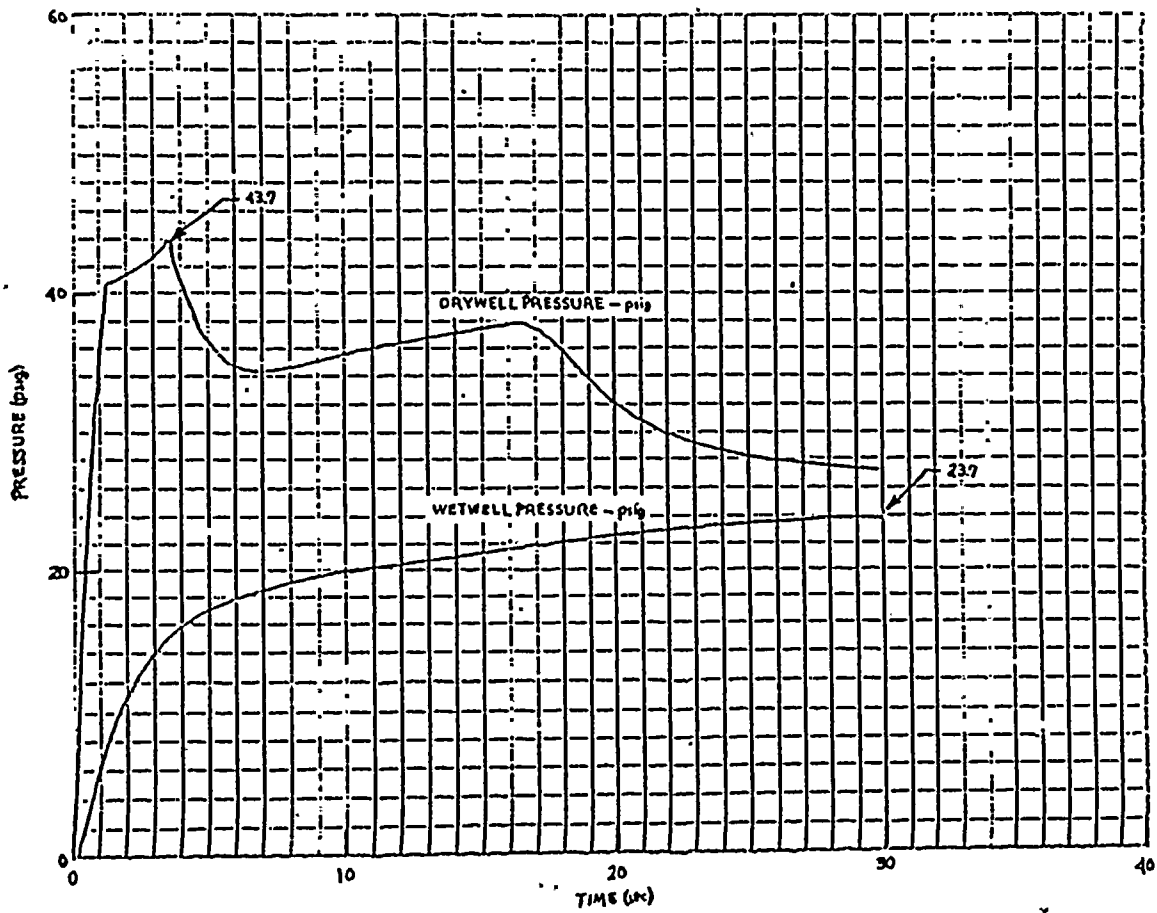


Figure A-4. DBA Containment Pressure Response (Licensee Figure C.1-4)

FIGURE SUPPLIED
BY THE LICENSEE

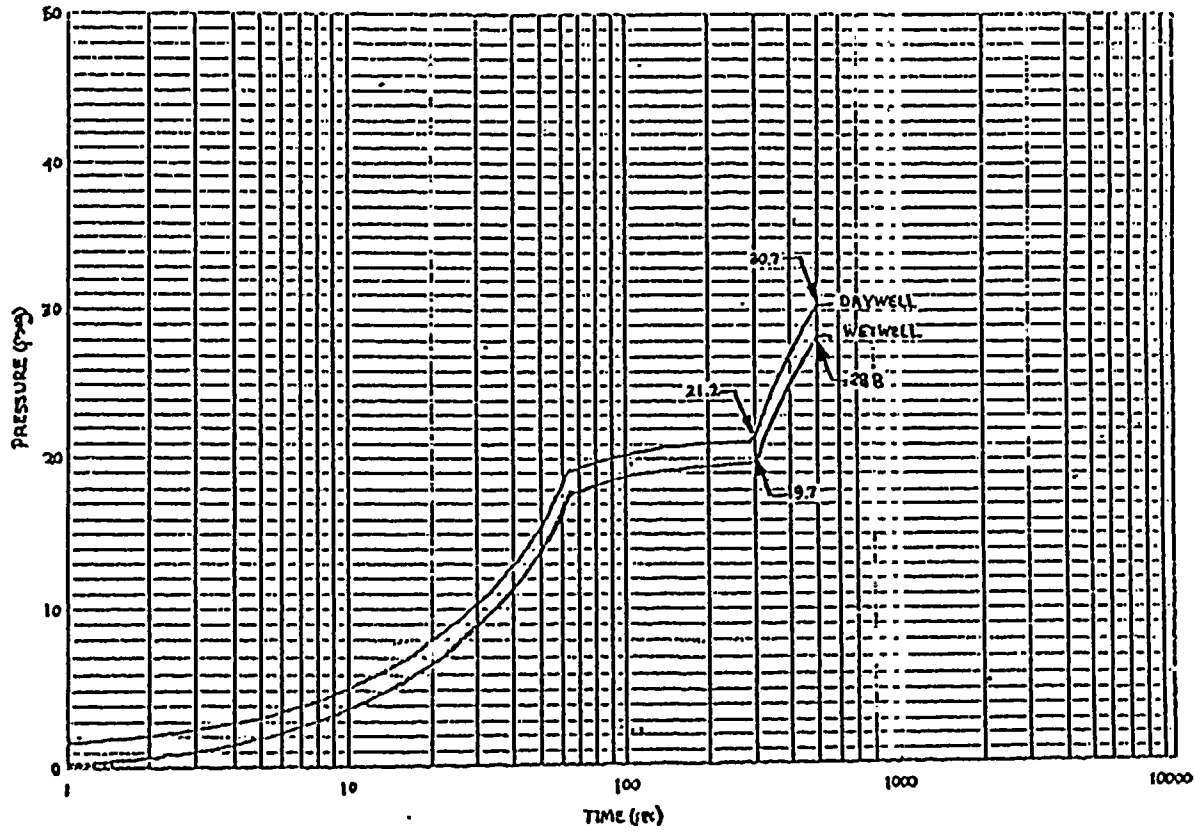
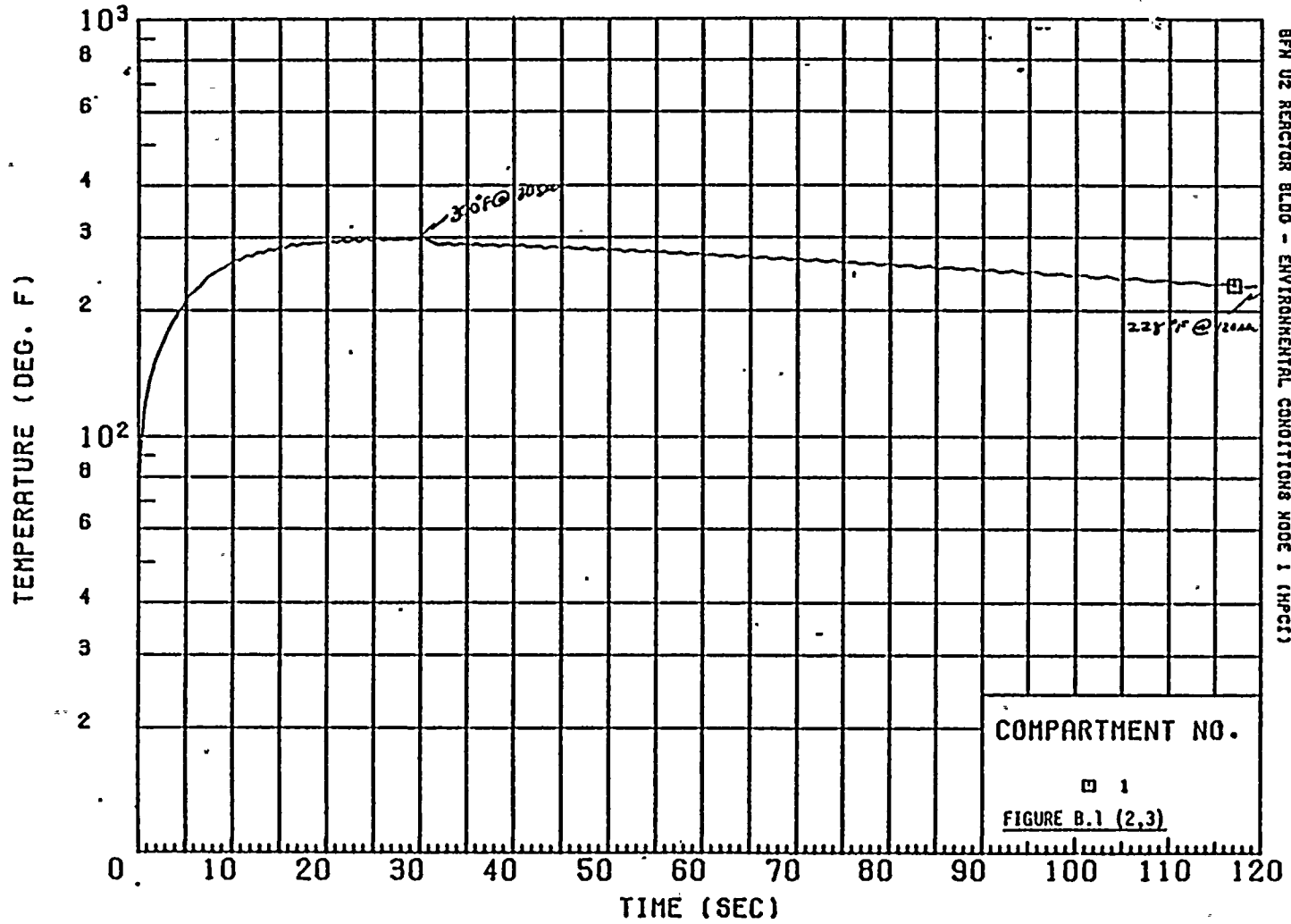


Figure A-5. IBA Containment Pressure Response (Licensee Figure C.1-5)

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BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

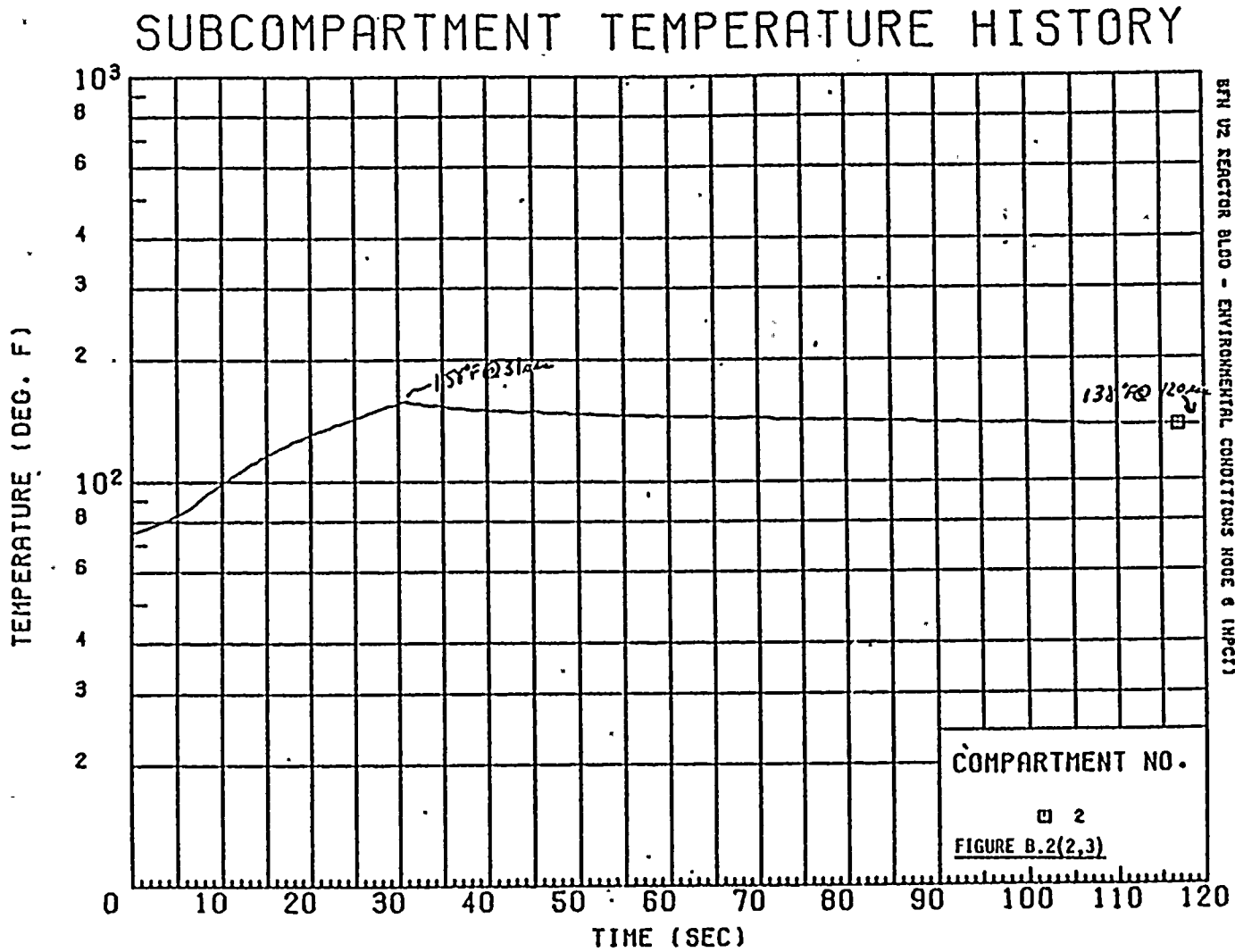


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Figure A-6. Licensee Figure B.1 (2,3)

FIGURE SUPPLIED
 BY THE LICENSEE



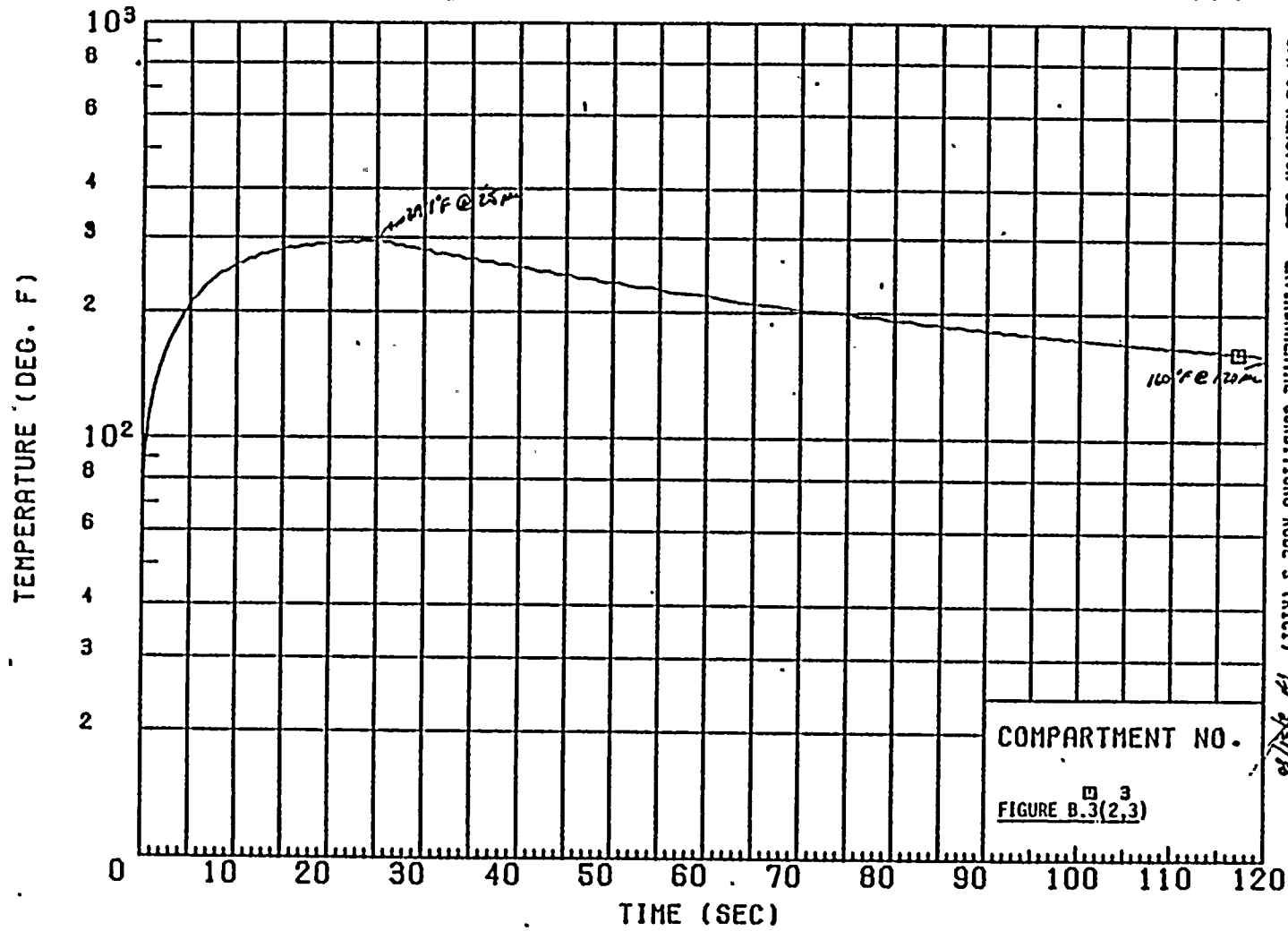
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 BFR V2 REACTOR BLDG - ENVIRONMENTAL CONDITIONS NODE 6 (INPCT)
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Figure A-7. Licensee Figure B.2 (2,3)

FIGURE SUPPLIED BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

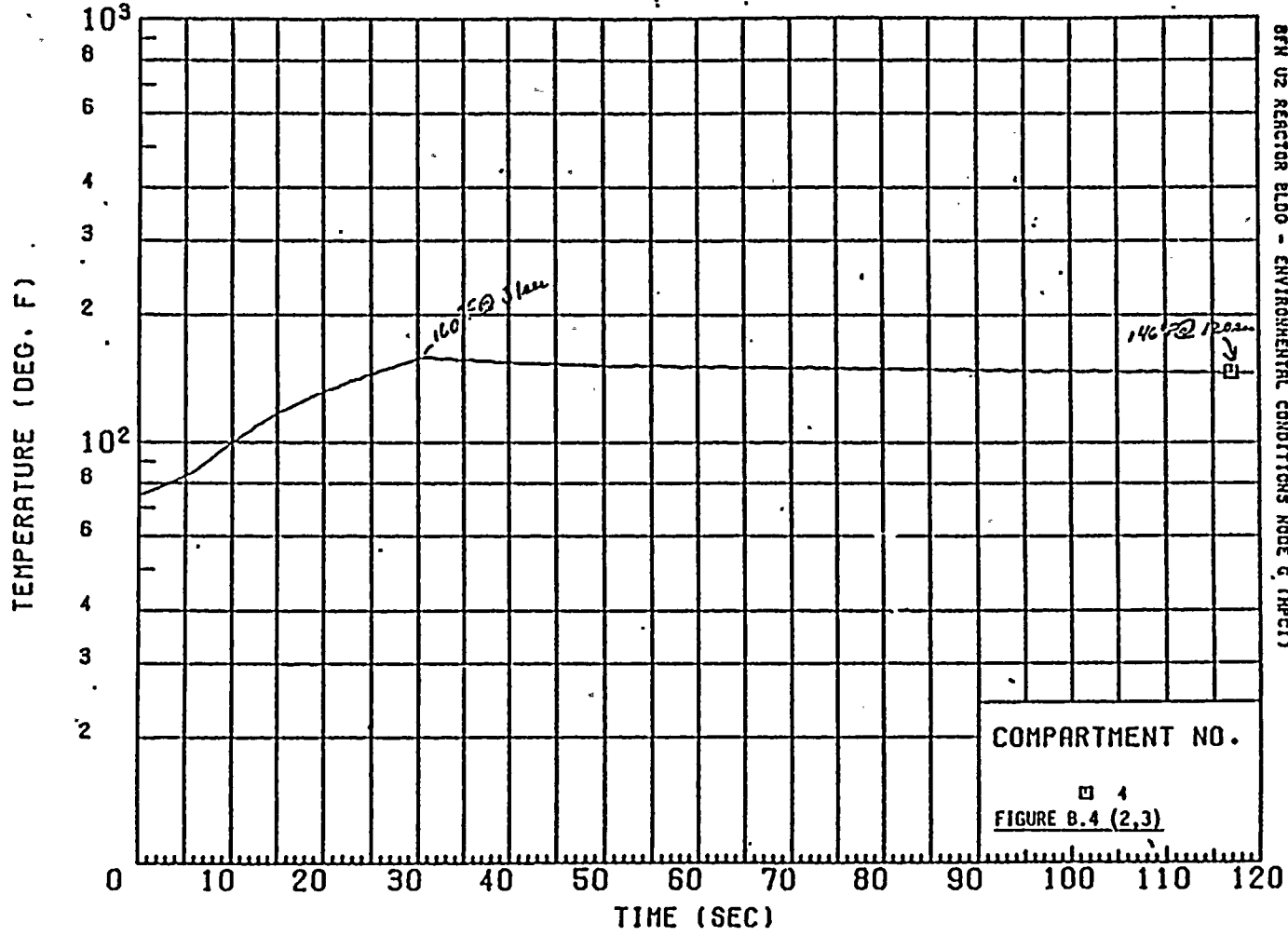


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Figure A-8. Licensee Figure B.3 (2,3)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY



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 4
 FIGURE B.4 (2,3)

Figure A-9. License Figure B.4 (2,3)

FIGURE SUPPLIED BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

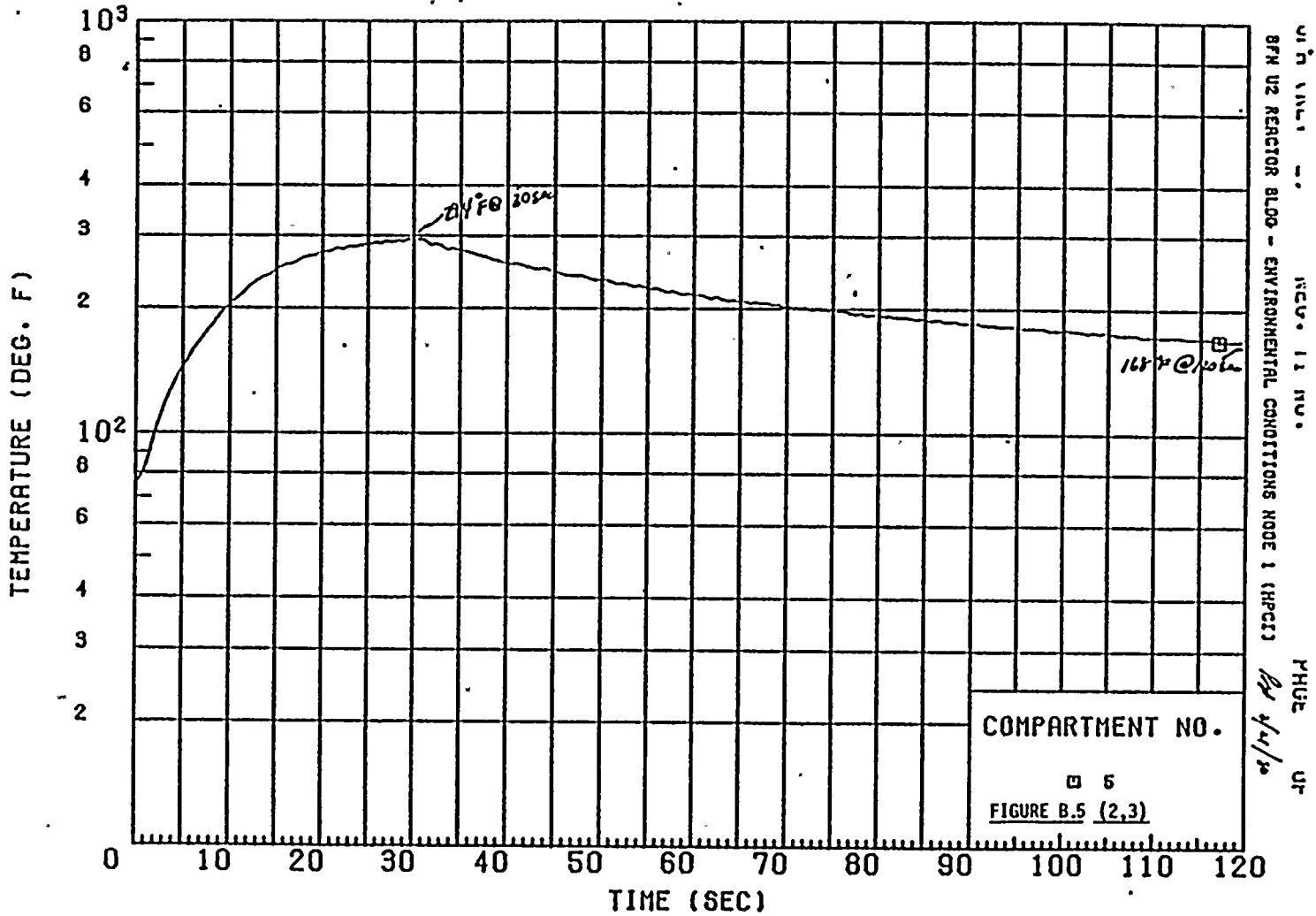


Figure A-10. Licensee Figure B.5 (2,3)

FIGURE SUPPLIED
 BY THE LICENSEE

SUBCOMPARTMENT TEMPERATURE HISTORY

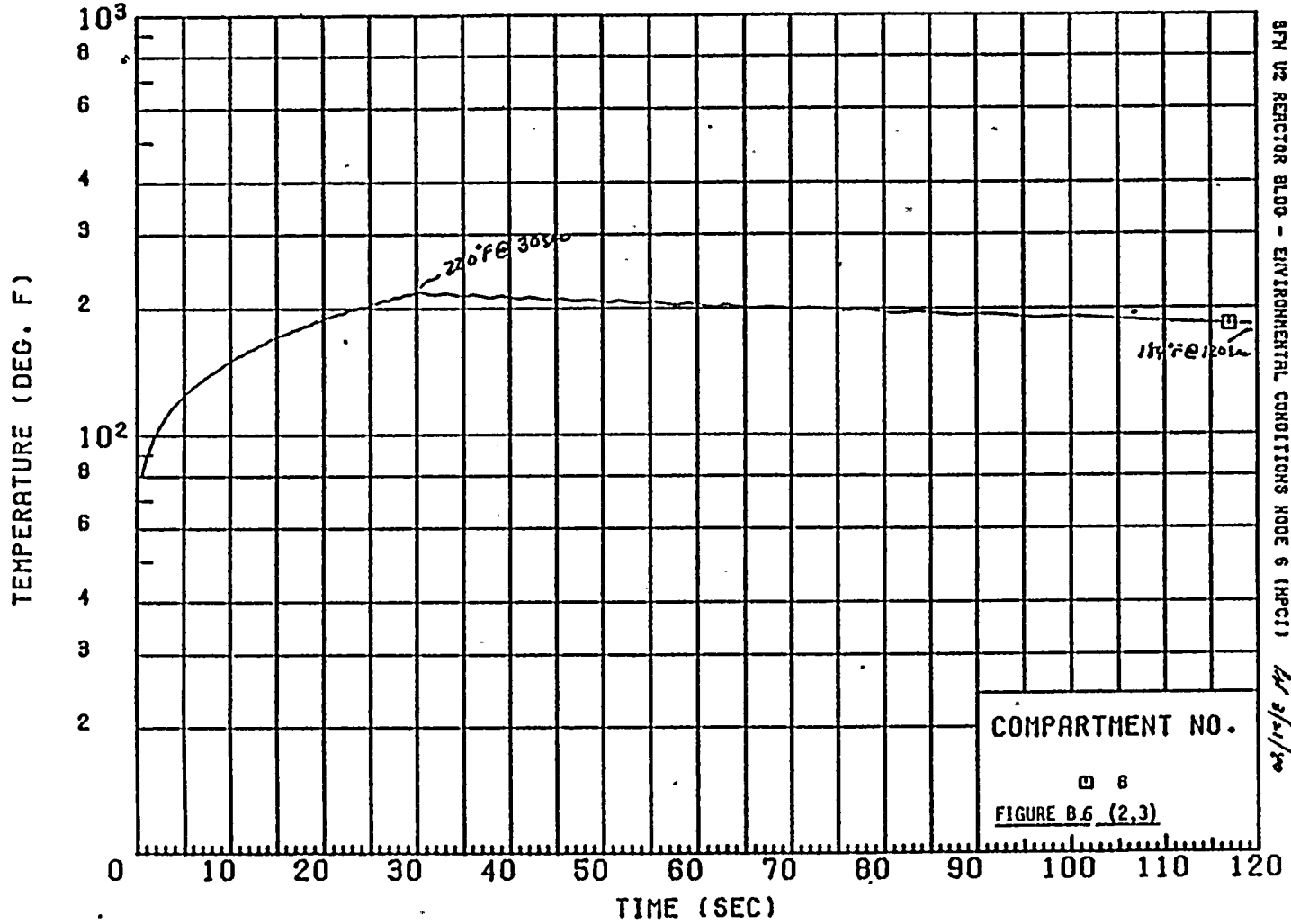


Figure A-11. Licensee Figure B.6 (2,3)

FIGURE SUPPLIED
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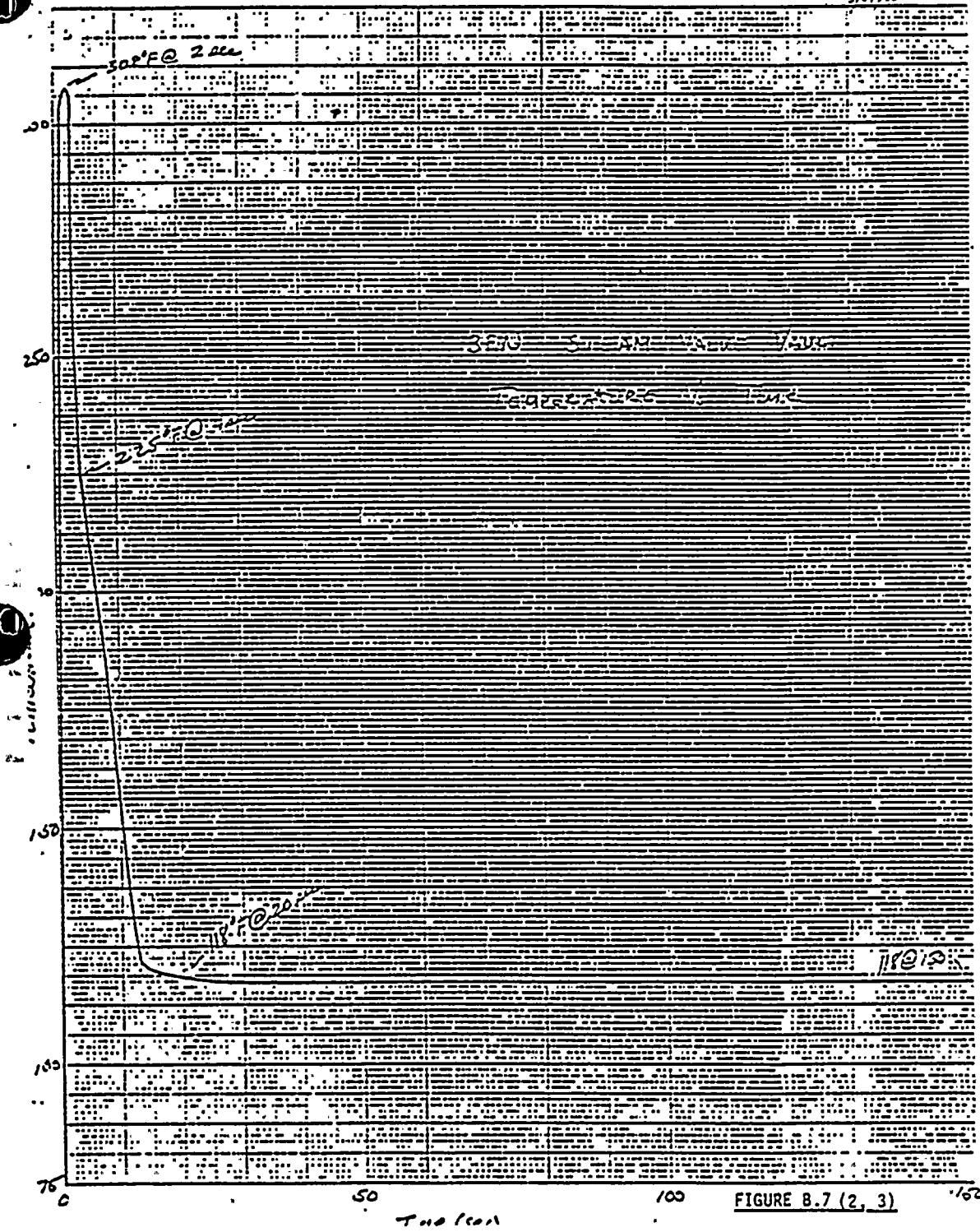


Figure A-12. Licensee Figure B.7 (2,3)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY

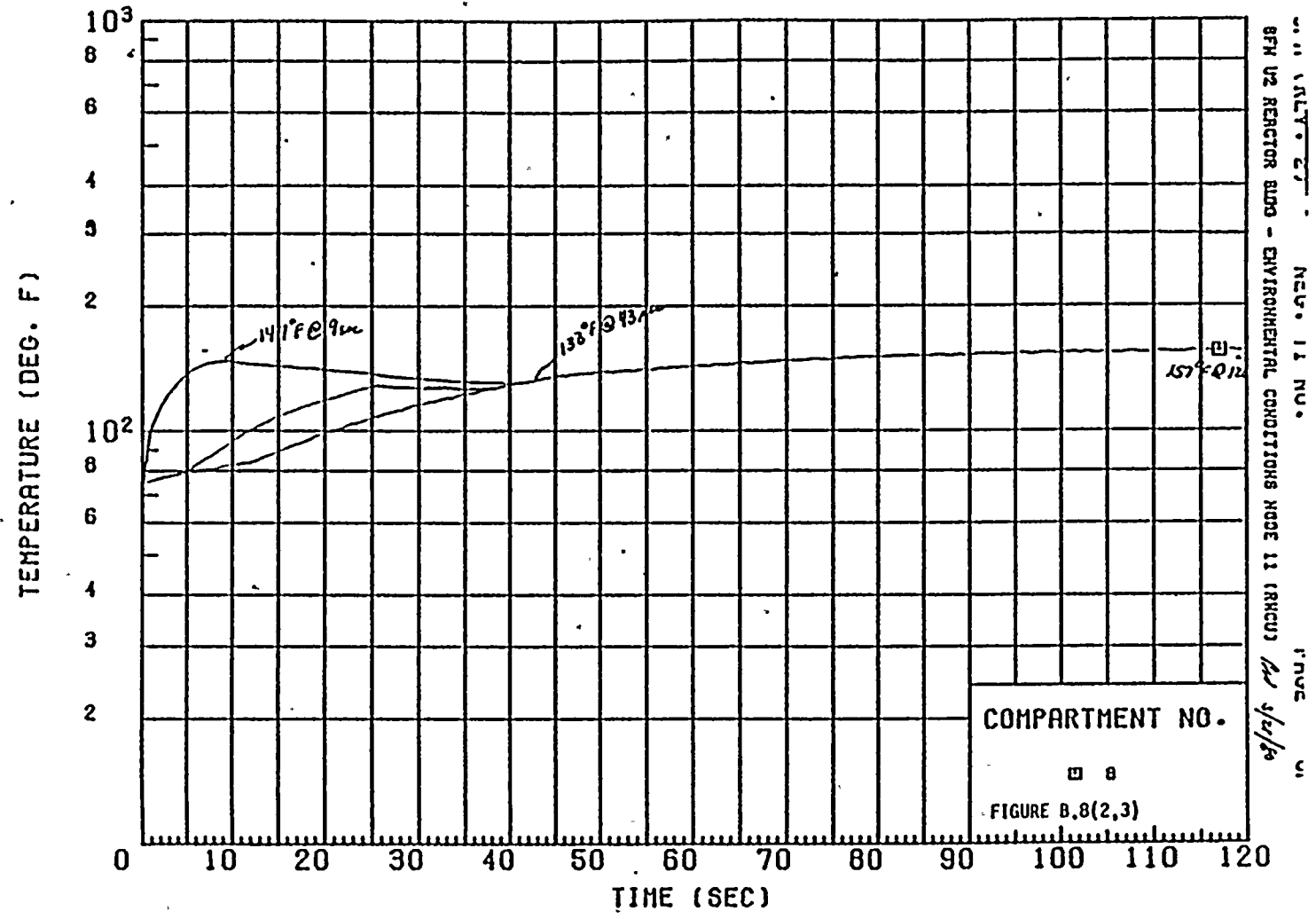


Figure A-13. License Figure B.8 (2,3)

**FIGURE SUPPLIED
BY THE LICENSEE**

A-37

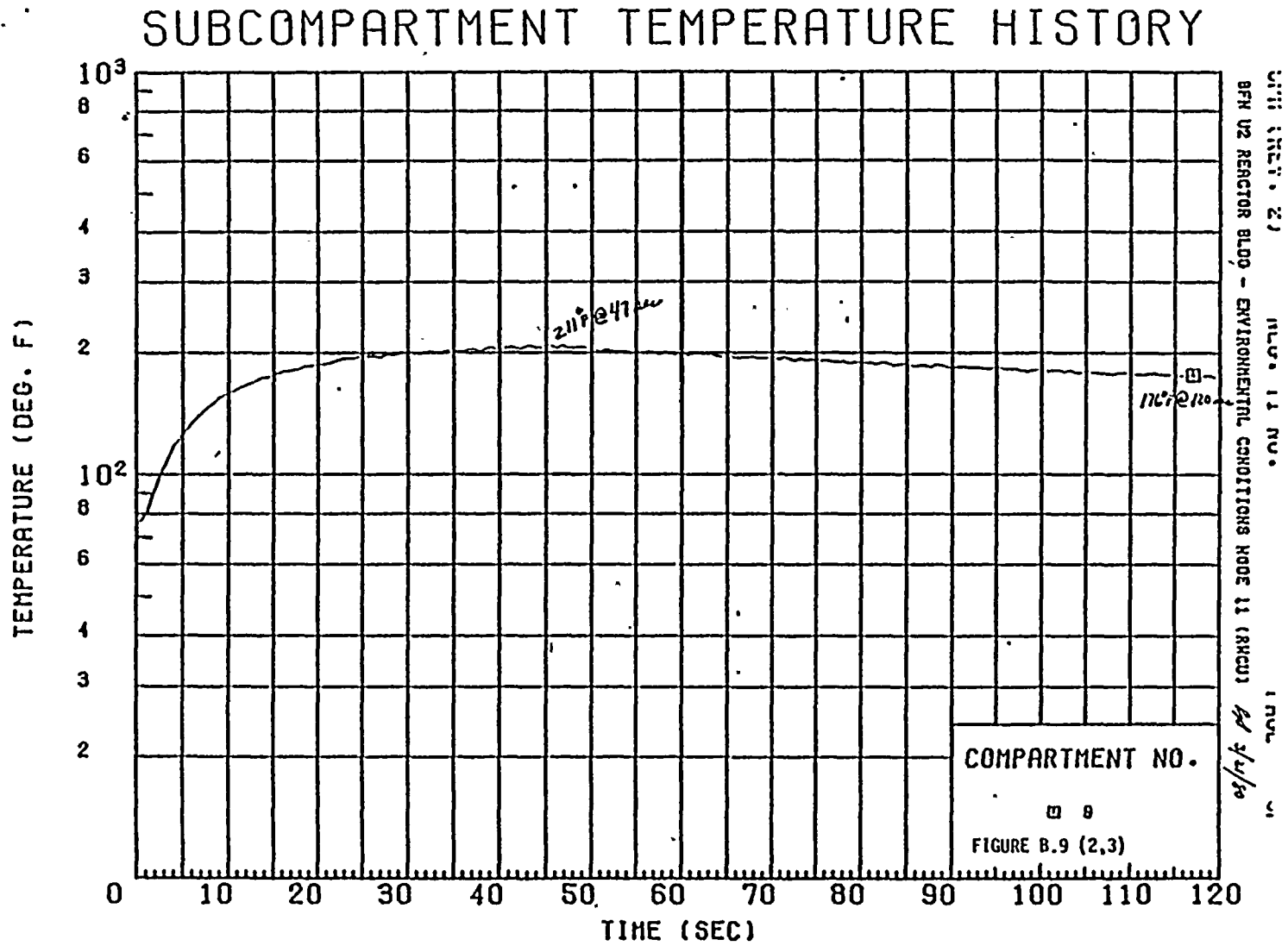


Figure A-14. Licensee Figure B.9 (2,3)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY

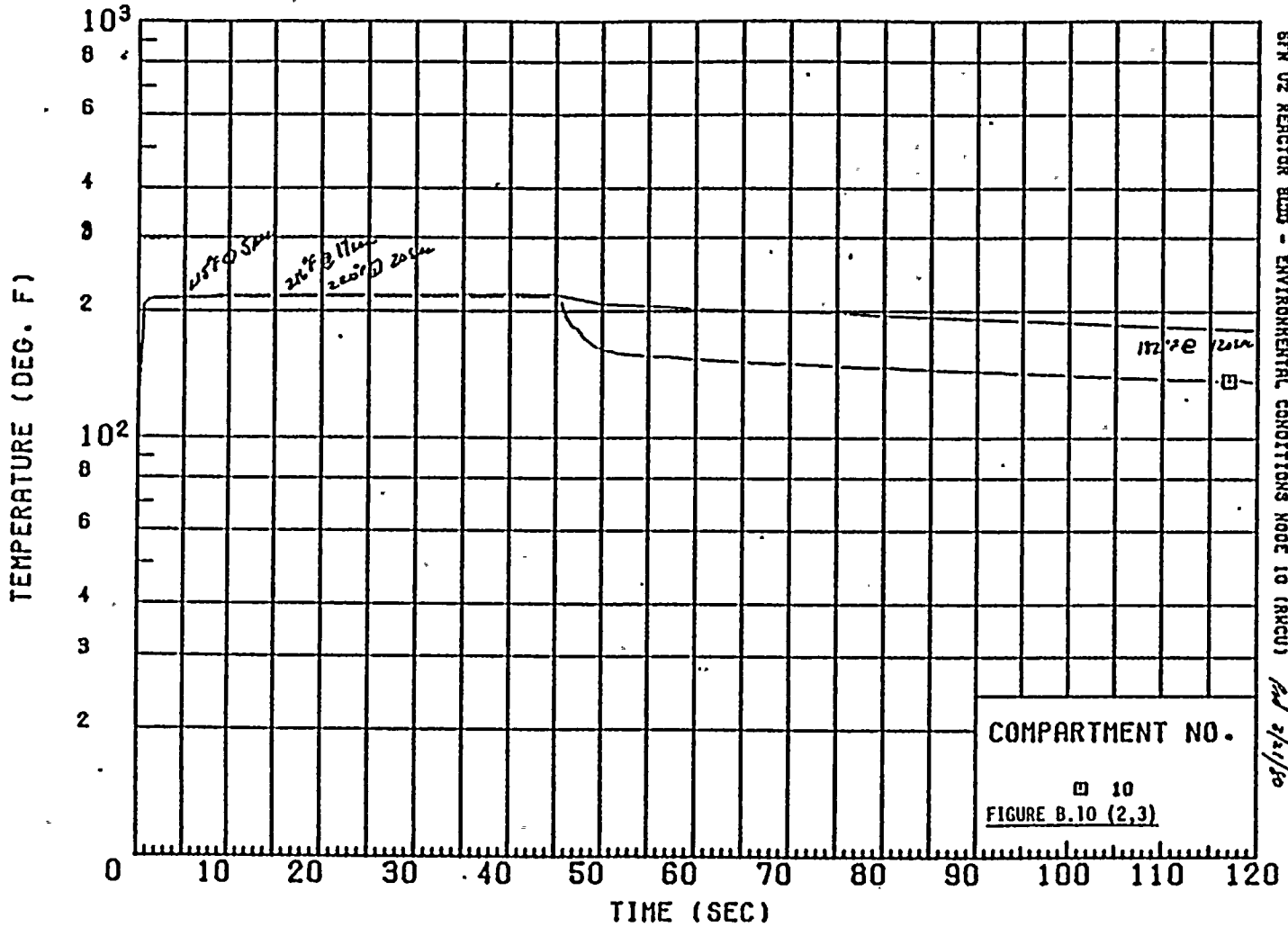
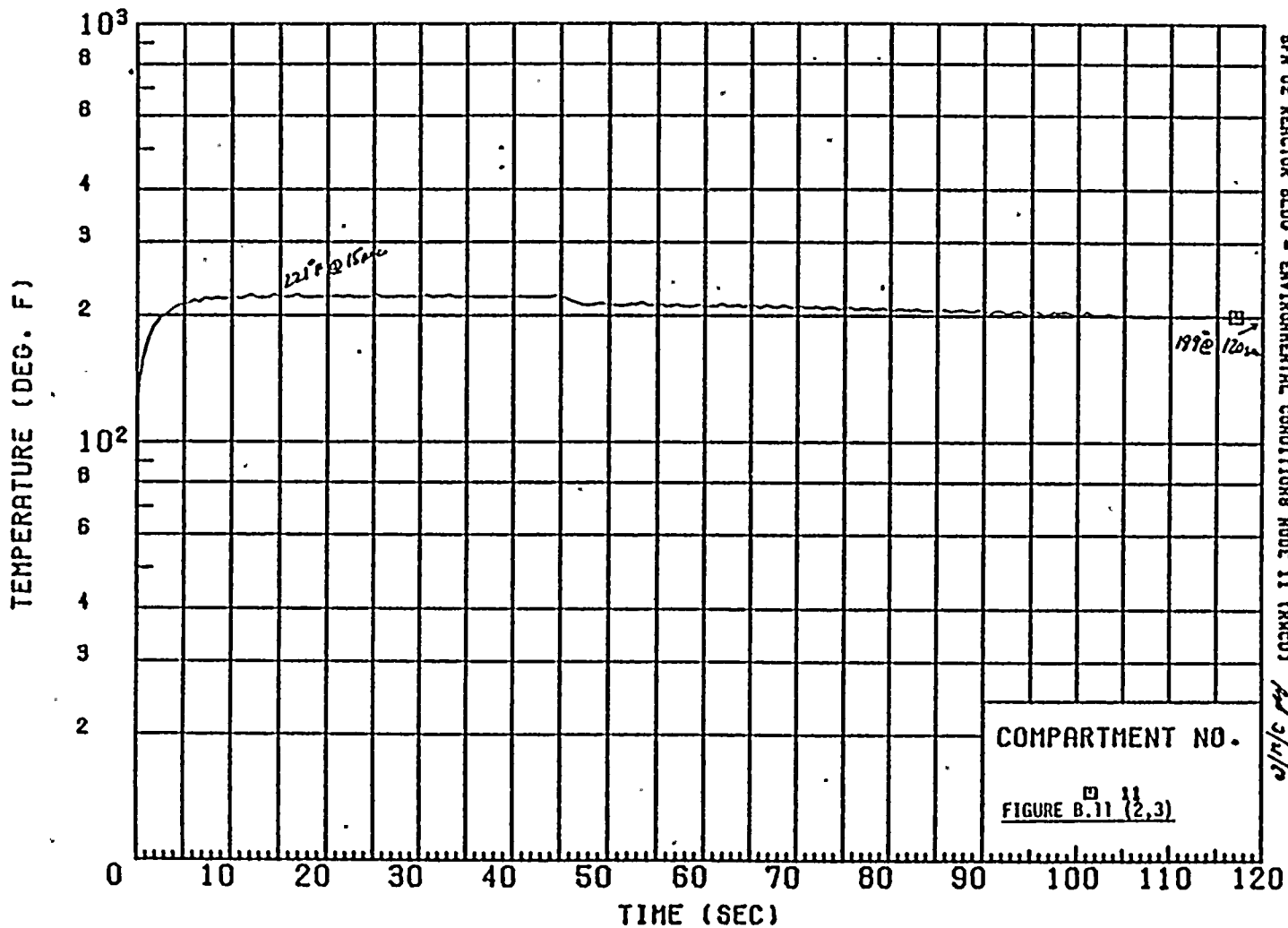


Figure A-15. Licensee Figure B.10 (2,3)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY



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Figure A-16. Licensee Figure B.11 (2,3)

FIGURE SUPPLIED
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SUBCOMPARTMENT TEMPERATURE HISTORY

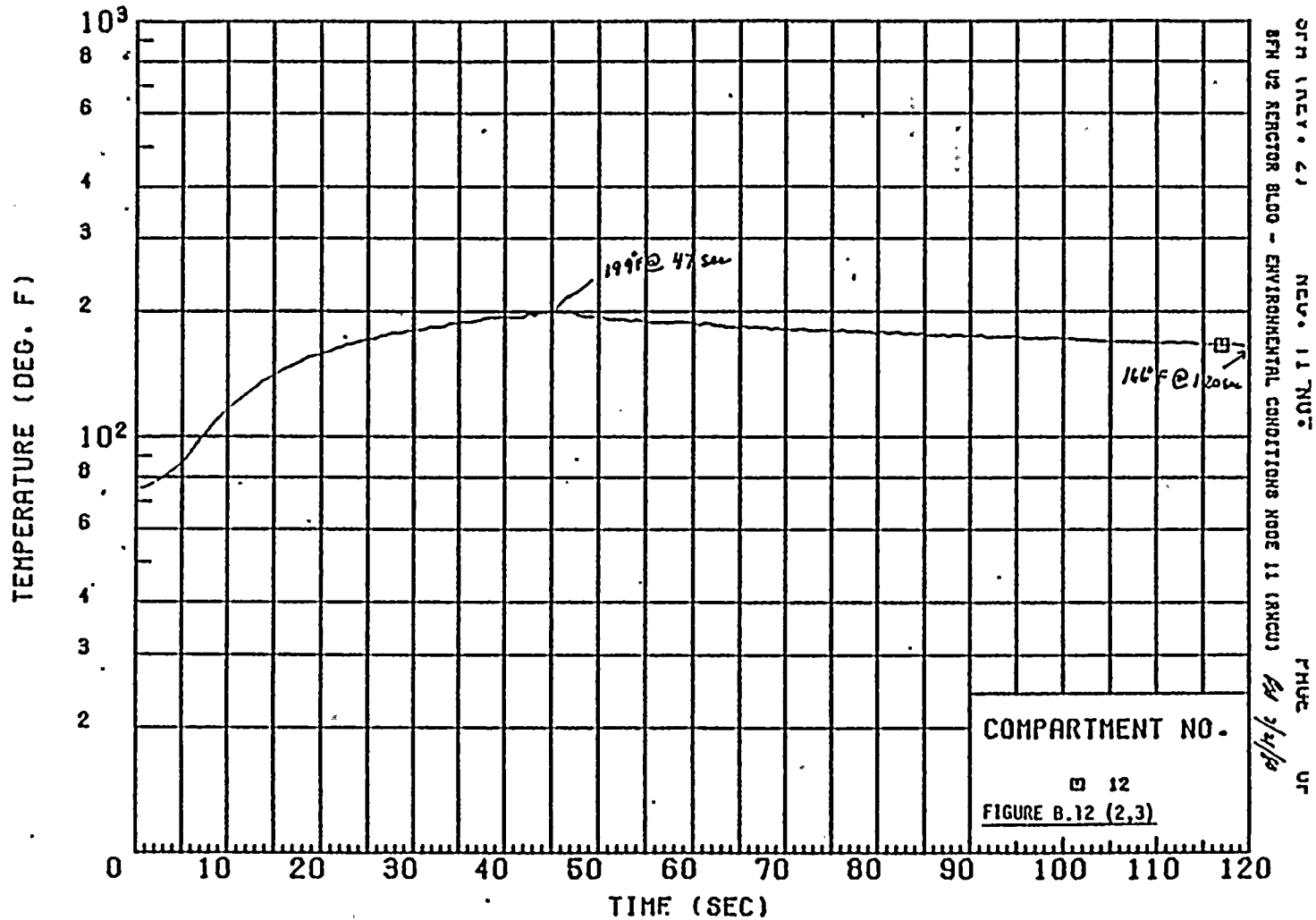


Figure A-17. Licensee Figure B.12 (2,3)

A-41

SUBCOMPARTMENT TEMPERATURE HISTORY

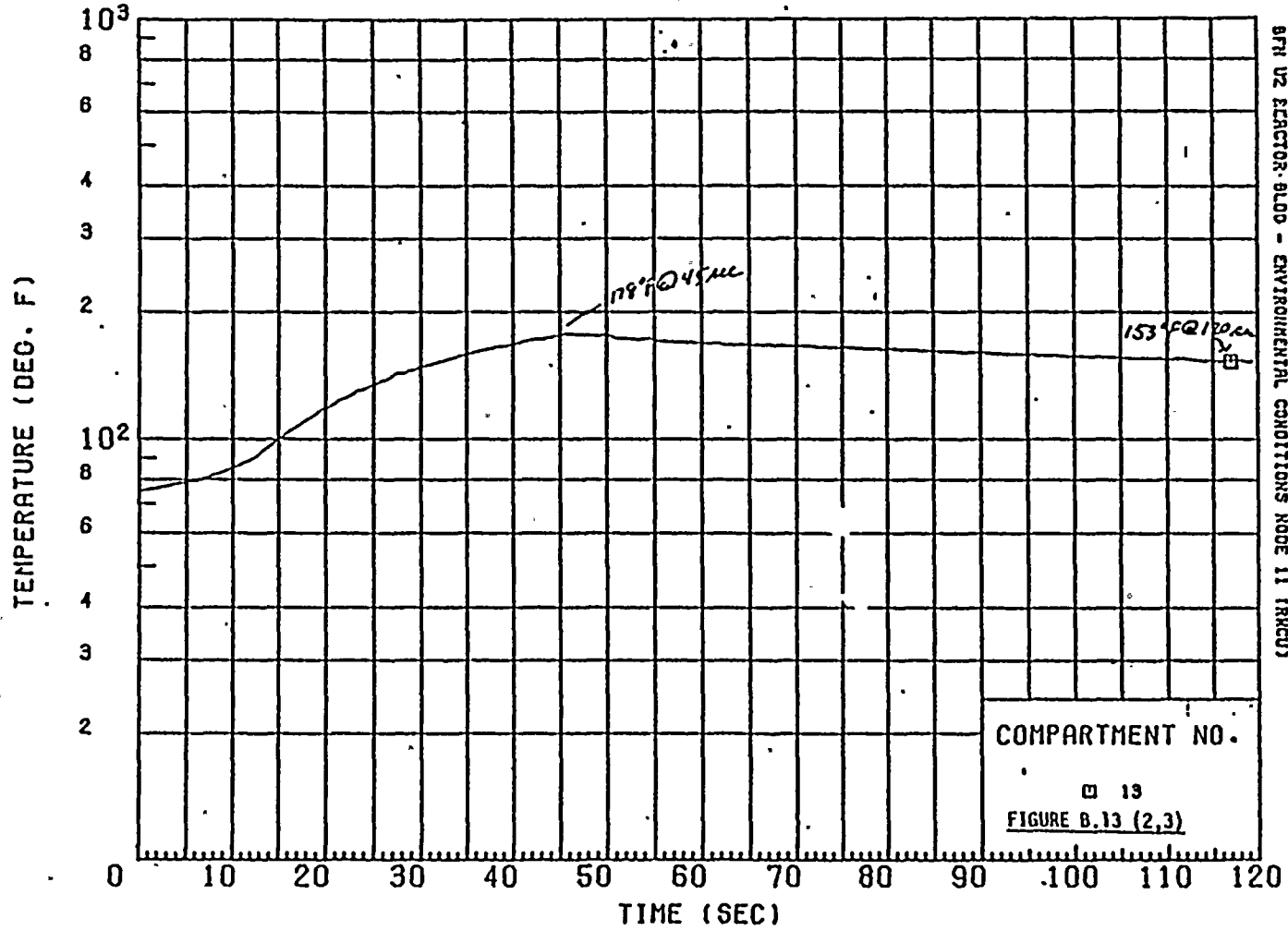


Figure A-18. Licensee Figure B.13 (2,3)

FIGURE SUPPLIED
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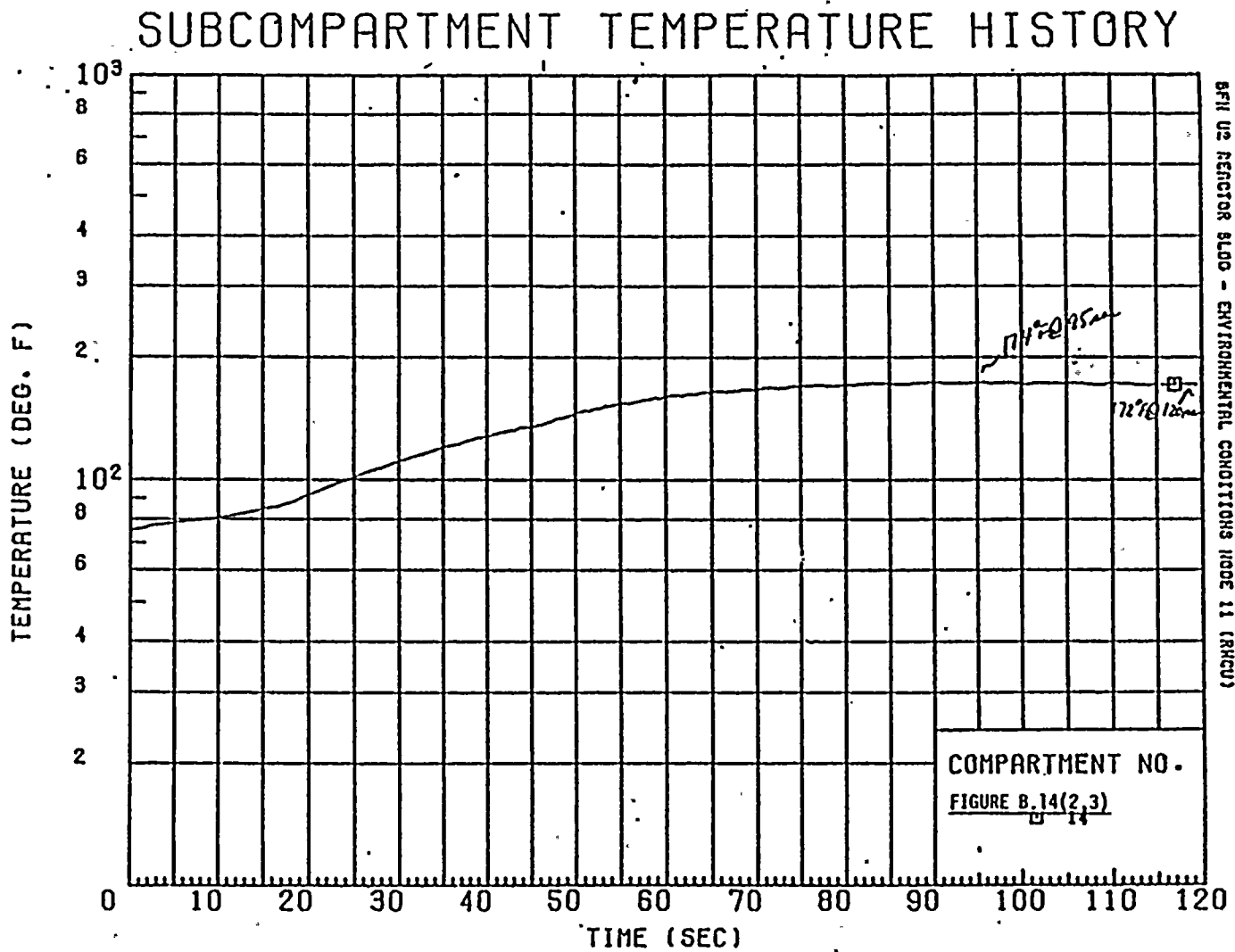


Figure A-19. Licensee see Figure B.14 (2,3)

FIGURE SUPPLIED
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APPENDIX B - LISTING OF SAFETY-RELATED ELECTRICAL EQUIPMENT

The following table lists the groupings of safety-related electrical equipment items for Browns Ferry Unit 3. Equipment items provided in the table are used in the detailed equipment environmental qualification evaluation presented in Section 4.4 and summarized in Section 4.2. This table was generated from the lists of equipment provided by the Licensee [1, 12, 14].

The Licensee identified an extensive list of safety-related electrical equipment in various locations of the plant. The equipment listed by the Licensee was analyzed, and all identical equipment located within plant areas that are exposed to the same environmental service conditions was grouped together and designated an "equipment item." In this report, the term "equipment item" refers to a specific type of electrical equipment, designated by manufacturer and model, which is representative of all identical equipment in a plant area exposed to the same environmental service conditions (e.g., Flow Transmitter, Fischer & Porter, Model 10B2496, located within containment). This analysis resulted in a reduced listing of equipment (equipment items) that formed the basis for the review. This appendix contains the tabulation of the equipment items, locations, function, plant identification numbers, required operating time, and applicable qualification documentation references.

Equipment Item No. 1

Solenoid Valves Located in the Reactor Building

AAA Model S02

Control Air Isolation (FSV-32-62, -63)

Licensee reference not cited

Required Operating Time: 1 hour, 1 year

TER Checksheet No. 1

Licensee Submittal: Pages EEB-32-1001 and -1002 [1]

Equipment Item No. 2

Flow Indicating Switch Located in the Reactor Building Open Areas

Fischer & Porter Model 10A2235A-55AR1011

Sampling System Flow (FIS-43-13A, B)

Licensee reference not cited

Required Operating Time: 1 day

TER Checksheet No. 2

Licensee Submittal: Pages EEB-43-1001 and -1002 [1]

Equipment Item No. 3

Differential Pressure Switch Located in the Reactor Building

Dwyer Model 3302

Various HVAC Functions (PDS-64-15, 62B, 62C, 62D, 62A)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 3

Licensee Submittal: Pages EEB-64-1001 through -1005, -1041 [1]

Equipment Item No. 4

Pressure Differential Modifier Located in the Reactor Building

Honeywell Models: Relay Assembly R7165-1078,

Terminal Assembly 122700

Reactor Zone Static Pressure (PDM-64-8, -16, -64)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 4

Licensee Submittal: Pages EEB-64-1014, -1015, and -1038 [1]

Equipment Item No. 5

Pressure Differential Indicating Controller Located in the Reactor Building

Fischer & Porter Model 53EL3311BB1B ESL-01

Reactor Zone Static Pressure (PDIC-64-8, -16, -64)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 5

Licensee Submittal: Pages EEB-64-1016, -1017, and -1018 [1]

Equipment Item No. 6

Pressure Differential Transmitter Located in the Reactor Building

Fischer & Porter Model 10B2494TBAB

Refueling Zone Static Pressure (PDT-64-8, -16, -64)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 6

Licensee Submittal: Pages EEB-64-1019, -1020, and -1021 [1]

Equipment Item No. 7

Temperature Element Located in the Drywell

Weed Model SP601-1A-A-3-C-275-5N4-2

Drywell Temperature (TE-64-52B)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 7

Licensee Submittal: Page EEB-64-1027 [1]

Equipment Item No. 8

Temperature Element Located in the Drywell

Weed Model SP601-1A-A-3-C-275-SN4-2

Drywell Temperature (TE-64-52A, C)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 8

Licensee Submittal: Pages EEB-64-1039 and -1040 [1]

Equipment Item No. 9

Flow Transmitter Located in the Reactor Building

GE/MAC Model 50-554212BKZZ3

Standby Gas Treatment Flow Indication and Alarm (FT-65-1)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 9

Licensee Submittal: Page EEB-65-1001 [1]

Equipment Item No. 10

Differential Pressure Transmitter Located in the Reactor Building

GE/MAC Model 555

Containment Atmospheric Dilution System Differential Pressure (FT-84-19, -20)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 10

Licensee Submittal: Pages EEB-84-1007 and -1008 [1]

Equipment Item No. 11
Temperature Switch Located in the Reactor Building
Fenwal Model 18002-27
Reactor Water Cleanup (RWCU) Leak Detection (TS-69-30A through H)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 11
Licensee Submittal: Pages EEB-69-1001 through -1008 [1]

Equipment Item No. 12
Solenoid Valve Located in the Torus Room
Valcor Model 526D
Containment Inerting System Isolation Valves (FSV-76-56, -65, -63, -68, -58, -67, -61, -62, -66, -57, -55)
Licensee Reference 4760
Required Operating Time: 1 year
TER Checksheet No. 12
Licensee Submittal: Pages EEB-76-1001 through -1007, -1012, -1013, -1024, and -1025 [1]

Equipment Item No. 13
Solenoid Valve Located in the Drywell
Valcor Model 526D
Containment Inerting System Isolation Valves (FSV-76-49, -60, -51, -59)
Licensee Reference 4760
Required Operating Time: 1 year
TER Checksheet No. 13
Licensee Submittal: Pages EEB-76-1008 through -1011 [1]

Equipment Item No. 14
Solenoid Valve Located in the Reactor Building
Target Rock Model 73FF-005
N₂ Isolation Valves (FSV-84-8A, 8D, 8C, 8B)
Licensee Reference 4654
Required Operating Time: 1 year
TER Checksheet No. 14
Licensee Submittal: Pages EEB-84-1001, -1002, -1003, and -1013 [1, 14]

Equipment Item No. 15
I/P Converter Located in the Reactor Building
Fisher Controls Model 546
Containment Atmospheric Dilution System Signal Converter (FM-84-19B, -20B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 15
Licensee Submittal: Pages EEB-84-1009 and -1010 [1]

Equipment Item No. 16

Pressure Switch Located in the Reactor Building
Custom Components Model 630 GH
Monitor Standby Gas Treatment Duct Pressure (PS-84-21, -22)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 16
Licensee Submittal: Pages EEB-84-1011 and -1012 [1]

Equipment Item No. 17

Radiation Monitor Located in the Reactor Building
Nuclear Measurement Corp., Model Not Stated
Cooling Water System Monitors (RE-90-132A, -133A, -134A)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 17
Licensee Submittal: Pages EEB-90-0003, -0006, and -0009 [1]

Equipment Item No. 18

Thermostat Located in the Reactor Building
Honeywell Models T675A1508
Standby Liquid Control System (SBLC) Pump Motor Temperature (TC-63-5A, 5B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 18
Licensee Submittal: Page MEB-63-01 [1]

Equipment Item No. 19

Motorized Valve Actuator Located in the Reactor Building
Limitorque Model SMB-3
Actuates Residual Heat Removal Valve (FCV-74-47)
Licensee References 659, 662, 2876, 1620, 1063
Required Operating Time: 1 year
TER Checksheet No. 19
Licensee Submittal: Page NEB-74-186 [1, 14]

Equipment Item No. 20

Thermostat Located in the Reactor Building
Honeywell Model T675A1540
Pump Motor Temperature Controller (TS-64-68, -69, -70, -71, -72, -73)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 20
Licensee Submittal: Page MEB-64-02 [1]

Equipment Item No. 21
Pump Motor Located in the Corner Rooms
GE Model 5K Series
Drive Reactor Building Equipment Drain Pumps (SP-A)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 21
Licensee Submittal: Page MEB-77-02, MEB77-05 [1]

Equipment Item No. 22
Differential Pressure Indicator Switch Located in the NE Corner Room
Barton Model 278
Main Steam Flow Indication (PDIS-1-13A through -13D; -25A through -25D;
-36A through -36D; 50A through -50D)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 22
Licensee Submittal: Page NEB-1-003 [1]

Equipment Item No. 23
Solenoid Operator Located Within Drywell
Automatic Valve Corp. Model C-5497
Pilot Valve, MSIV (FSV-1-14, -26, -37, -51: all A thru C)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 23
Licensee Submittal: Page NEB-1-005 [1]

Equipment Item No. 24
Solenoid Operator Located in the Steam Tunnel
Automatic Valve Corp. Model C-5497
Pilot Valve, MSIV (FSV-1-15, -27, -38, -52: all A thru C)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 24
Licensee Submittal: Page NEB-1-007 [1, 12]

Equipment Item No. 25
Temperature Switch Located in the Steam Tunnel
Fenwal Model 17002-40
MSLB Detection (TS-1-17A through -17D)
Licensee References 824, 827
Required Operating Time: 1 hour
TER Checksheet No. 25
Licensee Submittal: Page NEB-1-008 [1]

Equipment Item No. 26
 Temperature Switch Located in the Reactor Building
 Fenwal Model 17002-40
 Reactor Water Cleanup Steam Line Break Detection (TS-69-29J through M)
 Licensee References 824, 827, 4672
 Required Operating Time: 1 hour
 TER Checksheet No. 26
 Licensee Submittal: Page NEB-69-81 [1, 12]

Equipment Item No. 27
 Pressure Switch Located in the Reactor Building
 Barksdale Model B2T-A12SS
 Reactor Feedwater Pressure Indication and Control (PS-3-22A through D;
 PS-3-57A through D; PS-3-74A)
 Licensee Reference 4265
 Required Operating Time: 1 day
 TER Checksheet No. 27
 Licensee Submittal: Pages NEB-3-015, -018, and -021 [1]

Equipment Item No. 28
 Pressure Switch Located in the SW Corner Room
 Barksdale Model B2T-A12SS
 RCIC, HPCI Steam Line Pressure (PS-71-1A through D, PS-73-1A through D)
 Licensee Reference 4265
 Required Operating Time: 30 days
 TER Checksheet No. 28
 Licensee Submittal: Pages NEB-71-84 and NEB-73-128 [1, 12]

Equipment Item No. 29
 Level Indicator Switch Located in the Reactor Building
 Yarway Model 4418C
 Feedwater Level Indication and Control (LITS-3-46A, B; LIS-3-56A
 through D; LITS-3-58B; LIS-3-184, -185; LIS-3-58A, C)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 29
 Licensee Submittal: Pages NEB-3-016, -017, -019, -022, and -020 [1, 12]

Equipment Item No. 30
 Pressure Switch Located in the Reactor Building
 Barton Model 288
 Reactor Feedwater Pressure (PS-3-74B)
 Core Spray Differential Pressure (PDIS-75-28, 56)
 Licensee References 3252, 4266
 Required Operating Time: 1 year
 TER Checksheet No. 30
 Licensee Submittal: Pages NEB-3-021A [1, 12] and NEB-75-226 [1]

Equipment Item No. 31

Pressure Switch Located in the SW and NE Corner Rooms

Barton Model 288

RCIC Steam Flow Interlock (PS-68-96)

Core Spray Interlock (PDIS-71-1A, B)

Licensee References 3252, 4266

Required Operating Time: 1 year, 1 hour

TER Checksheet No. 31

Licensee Submittal: Pages NEB-68-72A and NEB-71-83 [1, 12]

Equipment Item No. 32

Level Indicator Switch Located in the Reactor Building

Barton Model 288

Reactor Water Level (LIS-3-203A through D; -208A through D)

Licensee References 3252, 4266

Required Operating Time: 1 year

TER Checksheet No. 32

Licensee Submittal: Page NEB-3-023 [1]

Equipment Item No. 33

Differential Pressure Indicator Switch Located in the SW Corner Room

Barton Model 288A

Excessive HPCI Steam Flow Indication (PDIS-73-1A, B)

Licensee References 3252, 4266

Required Operating Time: 1 hour

TER Checksheet No. 33

Licensee Submittal: Page NEB-73-129 [1, 12]

Equipment Item No. 34

Motorized Valve Actuator Located in the Reactor Building

Limitorque Model SMB-00

Actuates Residual Heat Removal System Valves (FCV-74-77)

Licensee References 659, 662, 2876, 1620, 1063

Required Operating Time: 1 year

TER Checksheet No. 34

Licensee Submittal: Page NEB-74-207 [1]

Equipment Item No. 35

Motorized Valve Actuator Located in the SW Corner Room

Limitorque Model SMB-2

HPCI/RCIC Test Return Valve (FCV-73-36)

Licensee References 659, 662, 1063, 1620, 2876

Required Operating Time: 30 days

TER Checksheet No. 35

Licensee Submittal: Page NEB-73-168B [1, 12]

Equipment Item No. 36

Flow Transmitter Located in the HPCI Pump and Corner Rooms
 GE/MAC Model Series 50-555111BDAA3AAA
 ECCS Flow Measurement (FT-71-36; FT-73-33)
 Licensee reference not cited
 Required Operating Time: 30 days, 1 year
 TER Checksheet No. 36
 Licensee Submittal: Pages NEB-71-116; NEB-73-165 [1, 12]

Equipment Item No. 37

Motorized Valve Actuator Located in Corner Rooms
 Limitorque Model SMB; Sizes 2 and 0
 Core Spray System I Test Bypass and Flow Isolation Valves (FCV-75-22;
 FCV-75-9), Actuates RHR "A" Pump Suppression Pool Suction Valve (FCV-74-35)
 Licensee References 662, 1620, 2876
 Required Operating Time: 1 year
 TER Checksheet No. 37
 Licensee Submittal: Pages NEB-74-179A; -75-217 and -221 [1, 12, 14]

Equipment Item No. 38

Transformer Located in Open Area
 GE Model 11CH2L4
 Power Distribution (TS3A, B, E)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 38
 Licensee Submittal: Page EEB-APS-0203, Typical [1]

Equipment Item No. 39

Terminal Block Located Outside Containment
 General Electric Model CR-15182
 Electrical Distribution/Wire Termination
 Licensee reference not cited
 Required Operating Time: Continuous
 TER Checksheet No. 39
 Licensee Submittal: Page EEB-01-0102, Typical [1]

Equipment Item No. 40

Pressure Transmitter Located in the Reactor Building
 GE/MAC Model 551
 Pressure Indication, Emergency Equipment Cooling Water (PT-67-23, -24)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 40
 Licensee Submittal: Pages EEB-67-1007 and -1008 [1]

Equipment Item No. 41
 Solenoid Operator Located in the Drywell
 Target Rock Model 1/2 SMS-A-01
 Actuates Main Steam Relief Valves (PSV-1-4, -5, -19, -23, -22, -31, -34, -41, -42)
 Licensee Reference 3453
 Required Operating Time: 1 year
 TER Checksheet No. 41
 Licensee Submittal: Page NEB-1-002 [1]

Equipment Item No. 42
 Limit Switch Located Inside Containment
 NAMCO Model EA740-50100
 Inboard MSIV Position Indication (ZS-1-14, -26, -37, -51)
 Licensee Reference 3746
 Required Operating Time: 1 day
 TER Checksheet No. 42
 Licensee Submittal: Pages EEB-1-1004, -1005, -1007, and -1009 [1]

Equipment Item No. 43
 Limit Switch Located in the Drywell
 NAMCO Model EA740-50100
 Outboard MSIV Position Indication (ZS-1-15, -27, -38, -52)
 Licensee Reference 3746
 Required Operating Time: 1 hour
 TER Checksheet No. 43
 Licensee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 [1]

Equipment Item No. 44
 Limit Switches Located in the Reactor Building
 NAMCO Model D1200G
 Containment Isolation (FCV-64-32, -34, -20, -21, -29, -31)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 44
 Licensee Submittal: Pages NEB-64-052; -054, -056A, -045, -048, [1, 12]

Equipment Item No. 45
 Pressure Switch Located in the Reactor Building
 Barton Model 289
 Containment Pressure (PDIS-64-20, -21)
 Licensee Reference 3252
 Required Operating Time: 1 hour
 TER Checksheet No. 45
 Licensee Submittal: Page NEB-64-046 [1, 12]

Equipment Item No. 46
 Flow Switch Located in the NW Corner Room
 Barton Model 289
 Monitors RCIC Flow (FS-71-36)
 Licensee Reference 3252
 Required Operating Time: 30 days
 TER Checksheet No. 46
 Licensee Submittal: Page NEB-71-115 [1]

Equipment Item No. 47
 Pressure Transmitter Located in the Reactor Building
 GE/MAC Model Series 55 2032KAATI
 Drywell Pressure Signal (PT-64-50)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 47
 Licensee Submittal: Page NEB-64-058 [1, 12]

Equipment Item No. 48
 Power Supply Located in the Reactor Building
 GE Model 583001AAGK1
 Supplies Power to Pressure Transmitters (PX-64-54, -66; PX-71-36A)
 Licensee reference not cited
 Required Operating Time: 1 hour to 30 days
 TER Checksheet No. 48
 Licensee Submittal: Pages NEB-64-060 and NEB-71-098 [1, 12, 14]

Equipment Item No. 49
 Level Transmitter Located in the Torus Room
 Rosemount Model 1151 Series
 Suppression Chamber Water Level Signal (LT-64-54, -66)
 Licensee References 4660, 4143, 3476
 Required Operating Time: 1 hour, 1 year
 TER Checksheet No. 49
 Licensee Submittal: Pages NEB-64-061 and -067 [1, 12]

Equipment Item No. 50
 Temperature Element Located in the Torus Room
 American Standard Models 158B7079P051 and 158B7079P001
 Suppression Pool Temperature Indication (TE-64-55A through F)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 50
 Licensee Submittal: Pages NEB-64-062 and -063 [1, 12, 14]

Equipment Item No. 51
 Pressure Switch Located in the Reactor Building
 Static-O-Ring Model 12N/AA4
 Drywell Pressure Signal; Half SCRAM, High-High (PS-64-56A through D;
 PS-64-57A through D; PS-64-58A through D)
 Licensee Reference 4215
 Required Operating Time: 1 day, 30 days
 TER Checksheet No. 51
 Licensee Submittal: Pages NEB-64-064, -065, and -066 [1, 12]

Equipment Item No. 52
 Switches Located in Various Areas in the Reactor Building
 General Electric Model CR2940
 Control Circuit
 Licensee Reference 4662
 Required Operating Time: Not stated
 TER Checksheet No. 52
 Licensee Submittal: Pages EEB-01-0109, EEB-23-0042, EEB-75-0150, EEB-71-0253,
 EEB-73-0136, EEB-74-0397, EEB-74-0148, EEB-77-0067, EEB-77-0069, EEB-73-0138,
 and EEB-74-0399 [1]

Equipment Item No. 53
 Switches Located in Various Areas in Reactor Building
 Cutler Hammer Model CH-10250T
 Control Circuit
 Licensee reference not cited
 Required Operating Time: Not stated
 TER Checksheet No. 53
 Licensee Submittal: Page EEB-74-0397, Typical [1]

Equipment Item No. 54
 Pump Motors Located in the SE and SW Corner Rooms
 General Electric Model 5K6348XC23A
 Drive RHR Pumps (2A, 2B, 2C, 2D)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 54
 Licensee Submittal: Pages NEB-74-211 and -212 [1]

Equipment Item No. 55
 Temperature Switch Located in the HPCI Pump Room and NW Corner Room
 Fenwal Model 17023-6
 Area Steam Leak Detection (TS-71-2A through D, TS-73-2A through D)
 Licensee References 824, 827
 Required Operating Time: 1 hour
 TER Checksheet No. 55
 Licensee Submittal: Pages NEB-71-089; NEB-73-131 and -132 [1, 12]

Equipment Item No. 56

Temperature Switch Located in the Torus Room

Fenwal Model 17023-6

Area Leak Detection (TS-71-2E through H, J through N, P, R, S; TS-73-2E, F, G, H; TS-73-2K, M, P, S, J, L, N, R)

Licensee References 824, 827

Required Operating Time: 1 hour

TER Checksheet No. 56

Licensee Submittal: Pages NEB-71-090; NEB-73-135, -141, and -142 [1, 12]

Equipment Item No. 57

Turbine Controls Located in the NW Corner Room

Terry Turbines Type GS

Isolation and Control of Pump Turbines (FCV-71-9; SC-71-10; FCV-71-10; SE-71-42A, B; PS-71-44; TIS-71-45, -46)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 57

Licensee Submittal: Page NEB-71-101, Typical [1, 12]

Equipment Item No. 58

Pressure Switch Located in the NW Corner Room

Mercoid Models DA-7043-804

HPCI, Turbine Exhaust Pressure Monitors (PS-71-13A, B; PS-73-22A, B)

Licensee reference not cited

Required Operating Time:

TER Checksheet No. 58

Licensee Submittal: Pages NEB-71-106 and NEB-73-158 [1, 12]

Equipment Item No. 59

Square Root Converter Located in the Reactor Building

GE Model 565100AAAC1

Measures Square Root RCIC Flow (FM-71-36)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 59

Licensee Submittal: Page NEB-71-114 [1]

Equipment Item No. 60

Turbine Control Valve Located in the HPCI Pump Room

Terry Turbines Type CCS

Controls HPCI Pump Turbine (FCV-73-18, SE-73-5, SC-73-19, PS-73-47A, PS-73-47B, TIS-73-52, PDS-73-53)

Licensee reference not cited

Required Operating Time: 30 days

TER Checksheet No. 60

Licensee Submittal: Page NEB-73-173A, Typical [1, 12]

Equipment Item No. 61

Pressure Switch Located in the HPCI Pump Room
Barksdale Model PIH-M85SS-V
HPCI Turbine Exhaust Pressure (PS-73-20A through D)
Licensee References 4265
Required Operating Time: 30 days
TER Checksheet No. 61
Licensee Submittal: Page NEB-73-156 [1, 12]

Equipment Item No. 62

Level Switch Located in the Torus Room
Robertshaw Model SL-202-A2X
Suppression Pool Level (LS-73-57A, B)
Licensee reference not cited
Required Operating Time: 30 days
TER Checksheet No. 62
Licensee Submittal: Page NEB-73-176 [1, 12]

Equipment Item No. 63

Pressure Switch Located in the SE and SW Corner Rooms
Static-O-Ring Model 5N-AA3
Monitors RHR Pump Discharge Pressure (PS-74-8A, -19A; PS-74-8B, -19B;
PS-74-31A, -42A; PS-74-31B, -42B)
Licensee Reference 4215
Required Operating Time: 1 year
TER Checksheet No. 63
Licensee Submittal: Pages NEB-74-180, -180A, -184, and -184A [1, 12, 14]

Equipment Item No. 64

Differential Pressure Indication Switch Located in the NE Corner Room
Barton Model 289A
RHR Flow Measurement (FIS-74-64)
Licensee References 4266, 3252
Required Operating Time: 1 year
TER Checksheet No. 64
Licensee Submittal: Page NEB-74-198 [1, 12]

Equipment Item No. 65

Flow Switch Located in the NE Corner Room
Barton Model 289
Measure Core Spray Flow (FIS-75-49)
Licensee References 3252, 4266
Required Operating Time: 1 year
TER Checksheet No. 65
Licensee Submittal: Page NEB-75-232 [1]

Equipment Item No. 66
 Pump Motors Located in the NE and NW Corner Rooms
 General Electric Model 5K6336XC198A
 Drives Core Spray Pump (A, B, C, D Pumps)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 66
 Licensee Submittal: Pages NEB-75-238 and -238A [1, 12, 14]

Equipment Item No. 67
 Pressure Switch Located in the NW Corner Room
 Barksdale Model PIH-M85SSV
 RCIC Turbine Exhaust Pressure (PS-71-11 A through D)
 Licensee References 3422, 4265
 Required Operating Time: 30 days
 TER Checksheet No. 67
 Licensee Submittal: Page NEB-71-104 [1, 12]

Equipment Item No. 68
 Electrical Penetration Located in the Drywell
 Physical Science Corp. Model PSC P/N 2022C
 Electrical Distribution
 Licensee References 27, 827
 Required Operating Time: Continuous
 TER Checksheet No. 68
 Licensee Submittal: Page EEB-01-0087, Typical [1]

Equipment Item No. 69
 Solenoid Valve Located in the Torus Room
 Versa Model VSG-3521
 Drywell Sump Isolation Valve (FSV-77-2A, -2B, -15A, -15B)
 Licensee reference not cited
 Required Operating Time: 1 hour
 TER Checksheet No. 69
 Licensee Submittal: Page NEB-77-249 [1, 12]

Equipment Item No. 70
 Switches Located in the Drywell
 Cutler Hammer Model CH-10250T
 Control Circuit
 Licensee reference not cited
 Required Operating Time: Not stated
 TER Checksheet No. 70
 Licensee Submittal: Page EEB-74-0400, Typical [1]

Equipment Item No. 71

Level Switch Located in the Corner Rooms

Autocon Model M-4

Floor Drain Sump Level (LS-77-8A, -8B, -17A, -17B)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 71

Licensee Submittal: Pages NEB-77-250, -251, -260, and -261 [1, 12, 14]

Equipment Item No. 72

Terminal Block Located in the Drywell

General Electric Model CR-15182

Electrical Distribution/Wire Termination

Licensee reference not cited

Required Operating Time: Continuous

TER Checksheet No. 72

Licensee Submittal: Pages EEB-01-0105, -0101, Typical [1]

Equipment Item No. 73

Ion Chamber Located in the Main Steam Vault

GE Model 237X731G001

Area Monitor (RE-90-136, -137, -138, -139)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 73

Licensee Submittal: Pages NEB-90-279, -280, -281, and -282 [1, 12]

Equipment Item No. 74

Solenoid Valve Located in the Reactor Building

ASCO Model HV200-924 Series

Containment Isolation System Valve (FSV-64-139, -140, -141)

Licensee reference not cited

Required Operating Time: 1 hour, 1 year

TER Checksheet No. 74

Licensee Submittal: Pages EEB-64-1022, -1034, and -1035 [1]

Equipment Item No. 75

Motorized Valve Actuator Located in the Reactor Building

Limitorque Model SMB-5T

Actuates Residual Heat Removal Valves (FCV-74-66, -52)

Licensee References 659, 662

Required Operating Time: 1 year

TER Checksheet No. 75

Licensee Submittal: Page NEB-74-191 [14]

Equipment Item No. 76
 Level Switch Located in the Reactor Building
 Robertshaw Model SL-305-E3-X
 SCRAM Discharge Volume Level (LS-85-45A through E)
 Licensee reference not cited
 Required Operating Time: 1 hour
 TER Checksheet No. 76
 Licensee Submittal: Page NEB-85-276 [1, 12]

Equipment Item No. 77
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-4
 Actuates Residual Heat Removal System Valves (FCV-74-67, -53)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 77
 Licensee Submittal: Pages NEB-74-192 and -202 [1, 12, 14]

Equipment Item No. 78
 Radiation Monitor Located in the Reactor Building (Refueling Floor)
 GE Model 194X927G014, 12
 Area Monitors (RE-90-140, -141, -142, -143)
 Licensee reference not cited
 Required Operating Time: 1 year
 Checksheet No. 78
 Licensee Submittal: Pages NEB-90-283 and -284 [1, 12, 14]

Equipment Item No. 79
 Motorized Valve Actuator Located in the High Pressure Coolant Injection
 Pump Room
 Limitorque Model SMB-4T, DC Motor, Class B Insulation
 Actuates High Pressure Coolant Injection System Valves (FCV-73-34, -35, -44)
 Licensee References 659, 662, 1620, 2876, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 79
 Licensee Submittal: Pages NEB-73-166, -167, -167A, and -170 [1, 12, 14]

Equipment Item No. 80
 TIP System Valve Assembly Located in the Reactor Building
 GE Model 136B1302G2
 Containment Isolation (GE-7-104)
 Licensee reference not cited
 Required Operating Time: 1 hour
 TER Checksheet No. 80
 Licensee Submittal: Page NEB-NM-287 [1, 12, 14]

Equipment Item No. 81
Motor Control Center Located in Open Area
International Switchboard Corp., Model Not Stated
Power Distribution (MOV BD 3D, 3E)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 81
Licensee Submittal: Page EEB-APS-0009, Typical [1]

Equipment Item No. 82
Motor Control Center Located in Open Area
GE Model 7700 Series
Power Distribution (MOV BD 3C)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 82
Licensee Submittal: Page EEB-APS-007, Typical [1]

Equipment Item No. 83
Motor Generator Set Located in Open Area
Louis Allis Model 8-127033
LPCI M-G Sets (3DN, 3DA, 3EN, 3EA)
Licensee Reference 4661
Required Operating Time: 1 year
TER Checksheet No. 83
Licensee Submittal: Page EEB-APS-0191, Typical [1]

Equipment Item No. 84
Solenoid Valve Located in Open Area
Target Rock Model 1/2 SMS-A-01-1
Actuates Main Steam Relief Valve (PSV-1-179, -180)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 84
Licensee Submittal: Pages EEB-1-1001 and -1002 [1]

Equipment Item No. 85
Terminal Block Located in the Drywell
General Electric Model EB-5
Electrical Distribution/Wire Termination
Licensee Reference 4652
Required Operating Time: Continuous
TER Checksheet No. 85
Licensee Submittal: Page EEB-01-0101, Typical [1]

Equipment Item No. 86
 Terminal Block Located Outside Containment
 General Electric Model EB-5
 Electrical Distribution/Wire Termination
 Licensee Reference 4652
 Required Operating Time: Continuous
 TER Checksheet No. 86
 Licensee Submittal: Page EEB-01-0102, Typical [1]

Equipment Item No. 87
 Electrical Penetration Located in the Drywell
 General Electric Model Series 100
 Electrical Distribution
 Licensee Reference 25
 Required Operating Time: Continuous
 TER Checksheet No. 87
 Licensee Submittal: Page EEB-01-0090, Typical [1]

Equipment Item No. 88
 Limit Switch Located in the Steam Tunnel
 NAMCO Model EA-740-50100
 Outboard MSIV Position Indication (ZS-1-15, -27, -38, -52)
 Licensee Reference 1530
 Required Operating Time: 1 day
 TER Checksheet No. 88
 Licensee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 [1]

Equipment Item No. 89
 Switches Located in the Drywell
 General Electric Model CR2940
 Control Circuit
 Licensee Reference 4662
 Required Operating Time: Not stated
 TER Checksheet No. 89
 Licensee Submittal: Page EEB-74-0402 [1]

Equipment Item No. 90
 Limit Switch Located in the Drywell
 NAMCO Model EA-740-50100
 Inboard MSIV Position Indication (ZS-1-14, -26, -37, -51)
 Licensee Reference 3746
 Required Operating Time: 1 day
 TER Checksheet No. 90
 Licensee Submittal: Pages EEB-1-1004, -1005, -1007, and -1009 [1]

Equipment Item No. 91
Flow Transmitter Located in the Reactor Building
GE/MAC Model 555
EECW Pump D Discharge Flow Indication (FT-67-12A, -12B)
Licensee reference not cited
Required Operating Time: 1 hour
TER Checksheet No. 91
Licensee Submittal: Pages EEB-67-1012 and -1013 [12]

Equipment Item No. 92
Limit Switches Located in the Reactor Building
Micro Model BZE6-2RN
EECW Header Valve Position Signal (FCV-67-50, -51, -53)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 92
Licensee Submittal: Pages EEB-67-1015, -1016, and -1017 [12]

Equipment Item No. 93
Flow Switch Located in the Reactor Building
GE/MAC Model 560130AAAC1
EECW Pump D Discharge Flow (FS-67-12B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 93
Licensee Submittal: Page EEB-67-1018 [12]

Equipment Item No. 94
Pressure Transmitter Located in the SW Corner Room
Rosemount Model 1151
HPCI System Pressure Measurement (PT-73-65)
Licensee reference not cited
Required Operating Time: 30 days
TER Checksheet No. 94
Licensee Submittal: Page EEB-73-1002 [12]

Equipment Item No. 95
Motorized Valve Actuator Located in the Drywell
Limitorque Model SMB-3, AC Motor, Class H Insulation
Actuates Reactor Water Recirculation Pump Isolation Valve (FCV-68-3, -79)
Licensee References 659, 1064
Required Operating Time: 1 year
TER Checksheet No. 95
Licensee Submittal: Page NEB-68-070 [1, 14]

Equipment Item No. 96
Limit Switch Located in the Torus Room
Micro Model OP-AR
RHR System Flush Vent Valve Position Indication (FCV-74-102, -103, -119, -120)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 96
Licensee Submittal: Pages EEB-74-1005 through -1008 [12]

Equipment Item No. 97
Solenoid Valve Located in the Reactor Building
Atkomatic Model 15820-WP
Core Spray Vent Valve (FSV-75-71, -72)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 97
Licensee Submittal: Pages EEB-75-1005 and -1006 [12]

Equipment Item No. 98
Level Switch Located in the Torus Room
Robertshaw Model 351A
Radwaste Fluid Level Detection (LS-77-25F)
Licensee reference not cited
Required Operating Time: 1 year.
TER Checksheet No. 98
Licensee Submittal: Page EEB-77-1002 [12]

Equipment Item No. 99
Level Switch Located in the HPCI Pump Room
Robertshaw Model 351A
Radwaste Fluid Level Detection (LS-77-25E)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 99
Licensee Submittal: Page EEB-77-1003 [12]

Equipment Item No. 100
Solenoid Valve Located in the Reactor Building
Valcor Model 526D
Drywell H₂ and O₂ Analyzer Valves (FSV-76-52, -50)
Licensee Reference 4760
Required Operating Time: 1 year
TER Checksheet No. 100
Licensee Submittal: Pages EEB-76-1022 and -1023 [12, 14]

Equipment Item No. 101
Level Switch Located in the NE and NW Corner Rooms
Robertshaw Model 351A
Radwaste Fluid Level Detection (LS-77-25A, -25B, -17A, 17B)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 101
Licensee Submittal: Pages EEB-77-1007, -1001 [12]

Equipment Item No. 102
Level Switch Located in the SW Corner Room
Robertshaw Model 351A
Radwaste Fluid Level Detection (LS-77-25C, -25D)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 102
Licensee Submittal: Pages EEB-77-1008 and -1009 [12]

Equipment Item No. 103
Limit Switch Located in the Reactor Building
Micro Model EX-AR30
Actuates Containment Exhaust Valve (FCV-84-19, -20)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 103
Licensee Submittal: Pages EEB-84-1014 and -1015 [12]

Equipment Item No. 104
Flow Control Valve Located in the Reactor Building
RAMCON Model 25B4
Radiation Monitoring Drywell Leak Detection (FCV-90-254A, B; -257A; -257B;
-255)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 104
Licensee Submittal: Pages EEB-90-1001, -1002, -1003, -1004, and -1005 [12]

Equipment Item No. 105
Acoustic Accelerometer Located in the Drywell
ENDEVCO Model 2273A
Safety Relief Valve Position Indication (XT-1-4, -5, -18, -19, -22, -23,
-30, -31, -34, -41, -42, -179, -180)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 105
Licensee Submittal: Pages EEB-1-1011 through -1023 [12]

Equipment Item No. 106
 Pump Motor Located in the NE Corner Room
 General Electric Model 5K Series
 Drives Reactor Building Equipment Drain Pumps (SP-B, SP-B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 106
 Licensee Submittal: Pages MEB-77-03, MEB-77-02, MEB-77-05, MEB-77-07 [1]

Equipment Item No. 107
 Pressure Switches Located in the NE and NW Corner Rooms
 Mercoid Model DA-7043-804
 Core Spray Pumps A & B Discharge Pressure (PS-75-7, -16, -35, -44)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 107
 Licensee Submittal: Pages NEB-75-216 and -229 [1, 12]

Equipment Item No. 108
 Flow Switch Located in the HPCI Room
 Barton Model 289A
 Monitors RHR Flow (FIS-74-50)
 Licensee Reference 4266
 Required Operating Time: 1 year
 TER Checksheet No. 108
 Licensee Submittal: Page NEB-74-188 [1, 12]

Equipment Item No. 109
 Flow Switch Located in the NW Corner Room
 Barton Model 289
 Monitors Core Spray Flow (FIS-75-21)
 Licensee Reference 4266
 Required Operating Time: 1 year
 TER Checksheet No. 109
 Licensee Submittal: Page NEB-75-219 [1, 12]

Equipment Item No. 110
 Flow Switch Located in the High Pressure Coolant Injection Room
 Barton Model 289
 Monitors High Pressure Coolant Injection Flow (FS-73-33)
 Licensee Reference 4266
 Required Operating Time: 1 year
 TER Checksheet No. 110
 Licensee Submittal: Page NEB-73-164 [1, 12]

Equipment Item No. 111

Solenoid Valve Located in the Reactor Building

ASCO Model 8000 Series

Containment Isolation Valves (FSV-67-53, -50; FSV-64-10, -44, -45, -43, -36, -42))

Licensee reference not cited

Required Operating Time: 1 hour to 1 year

TER Checksheet No. 111

Licensee Submittal: Pages EEB-67-001, -003; EEB-64-1032, -1029, -1030, -1023, -1024, 1013 [1]

Equipment Item No. 112

Solenoid Valve Located in the Torus Room

ASCO Model 8000 Series

Containment Inserting System Valves (FSV-76-41A, -41B, -37A, -37B), Main Steam Isolation Valve Pilot (Plant I.D. Not Stated)

Licensee reference not cited

Required Operating Time: 1 year

TER Checksheet No. 112

Licensee Submittal: Pages EEB-76-1018, -1019, -1026, -1027 [12]; NEB-1-002A [1]

Equipment Item No. 113

Solenoid Valve Located in the Reactor Building

ASCO Model HB830081F

Containment Isolation Valve Pilot (FSV-64-32)

Licensee Reference 712

Required Operating Time: 1 hour

TER Checksheet No. 113

Licensee Submittal: Page NEB-64-053A [1]

Equipment Item No. 114

Solenoid Valve Located in the Drywell

ASCO Model X8300B61F

Sampling System Isolation Valve (FSV-43-13)

Licensee Reference 806

Required Operating Time: 1 hour

TER Checksheet No. 114

Licensee Submittal: Page NEB-43-030 [1, 12]

Equipment Item No. 115

Solenoid Valve Located in the Reactor Building

ASCO Model HVA-90-405-2A

Control Rod Drive Systems Solenoids (FSV-85-37A, -37B, -39A, -39B)

Licensee References 4674, 4673

Required Operating Time: 1 hour

TER Checksheet No. 115

Licensee Submittal: Pages NEB-85-268 and -274 [1, 12]

Equipment Item No. 116
Solenoid Valve Located in the Reactor Building
ASCO Model X8300-B61F
Sampling System Isolation Valves (FSV-43-14)
Licensee Reference 806
Required Operating Time: 1 day
TER Checksheet No. 116
Licensee Submittal: Page NEB-43-032 [1, 12, 14]

Equipment Item No. 117
Solenoid Valve Located in the Torus Room
ASCO Model 8300C61U
RHR Vent Valves (FSV-74-119, -120, -102, -103)
Licensee reference not cited
Required Operating Time: 1 hour, 1 year
TER Checksheet No. 117
Licensee Submittal: Pages EEB-74-1004, -1003, -1002, and -1001 [1]

Equipment Item No. 118
Solenoid Valve Located in the Reactor Building
ASCO Model HT8211C94
Actuates Drywell or Suppression Chamber Exhaust Valve (FSV-84-19, -20)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 118
Licensee Submittal: Pages EEB-84-1006, -1005 [1]

Equipment Item No. 119
Solenoid Valve Located in the Reactor Building
ASCO Model 8300 Series
Containment Purge Makeup Isolation Valves (FSV-76-17, -18, -19, -24)
Licensee Reference 806
Required Operating Time: 1 day
TER Checksheet No. 119
Licensee Submittal: Pages NEB-76-240, -241, and -242 [1, 12, 14]

Equipment Item No. 120
Solenoid Valve Located in the NE Corner Room
ASCO Model 8300 Series
Containment Isolation Reactor Building Sump Pump (FSV-77-17)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 120
Licensee Submittal: Page EEB-77-1006 [1]

Equipment Item No. 121
Solenoid Valve Located in the Reactor Building
ASCO Model WPLBX831636
CRD Backup SCRAM Pilot Valve B (FSV-85-35A, B)
Licensee Reference 712
Required Operating Time: 1 hour
TER Checksheet No. 121
Licensee Submittal: Page NEB-85-267 [1, 12]

Equipment Item No. 122
Solenoid Valve Located in the Reactor Building
ASCO Model WPHTX8300B45F
Containment Isolation (FSV-64-17, -18, -19, -20, -21, -29, -30,
-31, -32, -33, -34)
Licensee Reference 806
Required Operating Time: 1 hour
TER Checksheet No. 122
Licensee Submittal: Pages NEB-64-039, -040, -047, and -053 [1, 12, 14]

Equipment Item No. 123
Solenoid Valve Located in the NW Corner Room
ASCO Model HB830081F
Core Spray Cooling System Isolation Valve (FSV-75-57)
Licensee reference not cited
Required Operating Time: 1 day
TER Checksheet No. 123
Licensee Submittal: Page NEB-64-49A [1]

Equipment Item No. 124
Solenoid Valve Located in the NW Corner Room
ASCO Model HTX8300B61U
RCIC Steam Line Isolation (FSV-71-6A, -6B)
Licensee reference not cited
Required Operating Time: 30 days
TER Checksheet No. 124
Licensee Submittal: Pages EEB-71-1001 and -1002 [1]

Equipment Item No. 125
Motorized Valve Actuator Located in the RCIC Pump Room
Limatorque Model SMB-0, DC Motor, Class B Insulation
RCIC Steam Supply Valve (FCV-71-8)
Licensee References 662, 659, 1063, 1620, 2876
Required Operating Time: 30 days
TER Checksheet No. 125
Licensee Submittal: Page NEB-71-100 [1, 12]

Equipment Item No. 126

Motorized Valve Actuators Located in the NE and NW

Core Spray Pump Rooms

Limitorque Model SMB-0

Core Spray Pumps "A" and "B" Suction Valves (FCV-75-2, -11, -30, -39)

Licensee References 662, 2876, 1620

Required Operating Time: 1 year

TER Checksheet No. 126

Licensee Submittal: Pages NEB-75-214, and -227 [1, 12, 14]

Equipment Item No. 127

Motorized Valve Actuator Located in the SE Corner Room

Limitorque Model SMB-0

RHR Pump B (FCV-74-25); RHR Pump D (FCV-74-36)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 127

Licensee Submittal: Page MEB-71-01 [1, 12]

Equipment Item No. 128

Motorized Valve Actuators Located in the SW Corner Room

Limitorque Model SMB-0

RHR Pump "A" Shutdown Cooling (FCV-74-2); RHR Pump "C" Shutdown Cooling (FCV-74-13)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 128

Licensee Submittal: Page MEB-74-01 [1, 12]

Equipment Item No. 129

Motorized Valve Actuator Located in the Drywell

Limitorque Model SMB-0

Containment Isolation (FCV-69-1)

Licensee References 1620, 1064

Required Operating Time: 1 hour

TER Checksheet No. 129

Licensee Submittal: Page NEB-69-73 [1, 12, 14]

Equipment Item No. 130

Motorized Valve Actuator Located in the HPCI Pump Room

Limitorque Model SMB-0, DC Motor, Class B Insulation

HPCI Suppression Pool Suction (FCV-73-27); HPCI, CST Suction (FCV-73-40);

HPCI Main Pump (FCV-73-30)

Licensee References 2876, 1620, 662, 1063, 659

Required Operating Time: 30 days

TER Checksheet No. 130

Licensee Submittal: Pages NEB-73-161, -169; MEB-73-02 [1, 12]

Equipment Item No. 131
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-0
 Actuates Reactor Water Cleanup Valves (FCV-69-2)
 Licensee References 659, 662, 1063, 1620, 2876
 Required Operating Time: 1 day
 TER Checksheet No. 131
 Licensee Submittal: Page NEB-69-074 [1, 12]

Equipment Item No. 132
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-00
 RHR System Suppression Pool Valve (FCV-74-58, -72); RBCCW Discharge Header
 Outlet Valve (FCV-70-47)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 132
 Licensee Submittal: Pages NEB-70-82 and NEB-74-194 [1, 12, 14]

Equipment Item No. 133
 Motorized Valve Actuator Located in the Steam Tunnel
 Limitorque Model SMB-00, Class B Insulation
 RCIC Steam Line Isolation (FCV-71-3)
 Licensee References 659, 662, 2876, 1620, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 133
 Licensee Submittal: Page NEB-71-96 [1, 12]

Equipment Item No. 134
 Motorized Valve Actuator Located in the NW Corner Room
 Limitorque Model SMB-00, DC Motor, Class B Insulation
 RCIC Suppression Pool Suction (FCV-71-17, -18); RCIC CST Suction (FCV-71-19)
 Licensee References 659, 662, 2876, 1620, 1063
 Required Operating Time: 30 days
 TER Checksheet No. 134
 Licensee Submittal: Pages NEB-71-107, -108, and -109 [1, 12]

Equipment Item No. 135
 Motorized Valve Actuator Located in the Corner Rooms
 Limitorque Model SMB-00
 Actuates Core Spray and Residual Heat Removal Valves (FCV-74-30, -96, -97, -98,
 -99); FCV-75-9, -37)
 Licensee References 659, 662, 2876
 Required Operating Time: 1 year
 TER Checksheet No. 135
 Licensee Submittal: Pages MEB-74-01; NEB-75-217, -230 [1, 12, 14]

Equipment Item No. 136
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-00
 Actuates Residual Heat Removal Valves (FCV-74-78)
 Licensee References 1064, 1620
 Required Operating Time: 1 year
 TER Checksheet No. 136
 Licensee Submittal: Page NEB-74-208 [1, 14]

Equipment Item No. 137
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-00
 Actuates Reactor Core Isolation Cooling Systems Valves (FCV-71-2)
 Licensee References 1064, 1620, 659
 Required Operating Time: 30 days
 TER Checksheet No. 137
 Licensee Submittal: Page NEB-71-85 [1, 14]

Equipment Item No. 138
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB; Sizes 00 and 2
 Actuates Residual Heat Removal System Valves (FCV-74-2, -7, -13, -25, -30,
 -36, -96, -97, -100; FCV-74-60, -61; FCV-23-34, -40, -46, -52)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 138
 Licensee Submittal: Pages NEB-74-197, -196A; NEB-23-026; NEB-23-029; MEB-74-01
 [1, 12, 14]

Equipment Item No. 139
 Motorized Valve Actuator Located in the Drywell
 Limitorque Model SMB-000
 Actuates Steam-Driven Isolation Valves (FCV-1-55)
 Licensee References 1064, 1620
 Required Operating Time: 1 hour
 TER Checksheet No. 139
 Licensee Submittal: Page NEB-1-012 [14]

Equipment Item No. 140
 Motorized Valve Actuator Located in the SW Corner Room
 Limitorque Model SMB-000
 Actuates Residual Heat Removal System Valves (FCV-74-7)
 Licensee Reference 662
 Required Operating Time: 1 year
 TER Checksheet No. 140
 Licensee Submittal: Page MEB-74-01 [12]

Equipment Item No. 141

Motorized Valve Actuator Located in the NW Corner Room

Limitorque Model SMB-000

Actuates Reactor Core Isolation Cooling System Valves (FCV-71-25, -34)

Licensee Reference 662

Required Operating Time: 30 days

TER Checksheet No. 141

Licensee Submittal: Page MEB-71-02 [12]

Equipment Item No. 142

Motorized Valve Actuator Located in the Steam Tunnel

Limitorque Model SMB-000, DC Motor, Class B Insulation

Actuates Steam Drain Isolation Valves (FCV-1-56)

Licensee References 659, 662, 2876, 1620, 1063

Required Operating Time: 1 day

TER Checksheet No. 142

Licensee Submittal: Page NEB-1-013 [12]

Equipment Item No. 143

Motorized Valve Actuator Located in the Drywell

Limitorque Model SMB-000

Actuates Emergency Core Cooling System Valves (FCV-67-18, -22, -26)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 143

Licensee Submittal: Page MEB-67-02 [14]

Equipment Item No. 144

Motorized Valve Actuator Located in the Reactor Building

Limitorque Model SMB-000

Actuates Emergency Core Cooling System Valves (FCV-67-17, -21, -25)

Licensee Reference 662

Required Operating Time: 1 year

TER Checksheet No. 144

Licensee Submittal: Page MEB-67-01 [14]

Equipment Item No. 145

Motorized Valve Actuator Located in the NW Corner Room

Limitorque Model SMB-1, DC Motor, Class B Insulation

Actuates Reactor Core Isolation Cooling Valves (FCV-71-37, -38, -39)

Licensee References 659, 662, 2876, 1620, 1063

Required Operating Time: 30 days

TER Checksheet No. 145

Licensee Submittal: Pages NEB-71-117, -118, and -119 [1, 14]

Equipment Item No. 146

Motorized Valve Actuator Located in the SW Corner Room

Limitorque Model SMB-1

Actuates Residual Heat Removal System Valves (FCV-74-1, -12, -24, 35)

Licensee References 659, 662

Required Operating Time: 1 year

TER Checksheet No. 146

Licensee Submittal: Page NEB-74-179 [1, 14]

Equipment Item No. 147

Motorized Valve Actuator Located in the Drywell

Limitorque Model SMB-2

HPCI Steam Line Isolation Valve (FCV-73-2)

Licensee References 659, 1064, 1020

Required Operating Time: 30 days

TER Checksheet No. 147

Licensee Submittal: Page NEB-73-130 [1, 12, 14]

Equipment Item No. 148

Motorized Valve Actuator Located in the HPCI Pump Room

Limitorque Model SMB-2, DC Motor, Class B Insulation

HPCI Steam Supply Valve (FCV-73-16)

Licensee References 659, 662, 2876, 1620, 1063

Required Operating Time: 30 days

TER Checksheet No. 148

Licensee Submittal: Page NEB-73-149 [1, 12, 14]

Equipment Item No. 149

Motorized Valve Actuator Located in the NE Corner Room

Limitorque Model SMB-2

Core Spray II Test Bypass Valve (FCV-75-50)

Licensee References 662, 659

Required Operating Time: 1 year

TER Checksheet No. 149

Licensee Submittal: Page NEB-75-234 [1, 12, 14]

Equipment Item No. 150

Motorized Valve Actuator Located in the Torus Room

Limitorque Model SMB-2, DC Motor, Class B Insulation

HPCI Steam Line Valve (FCV-73-3)

Licensee References 662, 2876, 1620, 1063, 659

Required Operating Time: 30 days

TER Checksheet No. 150

Licensee Submittal: Page NEB-73-147 [1, 12]

Equipment Item No. 151
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-2
 RHR Suppression Pool Valve (FCV-74-71); RHR System I (FCV-74-57); RHR System I
 Test Valves (FCV-74-59, -73)
 Licensee References 1620, 1064
 Required Operating Time: 1 year
 TER Checksheet No. 151
 Licensee Submittal: Pages NEB-74-193, -195, and -204 [1, 12, 14]

Equipment Item No. 152
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-2
 Core Spray Discharge Control Valves (FCV-75-23, -25, -73, -75)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 152
 Licensee Submittal: Pages NEB-75-222, -224, -235, and -237 [1, 12, 14]

Equipment Item No. 153
 Motorized Valve Actuator Located in the Reactor Building
 Limitorque Model SMB-2
 Containment Isolation (FCV-74-74)
 Licensee References 659, 662
 Required Operating Time: 1 year
 TER Checksheet No. 153
 Licensee Submittal: Page NEB-74-205 [1, 12, 14]

Equipment Item No. 154
 Cable
 (COAX, TRIAX, signal XLPE)

Times Wire & Cable, Brand Rex 936,
 Boston Insulated Wire, Okonite, Dearborn Wire,
 Alpha Wire, Belden, Consolidated, Rockbestos,
 Anaconda 17

Cable
 (CP, CPO, CPJS, PXJ)

Sumitomo Shoji, Plastic Wire & Cable, Collyer,
 Okonite, Triangle Conduit & Cable, Rome, Essex,
 PWC, Simplex, General Cable, Rockbestos

Cable
 (PNN, PJJ, PN, PJ)

Plastic Wire & Cable, Brand Rex 936, Rome,
 Cyprus, American Insulated Wire, General Cable,
 Tamaqua, PWC

Various Licensee References
 Required Operating Time: Continuous
 TER Checksheet No. 154
 Licensee Submittal: EEB-68-0016, Typical [1, 12, 14]

Equipment Item No. 155
 Electrical Cable Located in the Drywell
 Anaconda, Silicone Rubber Insulation
 Low Voltage Power and Control Cable
 Licensee Reference 17
 Required Operating Time: Continuous
 TER Checksheet No. 194
 Licensee Submittal: Page EEB-68-0016, Typical [1]

Equipment Item No. 156
 Pressure Switch Located in the HPCI Pump Room and NW Corner Room
 Static-O-Ring Model 6N-AA21
 Monitors Pump Suction Pressure (PS-71-21-1, PS-73-29-1)
 Licensee Reference 4215
 Required Operating Time: 30 days
 TER Checksheet No. 156
 Licensee Submittal: Pages NEB-71-112 and NEB-73-162 [1, 12]

Equipment Item No. 157
 Motorized Valve Actuator Located in the Torus Room
 Limitorque Model SMB-000
 Actuates Turbine Exhaust Valves (RCIC/HPIC) (FCV-71-59, FCV-73-64)
 Licensee Reference 662
 Required Operating Time: 30 days
 TER Checksheet No. 157
 Licensee Submittal: Pages MEB-71-01 and MEB-73-01 [12]

Equipment Item No. 158
 Motorized Valve Actuator Located in the SE Corner Room
 Limitorque Model SMB-0, DC Motor, Class B Insulation
 HPCI Suppression Pool Suction Valve (FCV-73-26)
 Licensee References 659, 1063, 662, 1620, 2876
 Required Operating Time: 30 days
 TER Checksheet No. 158
 Licensee Submittal: Page NEB-73-160A [1, 12]

Equipment Item No. 159
 Pressure Switches Located in the Reactor Building
 Meletron Model 2121-32A
 RBCCW Inlet Header Pressure Switch (PS-24-133A, -133B)
 Licensee reference not cited
 Required Operating Time: 1 year
 TER Checksheet No. 159
 Licensee Submittal: Pages EEB-24-1001 and -1002 [12]

Equipment Item No. 160
Limit Switch Located in the Reactor Building
NAMCO Model EA-170-11100
Compressor Valve Position Indication (FCV-64-140, -141, -139)
Licensee reference not cited
Required Operating Time: 1 year
TER Checksheet No. 160
Licensee Submittal: Pages EEB-64-1043, -1044, and -1045 [12]

APPENDIX C - PLANT SAFETY-RELATED SYSTEMS AND DISPLAY INSTRUMENTATION

C.1 LIST OF SAFETY-RELATED SYSTEMS

In accordance with IE Bulletin 79-01B or NUREG-0588, the Licensee was required to (1) establish a list of systems and equipment required to mitigate the consequences of a loss-of-coolant accident (LOCA) and a high energy line break (HELB) and (2) identify components needed to perform the functions of safety-related display information, post-accident sampling and monitoring, and radiation monitoring.

The list of safety-related systems provided by the Licensee was reviewed by the NRC staff against a staff-developed master list. The NRC staff had developed a generic master list based upon a review of plant safety analyses and emergency procedures. The systems list was established on the basis of functions that must be performed for accident mitigation (without regard to location of equipment relative to hostile environments). The instrumentation selected included that needed to monitor overall plant performance as well as to monitor the performance of systems on the list.

Based upon information in the Licensee's submittal, the equipment location references, and in some cases conversations with the Licensee, the NRC staff verified that the systems included in the Licensee's submittal were those required to achieve or support: (1) emergency reactor shutdown, (2) containment isolation, (3) reactor core cooling, (4) containment heat removal, (5) core residual heat removal, and (6) prevention of significant release of radioactive material to the surrounding environment. With the exception of items deferred for later review (cold-shutdown equipment and TMI Lessons-Learned modifications), the staff concluded that the systems identified by the Licensee were acceptable. The list of systems identified by the Licensee and accepted by the NRC staff is presented in this appendix.

<u>Function</u>	<u>System¹</u>
Emergency Reactor Shutdown	Engineered Safeguards Actuation Reactor Protection Standby Liquid Control Control Rod Drive
Containment Isolation	Main Steam Feedwater Control Air Sampling Reactor Recirculation Reactor Water Cleanup Reactor Building Closed Cooling Water Reactor Core Isolation Cooling Residual Heat Removal Core Spray Containment Inerting Radwaste Containment Air Dilution Primary Containment
Reactor Core Cooling	High Pressure Coolant Injection Low Pressure Coolant Injection (RHR) Core Spray Automatic Depressurization Reactor Core Isolation Cooling
Containment Heat Removal	Residual Heat Removal Emergency Equipment Cooling Water
Core Residual Heat Removal	Main Steam Residual Heat Removal Reactor Core Isolation Cooling Residual Heat Removal Cooling Water

¹The NRC staff recognized that there are differences in nomenclature of systems because of plant vintage and engineering design; consequently, some systems performing identical or similar functions may have different names. In those instances it was necessary to verify the system(s) function with the responsible IE regional reviewer and/or the Licensee.

Function

System¹

Core Residual Heat Removal

Reactor Building Closed Cooling
Water
Raw Cooling Water

Prevention of Significant Release
of Radioactive Material to Environment

Standby Gas Treatment
Containment Air Dilution
Radwaste
Reactor Water Cleanup
Radiation Monitoring
Neutron Monitoring
Containment Inerting
Sampling

Supporting Systems

Auxiliary Power
Air Conditioning
Ventilating
Fuel Oil

C.2 SAFETY-RELATED INSTRUMENTATION

In Section 3.1 of the NRC SER dated June 3, 1981 [13], the NRC made the following statement:

"Display instrumentation which provides information for the reactor operators to aid them in the safe handling of the plant was not specifically identified by the licensee. A complete list of all display instrumentation mentioned in the LOCA and HELB emergency procedures must be provided. Equipment qualification information in the form of summary sheets should be provided for all components of the display instrumentation exposed to harsh environments. Instrumentation which is not considered to be safety related but which is mentioned in the emergency procedure should appear on the list. For these instruments, (1) justification should be provided for not considering the instrument safety related and (2) assurance should be provided that its subsequent failure will not mislead the operator or adversely affect the mitigation of the consequences of the accident. The environmental qualification of post-accident sampling and monitoring and radiation monitoring equipment is closely related to the review of the TMI Lessons-Learned modifications and will be performed in conjunction with that review."

In Reference 14, the Licensee provided the following response:

A listing of display instrumentation, located in the harsh environment, which provides information for the reactor operators to aid them in the safe handling of the plant, is given below. The parameters selected were based on a review of present emergency operating instructions and the new symptomatic emergency instructions. Also included is the number of the Evaluation Work Sheet (EWS) associated with each device.

COMPONENTS OF DISPLAY INSTRUMENTATION LOCATED IN HARSH ENVIRONMENTS

<u>Monitored Parameter</u>	<u>Instrument</u>	<u>E.W.S Number</u>
Reactor Water Level	LITS-3-46A	NEB-3-016
	LITS-3-46B	NEB-3-016
	LITS-3-52	NEB-3-24
	LITS-3-62	NEB-3-24
Reactor Pressure	PT-3-22A	NEB-3-015
	PT-3-22B	NEB-3-015
	PT-3-22C	NEB-3-015
	PT-3-22D	NEB-3-015
	PT-3-54	
	PT-3-64	

Drywell Pressure

PT-64-50
 PT-64-67
 PT-64-160A
 PT-64-160B

NEB-64-058
 NEB-64-068
 *
 *

Drywell Temperature

TE-64-52A
 TE-64-52C

EEB-64-1039
 EEB-64-1040

Torus Water Temperature

TE-64-55A
 TE-64-55B
 TE-64-55C
 TE-64-55D

NEB-64-062
 NEB-64-062
 NEB-64-062
 NEB-64-062

Torus Water Level

LT-64-54
 PX-64-54
 LT-64-66
 PX-64-66
 LT-64-159A
 LT-64-159B

NEB-64-061
 NEB-64-060
 NEB-64-067
 NEB-64-060
 *
 *

Torus Pressure

PT-64-51

NEB-64-059

Conclusion

It is considered that the Licensee has provided a satisfactory response to the concern of the SER regarding safety-related display instruments.

These instruments are not presently installed.



APPENDIX D - REVIEW OF LICENSEE'S RESPONSE TO NRC EEQ
SER CONCERNING JUSTIFICATION FOR INTERIM OPERATION

1. BACKGROUND

The NRC Safety Evaluation Report (SER) concerning equipment environmental qualification (EEQ) states [13]:

"Subsection 4.2 identified deficiencies that must be resolved to establish the qualification of the equipment; the staff requires that the information lacking in this category be provided within 90 days of receipt of this SER. Within this period, the licensee should either provide documentation of the missing qualification information which demonstrates that such equipment meets the DOR guidelines or NUREG-0588 or commit to a corrective action (requalification, replacement, relocation, and so forth) consistent with the requirements to establish qualification by June 30, 1982. If the latter option is chosen, the licensee must provide justification for operation until such corrective action is complete."

On January 19, 1982, FRC representatives met with NRC Division of Licensing personnel at NRC offices to discuss the potential for FRC to assist the staff in the technical review of licensees' statements regarding justification for interim plant operation submitted in response to outstanding qualification deficiencies in the NRC EEQ SERs. The results of the meeting were as follows: (1) FRC was requested to proceed immediately with the technical review of licensees' justification for interim operation, (2) the format was established, and (3) the criteria for the review were established. These criteria are presented in Section 2 of this appendix.

On January 21, 1982, the NRC provided the following modification to final Assignment 13 concerning this subject:

"The FRC review will consist of:

- o Review the licensee's justification of interim operation and provide FRC independent analysis which shows whether or not licensee provided technically sound rationale as a basis for justification for continued plant operation.

- o On January 27, 1982, FRC shall provide a list of those power reactors that have provided technically sound justification for continued operation. FRC shall also provide a list of those power reactors which have not provided technically sound justification for continued operation. In addition to the lists, FRC may provide any additional information which in FRC's judgment is necessary to support the conclusions regarding justification for continued operation."

On January 25, 1982, the NRC was provided with the completed review of the licensees' statements presented as a basis for justification for interim operation in response to the NRC EEQ SER.* On February 5, 1982, at the NRC's request, the NRC was provided with actual examples of licensees' responses to the NRC EEQ SER that provide adequate rationale as a basis for justification for interim operation.**

2. GENERAL DISCUSSION

In general, licensee-submitted justifications for interim operation are based on systems considerations, equipment operability evaluations, or failure-modes-and-effects analyses.

Systems considerations often involve the availability of backup equipment capable of performing the particular safety function of concern. The backup equipment is either environmentally qualified, unqualified but not exposed to a harsh environment at the same time as the primary equipment, or located so that it is unlikely that both the primary and backup equipment would be simultaneously exposed to a severe environment. In general, these systems discussions should consider (1) the possibility of a single-active failure

* C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of FRC Review of Licensees' Responses to NRC EEQ SER Concerning Justification for Interim Operation
FRC, 25-Jan-82

** C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of Actual Examples of Licensees' Responses to NRC EEQ SER Which Provide Adequate Rationale as a Basis for Justification of Interim Operation
FRC, 5-Feb-82

(1) enabling the backup equipment, (2) any major differences in the characteristics of the primary and backup equipment (unless it is obvious that the equipment is essentially identical), (3) the possibility of electrical failure of the primary equipment causing an adverse effect on other safety-related equipment or power supplies, and (4) in the case of display instrumentation, the possibility of an operator being misled by the failed primary equipment. Where equipment has not been demonstrated to be qualified, some justifications discuss administrative procedures or revised operating procedures in effect. Depending upon the specific equipment involved, each of the above considerations need not be discussed in every instance, but, in general, a complete systems discussion would consider the above points.

Where equipment qualification evaluations were used, licensees generally (1) received additional information from manufacturers, (2) applied engineering judgment, (3) performed material analysis, and/or (4) used partial test data in support of the original qualification documentation. Where these evaluations were performed, the licensees determined that, although full qualification was not documented, there was sufficient evidence to suggest that the equipment would perform its intended safety function, thereby justifying interim operation until qualified equipment is installed.

Some licensees provided detailed failure-modes-and-effects analyses of electrical circuitry to demonstrate that, under all identified failure modes, the safety function of the equipment could still be accomplished.

Other justifications involved a combination of qualification information and systems information. For example, if a licensee has qualification information (such as a generic test report or other partial qualification documentation) that tends to confirm the ability of the equipment to remain operable for a specified period of time, justification for interim operation often was based upon a discussion of the required safety function being performed prior to the potential failure. This type of discussion often applies to equipment which performs a short-term trip or isolation function in the early stages of an accident.

3. PLANT-SPECIFIC REVIEW

As a result of the review, this plant was evaluated and the results documented on the "Summary of Review of Licensee's 90-Day Response" form reproduced below:

"EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)
Review of Licensees' Resolution of Outstanding Issues'
From NRC Equipment Environmental Qualification
Safety Evaluation Reports

SUMMARY OF REVIEW
OF LICENSEE 90-DAY RESPONSE

Utility: Tennessee Valley Authority
Plant Name: Browns Ferry Unit 3
NRC Docket No. 50-296
NRC TAC No. 42-483
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 471

References:

- a. L. M. Mills
Letter to H. R. Denton (NRC)
Subject: Response to Safety Evaluation Report for the Environmental Qualification of Safety-Related Electrical Equipment at Browns Ferry Plant
Tennessee Valley Authority, September 29, 1981
- b. Office of Nuclear Reactor Regulation
Safety Evaluation Report for Browns Ferry Units 1, 2, and 3
Environmental Qualification of Safety-Related Electrical Equipment
NRC, June 3, 1981
- c. L. M. Mills
Letter to J. P. O'Reilly (NRC)
Subject: Revisions and Updates to Response to IE Bulletin 79-01B, dated October 31, 1980
Tennessee Valley Authority, March 3, 1981

The Licensee has submitted technical information in Reference a in response to the NRC SER [b] on environmental qualification. FRC has reviewed these documents [a, b, c]. As a result of this review, FRC concludes that the Licensee has stated that the equipment items are environmentally qualified; or has provided a technically sound rationale as a basis for justification for continued plant operation; or has provided a technically sound rationale or other additional information which in FRC's judgment provides a basis for justification for continued operation; with the following exceptions:

<u>Equipment Item</u>	<u>Equipment Description/ Function</u>	<u>SCEW Sheet No.</u>	<u>Status Code</u>	<u>Basis for Deficiency</u>
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None

The Licensee's response to the SER addressed and provided resolution of deficiencies identified in the SER and provided adequate rationale as a basis for justification for interim operation. However, schedules for corrective action have not been provided for most of the equipment."



APPENDIX E - REQUEST FOR ADDITIONAL INFORMATION

This appendix contains the Request for Additional Information (RAI) that was developed during the course of the review and issued to the NRC for forwarding to the Licensee. The RAI was revised throughout the review to reflect the Licensee's response(s) to the initial RAI.

The reader is cautioned that the numbers in brackets refer to citations found in the list of references at the end of this appendix and not to the citations listed in Section 6, References, of the TER.

REQUEST FOR ADDITIONAL INFORMATION

EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)
REVIEW OF LICENSEES' RESOLUTION OF OUTSTANDING ISSUES
FROM NRC EQUIPMENT ENVIRONMENTAL QUALIFICATION SAFETY
EVALUATION REPORTS (SER) AND TMI ACTION PLAN INSTALLED EQUIPMENT

Tennessee Valley Authority
Browns Ferry Unit 3

NRC Docket No. 50-296

NRC TAC No. 42483

November 19, 1981
Rev. 1, April 7, 1982
Rev. 2, May 20, 1982

BACKGROUND

Franklin Research Center (FRC) of Philadelphia, Pa. is providing assistance to the U.S. Nuclear Regulatory Commission (NRC) for the equipment environmental qualification (EEQ) review of operating reactors. FRC will perform an EEQ review of the Licensee's 90-day response to outstanding issues from the NRC Equipment Environmental Qualification Safety Evaluation Report (SER) and the installed TMI Action Plan equipment. The review will be limited to safety-related equipment potentially exposed to a harsh environment. The results will be presented in the form of a technical evaluation report for each plant.

This request for additional information (RAI) is the result of an evaluation of the information provided by letters dated March 3, 1981 [1] and September 29, 1981 [2].* FRC previously requested TMI Action Plan information by a telephone memorandum dated October 7, 1981 [3].

By letter dated March 4, 1982 [6], the Licensee stated that non-proprietary documents will be transmitted by April 8, 1982 and proprietary documents will be forwarded by May 10, 1982 if a release can be obtained. (1)**

On April 6, 1982 [7], the Licensee transmitted the qualification documents requested. (2)

A. FRC REVIEW OF THE LICENSEE'S 90-DAY RESPONSE TO THE NRC EEQ SER

INFORMATION REQUESTED

DATE RECEIVED BY FRC***

1. In reference to the Licensee's 90-day response [2] to the NRC SER [4], a legible single copy of each of the following qualification documents is requested in order that the FRC evaluation may proceed:

*Numbers in brackets refer to citations found in the list of references.

**Throughout the text, superscript numbers in parentheses indicate the revision in which the underlined material preceding the superscript was added.

***This column will be completed by FRC as the requested information is received.

	DATE RECEIVED BY FRC*
1. TVA Engineering Report 1943.	<u>4/13/82</u> [7] (2)
2. Wyle Lab Report 43854-1.	<u>4/13/82</u> [7] (2)
3. TVA Engineering Report 1946.	<u>4/13/82</u> [7] (2)
4. TVA Engineering Report 1944.	<u>4/13/82</u> [7] (2)
5. Parkinson and Sisman, October 1970.	<u>4/13/82</u> [7] (2)
6. Anaconda-Continental Test Report No. 79117.	<u>4/13/82</u> [7] (2)
7. TVA Engineering Report 1942.	<u>4/13/82</u> [7] (2)
8. TVA Engineering Report 1928.	<u>4/13/82</u> [7] (2)
9. TVA Engineering Report 1923.	<u>4/13/82</u> [7] (2)
10. TVA Engineering Report 1945.	<u>4/13/82</u> [7] (2)
11. TVA Engineering Report 1947.	<u>4/13/82</u> [7] (2)
12. TVA Engineering Report 1950A.	<u>4/13/82</u> [7] (2)
13. TVA Engineering Report 1950B.	<u>4/13/82</u> [7] (2)
14. <u>Deleted (same as 2)</u> (1)	
15. TVA Engineering Report 1926.	<u>4/13/82</u> [7] (2)
16. TVA Engineering Report 1921.	<u>4/13/82</u> [7] (2)
17. GE Letter, February 3, 1978 to H. J. Green.	<u>4/13/82</u> [7] (2)
18. BWR Owners Group Report 081-A-01, September 23, 1980.	<u>4/13/82</u> [7] (2)
19. Target Rock Report 1827A, November 4, 1976.	<u>4/13/82</u> [7] (2)
20. NMC Test Report NMC-PT-7630 Rev. O.	<u>4/13/82</u> [7] (2)
21. NMC Drawing 0082445 Rev. D, February 9, 1978.	<u>4/13/82</u> [7] (2)

DATE RECEIVED BY FRC***

- | | |
|---|------------------------|
| 22. Target Rock Test Report 2199A. | <u>4/13/82</u> [7] (2) |
| 23. Fenwal Engineering Report 6350. | <u>4/13/82</u> [7] (2) |
| 24. Wyle Lab Report QSR-018-A012. | <u>4/13/82</u> [7] (2) |
| 25. Barksdale Qualification Procedure 9993. | <u>4/13/82</u> [7] (2) |
| 26. Barton Engineering Report R3288A-1. | <u>4/13/82</u> [7] (2) |
| 27. Wyle Summary Report QSR-027-A-02. | <u>4/13/82</u> [7] (2) |
| 28. Conax Test Report TR-39. | <u>Deleted</u> [7] (2) |
| 29. Wyle Summary Report QSR-146-A-01. | <u>Deleted</u> [7] (2) |
| 30. <u>Deleted (same as 26)</u> (1) | |
| 31. Wyle Summary Report QSR-029-A-01. | <u>Deleted</u> [7] (2) |
| 32. Wyle Summary Report E12-3. | <u>Deleted</u> [7] (2) |
| 33. Wyle Summary Report E12-N010. | <u>Deleted</u> [7] (2) |
| 34. Rosemount Test Report 37327B. | <u>4/13/82</u> [7] (2) |
| 35. Rosemount Test Report 127227. | <u>4/13/82</u> [7] (2) |
| 36. Wyle Report QSR-048-A-01. | <u>4/13/82</u> [7] (2) |
| 37. Louis Allis Document S40EJ4-099-630,
October 10, 1979. | <u>4/13/82</u> [7] (2) |
| 38. TVA Engineering Report 1927. | <u>4/13/82</u> [7] (2) |
| 39. Wyle Lab Report QSR-002-A-02. | <u>4/13/82</u> [7] (2) |
| 40. Rotork Report, "A" Range Nuclear
Qualification. | <u>4/13/82</u> [7] (2) |
| 41. Wyle Lab Report QSR-040-A-01. | <u>4/13/82</u> [7] (2) |
| 42. <u>Deleted (same as 2)</u> (1) | |
| 43. <u>Deleted (same as 27)</u> (1) | |

DATE RECEIVED BY FRC*

44. Insulation Class for All Limitorque Motor Operators.

4/13/82 [7] (2)

45. Wyle Report QSR-097-A-01.

4/13/82 [7] (2)

46. Wyle Report QSR-097-A-02.

4/13/82 [7] (2)

47. Rockwell Report 2792-03-02 Rev. 1 Type Test of 8300 Type Valve.

4/13/82 [7] (2)

B. FRC REVIEW OF INSTALLED TMI ACTION PLAN ITEMS

INFORMATION REQUESTED

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1. Reference 1 does not provide adequate detail with respect to identification of TMI Action Plan equipment installed as of 1/1/81.

- a. Identification of all TMI Action Plan equipment installed as of 1/1/81 is requested.
- b. Identification of TMI Action Plan equipment installed with implementation dates after 1/1/81 is requested.
- c. The correlation of these equipment items with the specific sections of NUREG-0737 [5] presented below (as applicable) is requested.

IIE4.2, IID3, IIB3, IIE4.1, IIK3.13, IIK3.15, IIK3.19, IIK3.21, IIK3.27.

[The correlation is needed to ensure that all items are included in the review, e.g., if a transmitter is identified as a TMI Action Plan item, are the cable and terminal blocks associated with the device also identified?]

- d. For all installed TMI Action Plan equipment identified, a System Component Evaluation Worksheet (SCEW) (in accordance with 79-01B format) is requested.

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- e. The approximate installation date for the TMI Action Plan equipment items is requested so that the appropriate qualification criteria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
2. The qualification documents, e.g., the actual test reports and associated correspondence cited as evidence of qualification listed on the SCEW sheets, for all identified TMI Action Plan equipment are requested. [The identification of those reports considered to be proprietary is requested so that proper control of documents can be maintained.]
3. Where the Licensee has a standard Owners' Group position with respect to a NUREG-0737 technical area or has requested extensions of implementation dates, this information is requested in order to incorporate it into the review.

C. INSTRUCTIONS FOR TRANSMITTING INFORMATION REQUESTED

1. The schedule for completion of the FRC assignment requires that the Licensee provide the requested information within 3 weeks of the date of the RAI.
2. The Licensee may transmit the requested information as follows:
 - o complete package directly to the NRC project manager
 - or
 - o copy of cover letter to NRC project manager and complete package to FRC.

REFERENCES

1. L. M. Mills
Letter to J. P. O'Reilly (NRC)
Subject: Revisions and Updates to Response to IE Bulletin 79-01B,
dated October 31, 1980
Tennessee Valley Authority, March 3, 1981
2. L. M. Mills
Letter to H. R. Denton (NRC)
Subject: Response to Safety Evaluation Report for the Environmental
Qualification of Safety-Related Electrical Equipment at Browns Ferry
Plant
Tennessee Valley Authority, September 29, 1981
3. Telephone Memorandum
C. J. Crane, R. Garrison, and D. Schmitz (FRC) with H. Walker (NRR/EQB)
and R. Reeves, J. Willis, R. Rogers, J. Edwards, and S. Stout (TVA).
October 7, 1981
4. Office of Nuclear Reactor Regulation
Safety Evaluation Report for Browns Ferry Units 1, 2, and 3
Environmental Qualification of Safety-Related Electrical Equipment
NRC, June 3, 1981
5. NUREG-0737
"Clarification of TMI Action Plan Requirements"
NRC, November 1980
6. L. M. Mills
Letter to D. B. Vassalo, NRC. Subject: Requested Reports for
Environmental Qualification of Electrical Equipment
Tennessee Valley Authority, March 4, 1982⁽¹⁾
7. L. M. Mills
Letter to D. B. Vassalo, NRC. Subject: Transmittal of Qualification
Documents,
Tennessee Valley Authority, April 6, 1982⁽²⁾