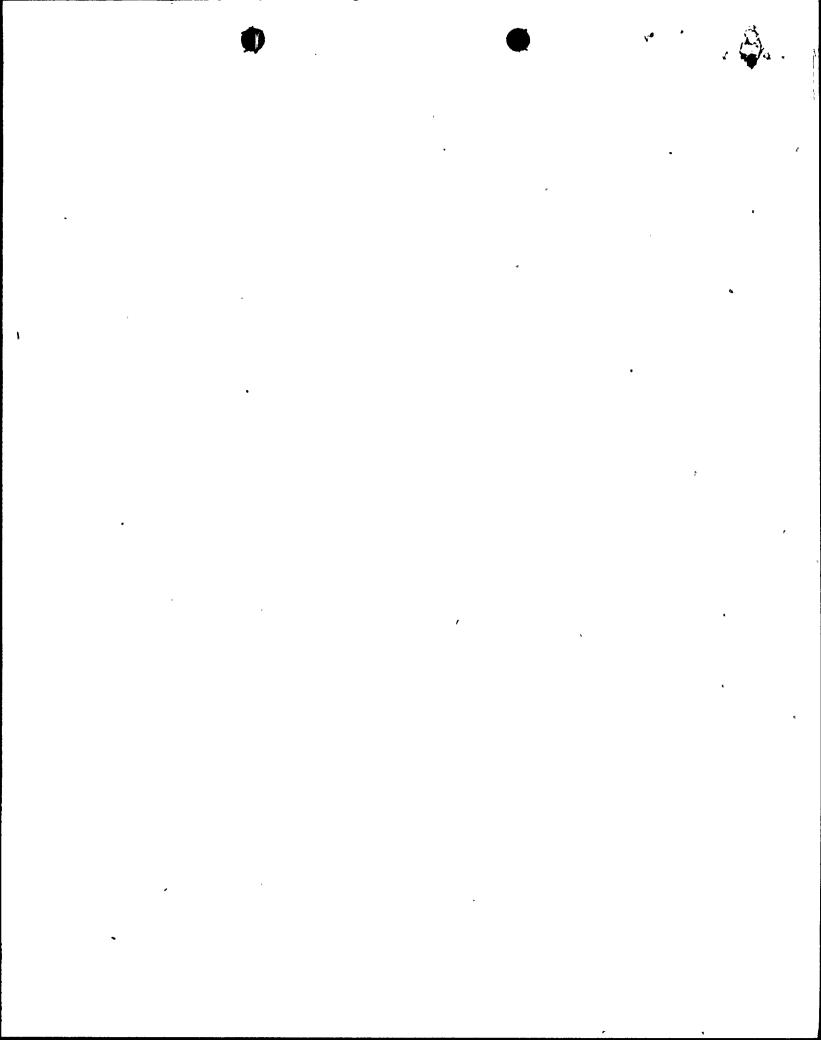
REGULATORY INCORMATION DISTRIBUTION SYSTEM (RIDS)

ACCE: 10N NOR: 8301190133 DUC.DATE: 83/01/11 NOTARIZED: NO DOCKET # FACIL:50-259 Browns Ferry Nuclear Power Station, Unit 1, Tennessee 50-260 Browns Ferry Nuclear Power Station, Unit 2, Tennessee 05000259 . 05000260 50-296 Browns Ferry Nuclear Power Station, Unit 3, Tennessee 05000296 AUTH.NAME AUTHOR AFFILIATION VASSALLO, D.B. Operating Reactors Branch 2 RECIPIENT AFFILIATION RECIP. NAME Tennessee Valley Authority PARRIS, H.G. 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. DISTRIBUTION CODE: PHOIS COPIES RECEIVED:LTR _ ENCL 1_ SIZE: S TITLE: File Location Distribution-2.790 Enclosure (Prop) .05000259 NOTES: NMSS/FCAF 1cy. NMSS/FCAF 1cy. NMSS/FCAF 1cy. 05000260 05000296 Agg: Mac - Nb owld RECIPIENT COPIES RECIPIENT COPIES LTTR ENCL ID CODE/NAME LTTR ENCL ID CODE/NAME NRC PDR

INTERNALE FILE LOC. EXTERNAL: LPDR NTIS NOTES:



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

JAN 1 1 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

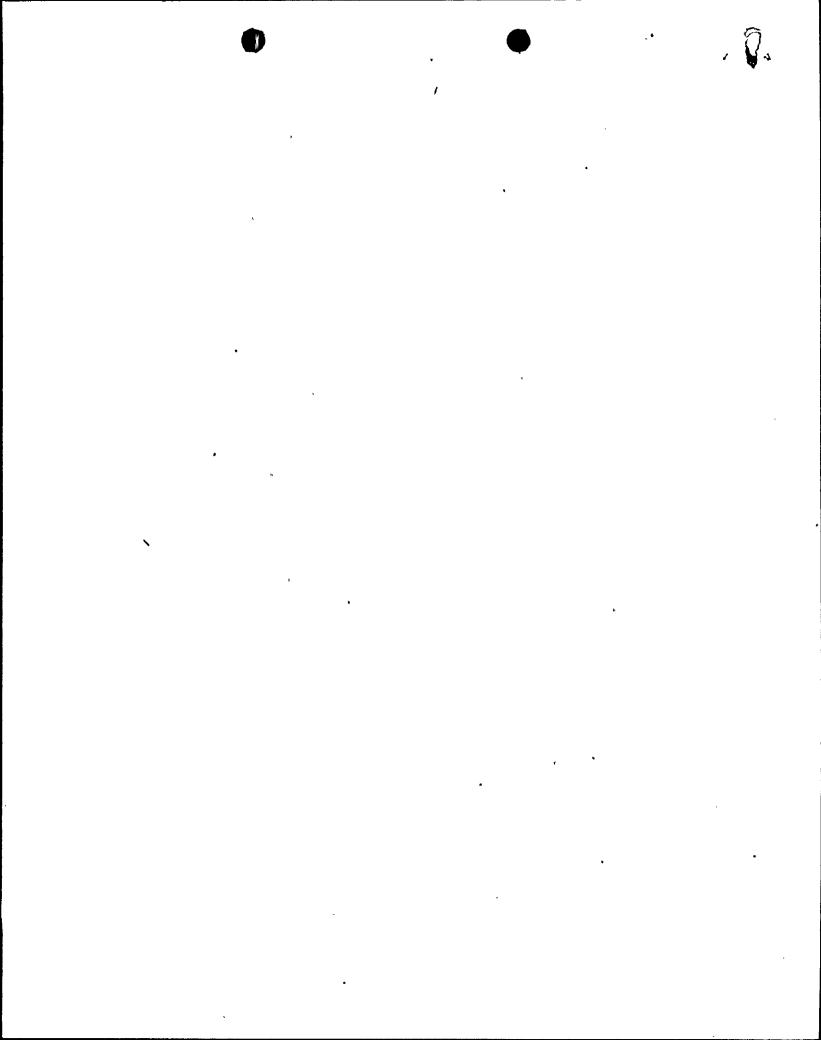
This letter transmits the Safety Evaluation for the Environmental Qualification of Safety-Related Electrical Equipment at your facilities. This evaluation is based on your response to our previous Safety Evaluation Report, which was transmitted by our letter of June 3, 1981, and to your subsequent responses 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 PDR Attachment to I Disclosurs

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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.

ALL WID TER XCEPTE

Disclosure

Sincerely,

Original circuit by

Attachment to be Withheld from Public

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

Distribution Docket File ⊀ NRC PDR⊀

Local PDR *

ORB#2 Rdg.

D. Eisenhut

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.E.L. JORDAN

D.Clark

S. Norris

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J. M. Taylor

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J. Hellemes, AEOD

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D.Clark.pr D.Vassallo G.Lainas

D.Clark.pr 1/7/83

FICIAL RECORD COPY

OFFICE !

DATE

SURNAME

cc:

H. S. Sanger, Jr., Esquire . General Counsel Tennessee Valley Authority 400 Commerce Avenue E 11B 33C Knoxville, Tennessee 37902

Mr. Ron Rogers Tennessee Valley Authority 400 Chestnut Street, Tower II Chattanooga, Tennessee 37401

Mr. Charles R. Christopher Chairman, Limestone County Commission P. O. Box 188 Athens, Alabama 35611

Ira L. Myers, M.D. State Health Officer State Department of Public Health State Office Building Montgomery, Alabama 36104

Mr. H. N. Culver 249A HBD 400 Commerce Avenue Tennessee Valley Authority Knoxville, Tennessee 37902

James P. O'Reilly Regional Administrator, Region II U.S. Nuclear Regulatory Commission 101 Marietta Street, Suite 3100 Atlanta, Georgia 30303 U. S. Environmental Protection Agency Region IV Office Regional Radiation Representative 345 Courtland Street Atlanta, Georgia 30308

Resident Inspector
U. S. Nuclear Regulatory Commission
Route 2, Box 311
Athens, Alabama 35611

Mr. Donald L. Williams, Jr. Tennessee Valley Authority 400 West Summit Hill Dr., W10B85 Knoxville, Tennessee 37902

George Jones Tennessee Valley Authority P. O. Box 2000 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

FRCTASK 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

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights.

Reviewed by:

Cl Com

Group Leader

Approved by:

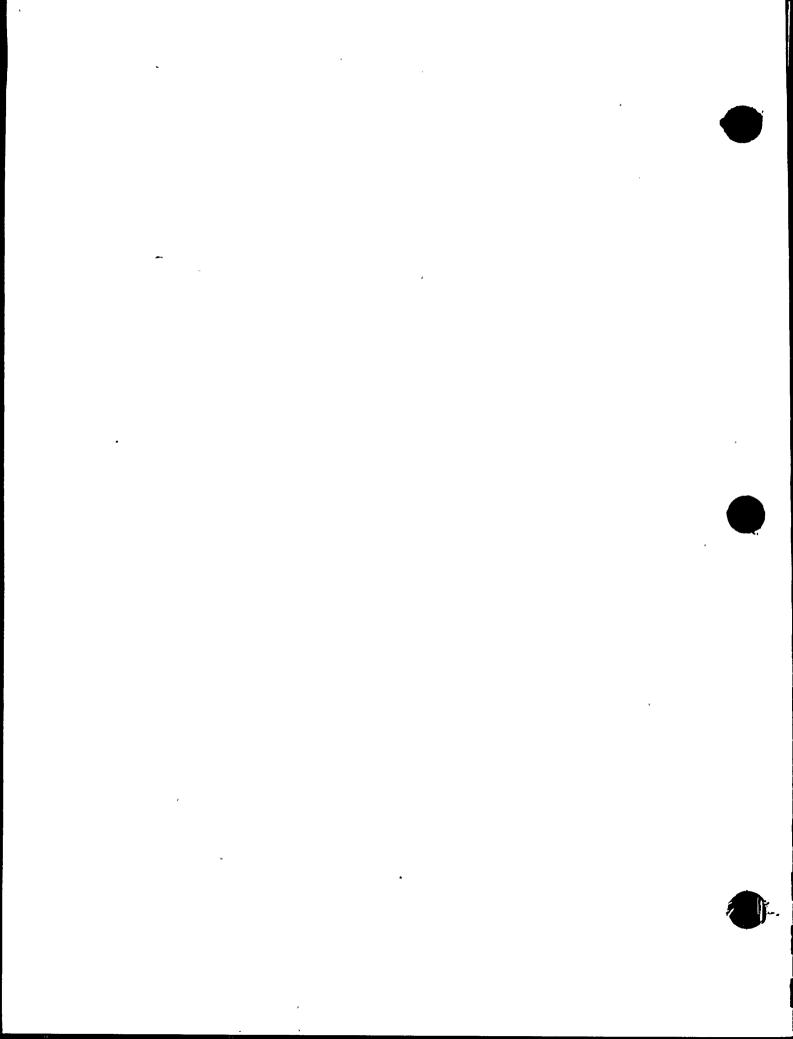
Project Ma

Department Director

Control # 8301190133

Franklin Research Center
A Division of The Franklin Institute
The Benjamin Franklin Parkway, Phila., Pa. 19103 (215) 448-1000

REGULATORY DOCKET FILE COPY



Franklin Research Center

A Division of The Franklin Institute

20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

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

Page I a

Br

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26_

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 C C R C CS, A S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

	Contents	Checksheet Page No.
	Equipment Item	la
	Summary of Licensee Responses to the NRC SER	lb
	Equipment Environmental Qualification Summary Forms	2
	Licensee Response to NRC SER	3a, 3b, 3c, 3 d
	System Consideration Review	4a, 4b, 4c, 4d, 4e, Af
1	Equipment Environmental Qualification Review	5a, 5b, 5a, 5d, 5e, 5f, 5g, 5h, 5i, 5j
	Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b

Page Ib

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

SUMMARY OF LICENSEE RESPONSES TO THE NE	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/ has not) provided	a response to the SER concerns.
The Licensee (has/has-not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informate outstanding qualification deficience	
The Licensee (has/has not) proposed item whose qualification has not be	l a corrective action for this equipment en fully established.
	tion (has/ has not) been provided by the
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipment Verify qualification by add Equipment relocation to a m Qualification testing of equipment	submergence level It from radiation source Itional (testing/analysis) Itid environment
	information for this equipment item s for justification for interim
The Licensee (hao/has not) prov corrective action. (Schedule f action '	ided a schedule for the proposed or accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
	TON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Qualified II.b Modification II.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope
II.b Not Qualified	IV Documentation Not Available



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

Page 2

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

		DESIGNATION:
NRC REO	UIREMENTS	X = DEFICIENCY
Adequate Aging Do Qualific Program Criteria Crit	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Esta egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Requi Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies ny) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied ration Margin (1 hour + Function Time) Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a I.b II.a II.b II.c	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scane of the Qualification	-
III.b	Equipment Not in the Scope of the Qualification Revi Documentation Not Made Available	ew



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/478/47

Page 3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

7

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 EEFQR; 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 EEFQR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

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:

Contents	Checksheet Page No.
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 30, 3d
System Consideration Review	4a, 4b, 40, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5o, 5d, 5e, 5f, 5 g, 5h, 5i, 5 j
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

Page Ib

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABI
χ 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-net) proposed a corrective action for this equipment item whose qualification has not been fully established.
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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No.4691470/471

Page 2

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: NRC REQUIREMENTS 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 riteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYI.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



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

Page 3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. S



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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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

Page 2

JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: NRC REQUIREMENTS X = DEFICIENCYDocumented 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 riteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC_QUALIFICATION CATEGORY X = CATEGORYI.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 Equipment Not in the Scope of the Qualification Review III.b IV ' Documentation Not Made Available

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20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469 470 47

Page 3 a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

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:

Pressure: 700°
Pressure: Atmospheric
Relative Humidity: 100%
Radiation: Gamma Flux 6.2x10¹⁰
Neutron Flux 3.7x10¹⁸

- 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 769

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>106</u>

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	s · 2
Licensee Response to NRC SER	3a 3b, 30, 3d
System Consideration Review	42, 46, 40, 40, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5c, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
	•

Page 1 b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

SUMI	MARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
	The	icensee (has/ has-not) provided a response to the SER concerns.
		fied and/or will function when exposed to the applicable DBE conmental service conditions.
*		icensee has presented information which shows there are no anding qualification deficiencies.
K	The ite	icensee (has/has-not) proposed a corrective action for this equipment whose qualification has not been fully established.
	X	ustification for interim operation (has/has-not) been provided by the icensee 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 (
		he Licensee has provided other information for this equipment item hat can be construed as a basis for justification for interim peration.
	¥.	the Licensee (heas/has not) provided a schedule for the proposed orrective action. (Schedule for accomplishing the corrective ction)
		icensee states that the equipment item does not require qualification response should be exempted from environmental qualification.
		ON OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Mod	ified II.c Qualified Life Deficiency III.a Exempt
II.a	Qua	ification Not Established III.b Not in Scope Qualified IV Documentation Not Available

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

Page

2

JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

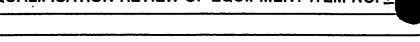
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establi Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Required Program Established to Identify Aging Degradation 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 L or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review	ife
IV Documentation Not Made Available	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47)

Page 3a

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).



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

Page la



UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

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]

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3 d
System Consideration Review	4a, 4b, 40, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a,-6b-

7a, 7b, 7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

Page 1b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

	g .			
SUMMAR	OF LICENSEE RESPONSES T	O THE NRC SER	- ONLY CHECKED ITEMS A	RE APPLICABLE
X Inc	Licensee (has/ has not)	provided a res	sponse to the SER conce	rns.
que	e Licensee (has/ has not) elified and/or will funct vironmental service condi	ion when expos		
	e Licensee has presented estanding qualification d		ich shows there are no	
Y The	e Licensee (has/ has-not) em whose qualification ha	proposed a cons not been ful	rective action for thi	s equipment
<u>X</u>	Justification for inter Licensee for this equip	im operation (has/ has not) been prov	ided by the
_×	Corrective action speci	fied by the Li	censee:	
	Equipment replaceme Equipment modificat Equipment relocatio Relocate or shield Verify qualificatio Equipment relocatio Qualification testi Other (ion n above submer equipment from n by additiona n to a mild en	gence level radiation source l (testing/analysis) vironment	
	The Licensee has provid that can be construed a operation.			
×	The Licensee (has/has no corrective action. (Scaction			
The	Licensee states that the Lor should be exempted for	e equipment it rom environmen	em does not require quatal qualification.	alification
DESIGNA - CIRCI	TION OF RESULTANT NRC QUEEN ITEM ONLY: (See Sect.	ALIFICATION EV	ALUATION CATEGORY BASE TER for Legend)	O ON REVIEW
I.a Qu	alified dification	II.c III.a	Qualified Life Deficience	ency
	alification Not Establisht Qualified	hed III.b IV	Not in Scope Documentation Not Avai	ilable



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

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OUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

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 P P 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	la
Summary of Licensee Responses to the NRC SER	lb
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	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation -	6 a, 6b

Equipment Summary

Maintenance and Replacement Schedule Summary

Franklin Research Center
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20th and Race Streets, Phila.. Pa. 19103 (215) 448-1000

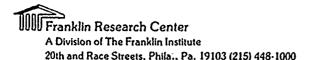
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/47/</u>

Page Ib

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



SUMI	MARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE	
<u>X</u>	The Licensee (has/ has-not) provided	a response to the SER concerns.	
工	The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	cally stated that the equipment is- n exposed to the applicable DBE	
**	The Licensee has presented information outstanding qualification deficience		
X	The Licensee (has/ has not) proposed a corrective action for this equipmen item whose qualification has not been fully established.		
		ation (has/ has not) been provided by the	
	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 that can be construed as a basi operation.	information for this equipment item s for justification for interim	
	The Licensee (has/has not) provocorrective action. (Schedule faction	ided a schedule for the proposed or accomplishing the corrective	
	The Licensee states that the equipment and/or should be exempted from envi	ent item does not require qualification ronmental qualification.	
DESI	IGNATION OF RESULTANT NRC QUALIFICAT IRCLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)	
I.b II.a	Qualified Modification a Qualification Not Established b Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4691470/471

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: NRC REQUIREMENTS X = DEFICIENCYDocumented 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 riteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYI.a Equipment Qualified I.b Equipment Qualification Pending Modification Equipment Qualification Not Established II.a II.b " Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified III.a Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review III.b Documentation Not Made Available IV

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

Page 3a

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).

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22

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

Licensee Submittal: Page EEB-77-1003 [12]

TER Checksheet No. 99

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

R) C (27), RM, P H) CS, A) S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS) None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb '
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 40, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j.
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b .

7a, 7b,

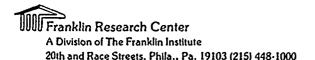
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ${\mathscr D}$



SUMMARY OF LICENSEE RESPONSES TO THE NI	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/ has -not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented information outstanding qualification deficient	
The Licensee (has/has-not) proposed item whose qualification has not be	d a corrective action for this equipment een fully established.
	ation (has/ has not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of equipment (submergence level at from radiation source ditional (testing/analysis) aild environment
	information for this equipment item s for justification for interim
The Licensee (has/has not) provocorrective action. (Schedule faction	rided a schedule for the proposed for accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from envi	ment item does not require qualification ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	TION EVALUATION CATEGORY BASED ON REVIEW 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
	6



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: NRC REQUIREMENTS X = DEFICIENCYDocumented 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 riteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYEquipment Qualified I.a I.b Equipment Qualification Pending Modification Equipment Qualification Not Established II.a II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified III.a Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review III.b

Documentation Not Made Available

IV



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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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 ELEDR; 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 ELEDR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 Page I a



UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2002

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)

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4 a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j.
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b

7a, 7b, 7c

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20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. <u>V6 9/47 0/4</u>7)

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

SUMMA	ARY OF LICENSEE RESPONSES TO THE NR	C SER - ONLY CHECKED ITEMS ARE APPLICABLE		
√ 'n	Fne Licensee (has/h as-not) provided	a regrence to the SEP gengerns		
_& .	ine bicensee (mas/mas moe) provided	a response to the SER Concerns.		
X	The Licensee (has/ has no t) specific	ally stated that the equipment is		
	qualified and or will function when	exposed to the applicable DBE		
•	environmental service conditions.	•		
	The Licensee has presented informat	ion which shows there are no		
	outstanding qualification deficienc			
	, , , , , , , , , , , , , , , , , , ,			
		a corrective action for this equipment		
j	item whose qualification has not be	en fully established.		
	Justification for interim opera	tion (has/has not) been provided by the		
_	Licensee for this equipment ite			
	· · · · · ·	•		
_	Corrective action specified by	the Licensee:		
	Equipment replacement with	gualified equipment		
	Equipment modification	dagiilea edaibmenc		
	Equipment relocation above	submergence level		
	Relocate or shield equipmen			
	Verify qualification by add			
	Equipment relocation to a m			
	Qualification testing of eq Other (ulpment 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			
-		or accomplishing the corrective		
	action	.)		
	n			
	The Licensee states that the equipm and/or should be exempted from envi	ent item does not require qualification		
•	and/or should be exempted from envi	conmental qualification.		
DESI	NATION OF RESULTANT NRC QUALIFICAT	ION EVALUATION CATEGORY BASED ON REVIEW		
	RCLED ITEM ONLY: (See Section 3 of			
	2002161-2			
I.b	Qualified Modification	II.c Qualified Life Deficiency III.a Exempt		
	Qualification Not Established	III.a Exempt III.b Not in Scope		
	Not Qualified	IV Documentation Not Available		

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: NRC REQUIREMENTS 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 riteria Regarding Test Sequence Satisfied riteria 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. 1) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b IV Documentation Not Made Available

SEE DETAILED REVIEW FOR EQUIPMENT ITEM NO. 13



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/471/47

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 22



LICENSEE RESPONSE TO NRC SER

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

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>101</u>

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2 .
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 42
Equipment Environmental Qualification Review	5 a, 5b, 5e, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b-

7a, 7b, 7c-

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 46914701471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

SUMM	IARY	OF :	LICEN	SEE	RESI	ONSE	es to	THE	NRC	SER	_	ONL	Y CI	ECK	ED_	ITEM	S A	RE	APPI	LICAI	BLE
<u>X</u>	Tne	Lic	ensee	(ha	ıs/ ha	is n c	r t-) I	provi	ded	a res	spo	onse	to	the	SE	R co	nce.	rns	•		
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			ensee ding							on wh	nio	ch s	hows	th	ere	are	no				
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		Jus Lic	ific ensee	atio for	n fo	or in	nteri Nuipm	im op nent	erat item	ion ((ha	as/h	as- n	ot)	be	en p	rov	ide	d by	, the	9
	X	Cor	ecti	ve a	ctic	n sp	eci	fied _.	by t	he Li	ice	ense	e:			,					
			Equi Equi Relo Veri Equi	pmer pmer cate fy c pmer ific	nt montre t re or quali nt re	difi loca shie fica loca	cati tior ld e tior	ion abo equip aby ato	ve s ment addi a mi	ualif ubmer from tiona ld en ipmen	ge al al	ence radi (te	lev atic stin ment	el n so g/an	our nal		,		•)	
		that		be						infor for										em	
	X.	The corr act	ecti	nsee ve a	: (he	ha n	s no	ot) p nedul	rovi e fo	ded a	on	sche	dule shin	for g th	r ti he d	ne p	ropo ect:	ose ive	a •)		
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II.a	Mod	lific alif:	ed atio catio	on N	ot E	Stab	lish	ied		II.c III.a III.b IV	E	Exemple 1	pt in S	cope	.	Def:		enc	-		



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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _/D/

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCYNRC REQUIREMENTS 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 riteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYI.a Equipment Qualified Equipment Qualification Pending Modification I.b 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 Equipment Not in the Scope of the Qualification Review III.b

Documentation Not Made Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ZA



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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 💋 🗷

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	6 a, 6b.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE						
X 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.						
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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available						



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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 202

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: NRC REQUIREMENTS X = DEFICIENCYDocumented 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 titeria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYI.a Equipment Qualified Equipment Qualification Pending Modification I.b 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 Documentation Not Made Available IV



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO /0...

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 EEEOR; 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 EEEOR 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

Page la

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 423

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)

RT PH 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	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 30, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4o, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5£ , 5g, 5h, 5i, 5 j
Installed TMI Lessons Learned Implementation	6 a7-6b.

Equipment Summary

Maintenance and Replacement Schedule Summary

Page ib

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.
\underline{X} 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 (had/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 III.a Exempt II.a Qualification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available



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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔼 3

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Es Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Req 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 Radiation Satisfied iteria Regarding Test Sequence Satisfied riteria 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)	(uired)
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 or Replacement Schedule Justified	ied Life
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Re IV Documentation Not Made Available	view

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 💋

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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:

Maintenance and Replacement Schedule Summary

	Contents	Checksheet Page No.
	Equipment Item	la
	Summary of Licensee Responses to the NRC SER	1b
	Equipment Environmental Qualification Summary Forms	2
	Licensee Response to NRC SER	3a, 3b, 3c, 3d-
4	System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
	Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5c, 3f, 5g, 5h, 5i, 5j
	Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.
	• • • •	

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Page Ib

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE					
X 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.					
\underline{X} 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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available					



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 194

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REC	QUIREMENTS	DESIGNATION: X = DEFICIENCY
Adequate Aging I Qualifit Program Criteri Crit	nted Evidence of Qualification Adequate re Similarity Between Equipment and Test Specimen Estable Degradation Evaluated Adequately red Life or Replacement Schedule Established (If Requirm Established to Identify Aging Degradation red Regarding Aging Simulation Satisfied (If Required) red Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate red Regarding Spray Satisfied red Regarding Radiation Satisfied red Regarding Test Sequence Satisfied red Regarding Test Failures or Severe Anomalies red Regarding Functional Testing Satisfied red Regarding Instrument Accuracy Satisfied reation Margin (1 hour + Function Time) Satisfied red Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: X = CATEGORY
I.a I.b II.a II.b II.c	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified	Life.
III.a III.b IV	or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19



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SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provide	ed a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function whe environmental service conditions.	
The Licensee has presented information outstanding qualification deficient	
The Licensee (has/has-not) propose item whose qualification has not be	ed a corrective action for this equipment een fully established.
	ation (has/ has-not) been provided by the em.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (submergence level nt from radiation source ditional (testing/analysis) mild environment
The Licensee has provided othe that can be construed as a bas operation.	r information for this equipment item is for justification for interim
The Licensee (has/has not) pro- corrective action. (Schedule action Juruany)	for accomplishing the corrective
The Licensee states that the equipart and/or should be exempted from environment.	ment item does not require qualification ironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATION 3 OF CORPORATION 3 OF CORPORATI	TION EVALUATION CATEGORY BASED ON REVIEW f 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
ren une Andtitten	IV Documentation Not Available



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: NRC REQUIREMENTS 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 citeria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORY I.a Equipment Qualified I.b Equipment Qualification Pending Modification II.a Equipment Qualification Not Established II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a III.b Equipment Not in the Scope of the Qualification Review 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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JIPMENT 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, (T), 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 .	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£
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-

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 29



SUMMA	RY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u> </u>	ne Licensee (has/ has-not) provided a response to the SER concerns.
Ć	the Licensee (has/ has-not) specifically stated that the equipment is- ualified and/or will function when exposed to the applicable DBE invironmental service conditions.
	he Licensee has presented information which shows there are no utstanding qualification deficiencies.
<u> </u>	the Licensee (has/ has not) proposed a corrective action for this equipment tem 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.
7	The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
— Т а	he Licensee states that the equipment item does not require qualification nd/or should be exempted from environmental qualification.
	NATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW CLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b II.a	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCYNRC REQUIREMENTS 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 riteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYI.a Equipment Qualified I.b Equipment Qualification Pending Modification II.a Equipment Qualification Not Established II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review Documentation Not Made Available IV See equipment item 64 for full evalention detaile.



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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 1V (to be replaced); an acceptable justification for continued operation has been given in the EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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OUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFIC DOCUMENT	CATION	DEFICIENCY (X OR NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS	1	[4266.]	[3252]	!
Rate of Temp./Press.	1	,	•	! !
Peak: °F/psig/RH/Time	BFunita/3	test No.1.		: : :
Decrease To: °F/psig/RH/Time	228 7/0/104	test No.1. 156/0/90/14R Test No.2 212/0/100/14.		X-su
Decrease To: °F/psig/RH/Time	المسرو	2/2/0/100/14.		X-see inte 8 and 9
Decrease To: °F/psig/RH/Time	153/0/100/2 dutin nt 1			item 64
Equipment Surface Temperature (MSLB) (-/1.2.5.C,	dutionty			• •
2.2.6/1.2.5.C, 2.2.6)	! —— !			! !
pray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	!		· ·	1 ` !
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)	<u> </u>			1
In-Leakage Considered (5.2.6, 5.3.2/-/-)				! ! !
Time to Submergence	<u> </u>			,
Dust Environment (-/2.2.11/2.2.11)	: :	_		
Radiation dose (Normal + accident) Rode	5 7 104	3 7/0 G	3 X10 6	

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46 9

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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	la
Summary of Licensee Responses to the NRC SER	lb
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, 3£, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c



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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109_

SUMM	IARY	OF	LICE	NSE	E_F	ESP	ONS	ES '	TO T	HE NE	C SER	_	ON	LY (CHEC	KED	IT	EMS	ARE	API	LICA	BLE
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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. /

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F.	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
	n	ESIGNATION:
MDC DE	•	= DEFICIENCY
NAC RE	<u>QUIREMENTS</u> <u>X</u>	
Docume	nted Evidence of Qualification Adequate	X
Adequa	te Similarity Between Equipment and Test Specimen Establish	ed
Aging	Degradation Evaluated Adequately	
Qualif	ied Life or Replacement Schedule Established (If Required)	
Progra	m Established to Identify Aging Degradation	
Criter	ia Regarding Aging Simulation Satisfied (If Required) ia Regarding Temperature/Pressure Exposure:	
	la Regarding Temperature/Pressure Exposure. .Peak Temperature Adequate	
	Peak Pressure Adequate	,
	Duration Adequate .	
	Required Profile Enveloped Adequately	
	Steam Exposure (If Required) Adequate	
	ia Regarding Spray Satisfied	
	ia Regarding Submergence Satisfied	
	ia Regarding Radiation Satisfied	***
	ia Regarding Test Sequence Satisfied	
	ia Regarding Test Failures or Severe Anomalies	'
	Any) Satisfied ia Regarding Functional Testing Satisfied	
Criter	ia Regarding Instrument Accuracy Satisfied	
	uration Margin (1 hour + Function Time) Satisfied	
	ia Regarding Margins Satisfied (NUREG-0588, Cat. I)	****
	•	
		DESIGNATION:
NDC OU	ALIBIOANTON CAMPCODY	X = CATEGORY
NAC QU	ALIFICATION CATEGORY	N - CILLOUIL
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	e
	or Replacement Schedule Justified	
III.a	Equipment Exempt From Qualification	
III.b IV	Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	
TA		
	For full evaluation details, see equipment 6:4. It is concluded that model 28.	- · +
	For full evaluation delaite, see equipment	rom
	all the mill of	99
	6.4. It is Concluded Was Model 20,	
	1 + 1 and 1 - tet out there	Lace 1
	Too me men wayyou or resure with the	,
	1 Si pulilie tim documentation.	•
	has not been analyzed or tested and they lacke qualification documentation.	



Page 3a



QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>109</u>

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 EEEOR; 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 EEEOR 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. .

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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 2a, 2d.
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5c, 5f, 5g , 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	.62, 6b.

Maintenance and Replacement Schedule Summary 7a, 7b, 7c

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

SUMMARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provided	ń
The Licensee (has/has not) specifical qualified and/or will function when environmental service conditions.	
The Licensee has presented information outstanding qualification deficiencies	
The Licensee (has/has not) proposed item whose qualification has not been	
	ion (has/ has not) been provided by the
Corrective action specified by the	ne Licensee:
Equipment replacement with question Equipment modification Equipment relocation above suestion Relocate or shield equipment Verify qualification by additional statements.	ubmergence level from radiation source tional (testing/analysis)
Equipment relocation to a mi Qualification testing of equ Other (
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
The Licensee (has/has not) provide corrective action. (Schedule for action	
The Licensee states that the equipment and/or should be exempted from environment.	nt item does not require qualification onmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATION - CIRCLED ITEM ONLY: (See Section 3 of	
I.b Modification L.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available
1.b Not Qualified	TA POSTUREITERCTOIL MAC UASTTUNE

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _

14	1	
1		
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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY PO	
	DESIGNATION:
NDG DEVILLDENEEME	X = DEFICIENCY
NRC REQUIREMENTS	11 222 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
n	_X_
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Establ	TISHED
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	ea)
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)	
official wedgeding warding pacing and all and all	1
	,
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
,	
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	$\overline{\mathbf{x}}$
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	···
14 Podmientation for made wattable	
erestage	,
111 1+ 141	•
For full evaluation details, see excuism	ent item.
For full evaluation details, see equipm 6.4. It is concluded that model	289

has not been analyzed or tested and thoughter lacks qualification documentation.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO...///O

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 EEEOR; 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 EEEOR 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. 1

4

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,TQT RT,PH, CS, A, S, (R), M, I, QM, RPN EXN, SEN,QI RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

<u>Contents</u> .	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4 a, 4b, 4c, 4d, 4e, 4f →
Equipment Environmental Qualification Review	5a, 5b, 5e, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	607-00

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

		•	
SUMM	MARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE	
<u>X</u> 2	The Licensee (has/has-not) provided a	response to the SER concerns.	
4	The Licensee (has/has-not) specifical qualified and/or will function when environmental service conditions.	ly stated that the equipment is xposed to the applicable DBE	
-	The Licensee has presented information outstanding qualification deficiencies		
	The Licensee (has/has_not) proposed a item whose qualification has not been	corrective action for this equipment fully established.	
-	Justification for interim operation Licensee for this equipment item.	on (has /has-not) been provided by the	
<u>.</u>	imes Corrective action specified by th	e Licensee:	
	Equipment replacement with que Equipment modification Equipment relocation above sue Relocate or shield equipment Verify qualification by addition Equipment relocation to a mil Qualification testing of equipment (bmergence level from radiation source ional (testing/analysis) d environment	
-	The Licensee has provided other in that can be construed as a basis operation.	nformation for this equipment item for justification for interim	
-	The Licensee (has/has not) provide corrective action. (Schedule for action	ed a schedule for the proposed accomplishing the corrective)	
	The Licensee states that the equipment and/or should be exempted from environment.	t item does not require qualification nmental qualification.	
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)			
I.a	Modification A Qualification Not Established	I.c Qualified Life Deficiency II.a Exempt III.b Not in Scope IV Documentation Not Available	

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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FRC Task No. 469/47/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY F	ORM
	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	X = DEFICIENCE
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Estab Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requir 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied	
(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)	
Criteria Regarding Margins Sacisfied (North-1900) Cat. 17	
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	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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UIPMENT 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 EFEOR; 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 EFEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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. 4

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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,

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

-1002[1]

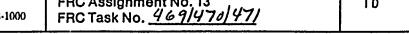
LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3h, 30, 3d
System Consideration Review	4a, 4b, 4e, 4d, 4c, 4£
Equipment Environmental Qualification Review	5 a, 5b, 5o, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	Sa, Sb

Maintenance and Replacement Schedule Summary 72, 75, 7

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Task No. 46914701471

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	<u>LE</u> :
X 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.	
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 III.a Exempt III.b Not in Scope I.b Not Qualified IV Documentation Not Available	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔏

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

D. <u>14</u>

NRC REQUIREMENTS	DESIGNATION: $X = DEFICIENCY$
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Esta Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requipment 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 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 Qualification Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Rev IV Documentation Not Made Available	

DUIPMENT 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 EFEOR; 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 EFEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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.

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Equipment Item No. 113
Solenoid Valve Located in the Reactor Building ASCO Model HB830081F
Containment Isolation Valve Pilot (FSV-64-32)
Licensee Reference 712

TER Checksheet No. 113

Licensee Submittal: Page NEB-64-053A [1]

Required Operating Time: 1 hour

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb '
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 40, AE
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary .	6a, 6b

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. \(\frac{\(\alpha q \(\sqrt{\(\gamma\)}\)\(\gamma\)\(\gamma\)\(\gamma\)\(\gamma\)

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

SUMM	MARY OF LICENSEE RESPONSES TO THE NE	C SER - ONLY CHECKED ITEMS ARE APPLICABLE:
•	The Licensee (has/has_not) provided The Licensee (has/has_not) specific qualified and/or will function when environmental service conditions.	ally stated that the equipment is
	The Licensee has presented informat outstanding qualification deficient	
	The Licensee (has/has not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
	Justification for interim operation Licensee for this equipment ite	tion (has/has not) been provided by the m.
	Corrective action specified by	the Licensee:
	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of education	submergence level at from radiation source litional (testing/analysis) wild environment
	The Licensee has provided other that can be construed as a basi operation.	information for this equipment item s for justification for interim
	The Licensee (has/has not) procorrective action. (Schedule action	rided a schedule for the proposed for accomplishing the corrective
	The Licensee states that the equipment and/or should be exempted from environment.	ment item does not require qualification ronmental qualification.
DES	IGNATION OF RÉSULTANT NRC QUALIFICATION 3 OF TREE OF THE COLUMN STATE OF THE COLUMN ST	TION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.b	Qualified Modification a Qualification Not Established b Not Qualified	<pre>II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available</pre>

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>U69/478/47</u>/

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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 Est	ablished X
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requ.	irea)
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	<i>,</i>
Criteria Regarding Instrument Accuracy Satisfied	
Test Duration Margin (1 hour + Function Time) Satisfied	
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
•	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
NRC QUALIFICATION CAIDGOXI	
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	
II.a Equipment Qualification Not Established	$\overline{\mathbf{X}}$
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements Except Qualifi	ed Life
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Rev	iew
IV Documentation Not Made Available	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46 9/470/47/

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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.

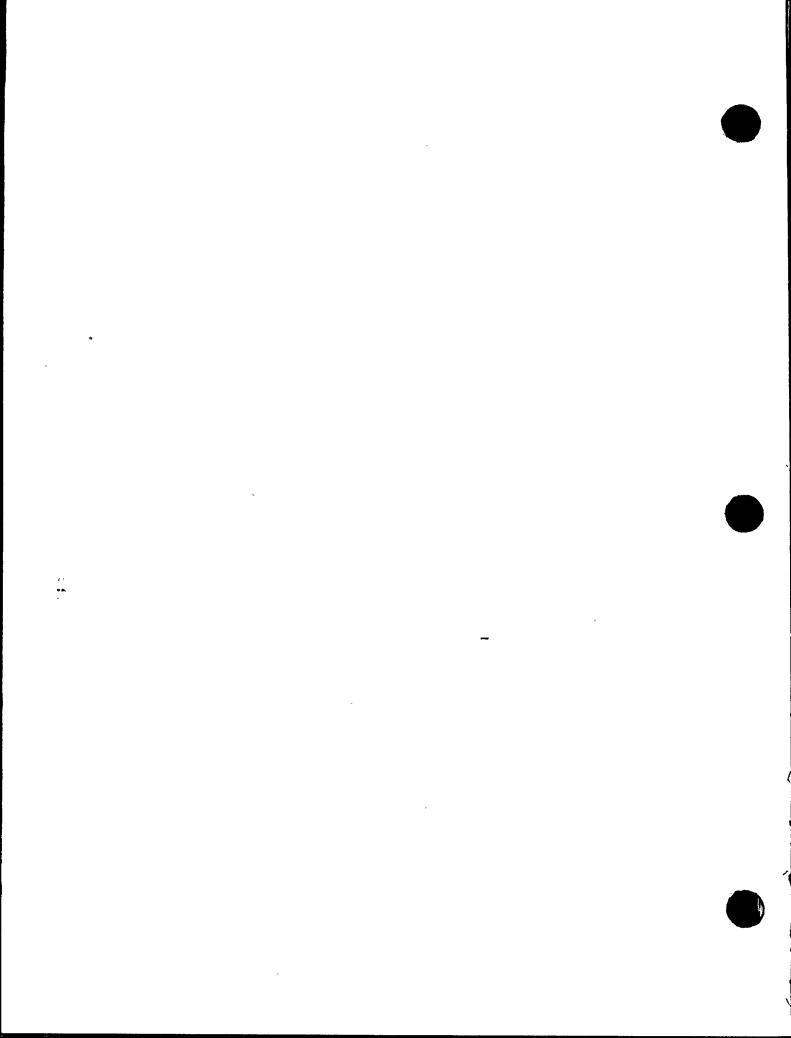


NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43

Checksl	neets 💆	<u>5 a</u>	thru	5+'	have	been	${\tt removed}$	due	to	the
proprietary	nature	of	information	contained	the	cein.				



Franklin Research Center

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20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. ______469

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UIPMENT 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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3h, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 41
Equipment Environmental Qualification Review	5a. 5b. 5c. 5d. 5or 5f, 5g, 5h, 5i. 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a. 6b

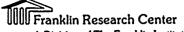
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 464 47047

Page 1 b

(D)

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 仏母,

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	<u>E</u> :
Y 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.	
Y Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.	
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 III.a Exempt III.b Not in Scope III.b Not Qualified IV Documentation Not Available	



A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>(/6 9/470/47</u>)

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. :

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
•	ESIGNATION: DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establishe 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	ed X
NRC QUALIFICATION CATEGORY	DESIGNATION: <u>X = CATEGORY</u>
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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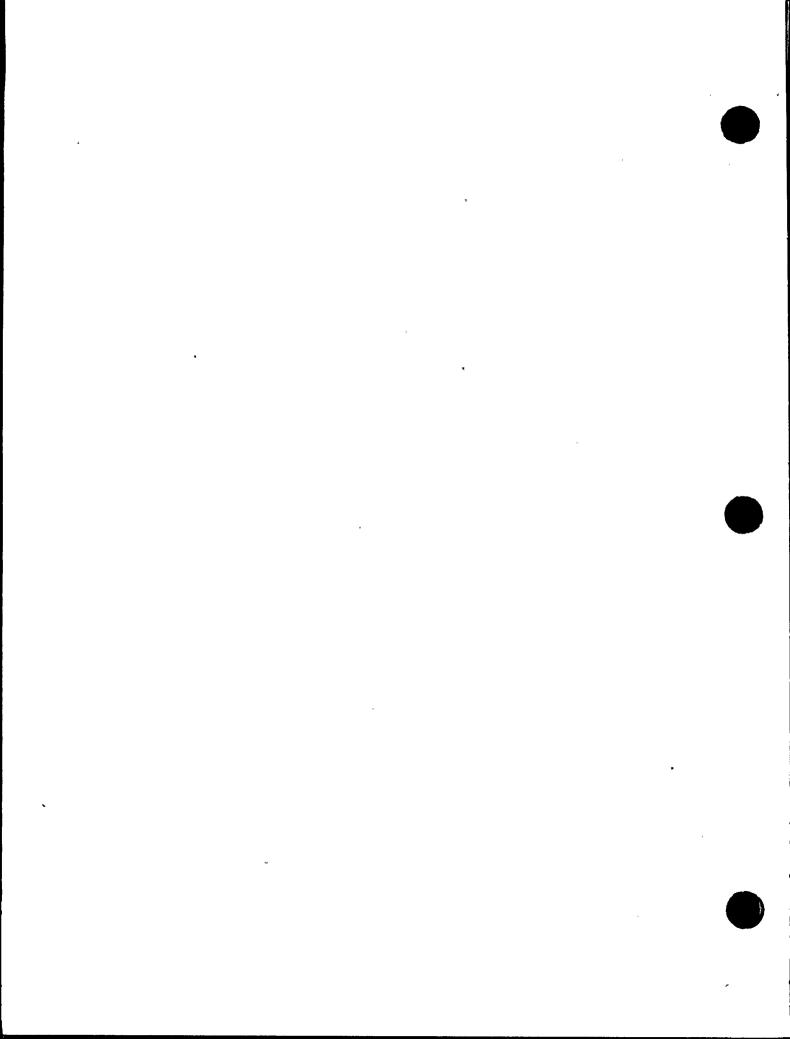
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

Page 3a

QUIPMENT 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. 46 9

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

Checksi	heets <u>5</u>	F	59	and	5h	have	been	removed	due	to	the
proprietary	nature	of	infor	mation	contained	the	rein.				

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. __469

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. \dot{H}

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)

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	la
Summary of Licensee Responses to the NRC SER	lb ·
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 2d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5h, 5c, 5d, 5e, 5f, 5a, 5h, 51, 51

Installed TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

Checksheet Page No.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO

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SUMMARY OF LICENSEE RESPONSES TO THE NE	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has-not) provided	a response to the SER concerns.
The Licensee (has/has-not) specific qualified and/or will function when environmental service conditions.	cally stated that the equipment is a exposed to the applicable DBE
The Licensee has presented informat outstanding qualification deficience	
The Licensee (has/has-not) proposed item whose qualification has not be	l a corrective action for this equipment en fully established.
Justification for interim opera Licensee for this equipment ite	tion (has/ has-not) been provided by the
X Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipment Verify qualification by add Equipment relocation to a management Qualification testing of equipment (submergence level at from radiation source litional (testing/analysis) hild environment
The Licensee has provided other that can be construed as a basi operation.	information for this equipment item s for justification for interim
The Licensee (has/has not) prov corrective action. (Schedule faction	ided a schedule for the proposed or accomplishing the corrective
The Licensee states that the equipm and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW 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

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1/5

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NDG DEG	, , , , , , , , , , , , , , , , , , ,	DESIGNATION:
NRC REC	UIREMENTS	X = DEFICIENCY
Adequate Aging D Qualifit Program Criteri Test Du	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establ egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Require Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies my) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied ration Margin (1 hour + Function Time) Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a I.b II.a II.b II.c	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified	Life
III.a III.b IV	or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	



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FRC Task No. <u>469/470/47</u>/

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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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

References 4673 (G.E. eummary report 097-A-01) Cocument testing performed on an ASCO polenosis value (mossel no. HVA-90-405). Testing consists of exposure to 212°F, 100°Z. The for 6 hours. The rolue was also subjected to recenies testing. The test summarry does not contain auditable dota, and information regarding test results. This Caes not constitute qualification For this equipment Reference 4674 (G.E. pummary report 097-A-02) is a pummary of vendor Onto and coose not provide qualification for this equipment.		
ASCO polenois value. (model no. HVA-90-405). Testing consisted of exposure to 212.°F, 100%. The for 6 howes. The walve was also subjected to seismise testing. The test summary does not contain auditable dots, and information regarding test results. This Ones not constitute qualification For this equipment Reference 4674 (G.E. summary report 097-A-02) is a summary of vendor	NOTES:	
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and information regarding test results. This Ones not constitute qualification for this equipment. Reference 4674 (G.E. summary report 097-A-02) is a summary of vendor onto and ones not provide	also subjected to seismise testing. The	
and information regarding test results. This Ones not constitute qualification for this equipment. Reference 4674 (G.E. summary report 097-A-02) is a summary of vendor onto and ones not provide	test summary does not contain auditable do	<u>ta,</u>
Ores not constitute qualification for this equipment. Reference 4674 (G.E. summary report 097-A-02) is a summary of vendor vota and over not provide		
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097-A-02) is a pummary of vendor Data and Over mot provide	P of the A (6, E. Oummore Texast	•
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qualification for this equipment.		
	qualification for this equipment.	
		
		
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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.

1

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:

Contents	Checksheet Page No.
Equipment Item	la '
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. 40. 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5a, 5e, 5f, 5g, 5h, 5i, 5j.
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6 5

Maintenance and Replacement Schedule Summary 7a, 7b,

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UIPMENT 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 II.b Modification III.a Exempt II.a Qualification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1/4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
	ESIGNATION: - DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establishe 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:	ed X
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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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. //6

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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.

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 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. 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]

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

R,T,QT, RT,PH, 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	la
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, to, 1d, 40, 45
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6 2, 6b

Maintenance and Replacement Schedule Summary 72, 75,

A Division of The Franklin Institute
20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

SUMMA	ARY	OF	LICEN	ISEE	RESP	ONSES	ror	HE NR	C ŠER	- ON	<u> ГУ СН</u>	ECKED	ITEMS	ARE	APP	LICABLE
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								ormat cienc	ion wh: ies.	ich :	shows	ther	e are	no		,
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_	X	Cor	recti	ve a	ctio	n spe	cifie	d pa	the Li	ens (ee:					
			Equi Equi Relo Veri Equi	pmen pmen cate fy q pmen	t moder to the contract of the	dific locat shiel ficat locat	ation ion a d equ ion b ion t	bove ipmen y add	qualifications and the second	gence rad: L (te	e lev iatio estin nment	el n sou g/ana	rce lysis)	•)
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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

	EQUIPMENT ENVIRONMENTAL QUALIFICATION BURNARY TO	14.1
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NRC REQ	<u>UIREMENTS</u>	
Adequat Aging D Qualifi Program Criteri Test Du	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establ egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Required Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies any) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
		
		DESIGNATION:
NRC OUA	LIFICATION CATEGORY	X = CATEGORY
I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	$\overline{\mathbf{X}}$
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	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. J

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)

RTP (RT) PH, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la '
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3a, 3d
System Consideration Review	42, 4b, 4c, 4d, 4e, 4r
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5c, 5t, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

·	
SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICAB	LE:
X 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.	
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 (han/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 III.a Exempt III.b Not in Scope I.b Not Qualified IV Documentation Not Available	•

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469 470 471

Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM							
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY						
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Estab Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requir 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy 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 or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review							



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46 9/470/47/

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO! 1/18

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).

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

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.

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 5, 30, 3d
System Consideration Review	40, 40, 40, 40, 45
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5£ , 5g, 5h, 5i, 5j.
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/470/4</u>7/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

SUMMA	ARY	OF LICEN	SEE RESPO	ONSES TO	THE NRC	SER -	ONLY	CHECKED	ITEMS_	ARE	APPLICAB	LE
× 1	ne	Licensee	(has/ has	not), pr	ovided a	a resp	onse to	the S	ER conc	erns	•	
q	<u>qual</u>	ified an	has/ has) d/or will service	L function	n when						is	
		•	has pres qualifica				ch show	vs there	e are n	0		
			has/has) ualificat							is e	quipment '.	,
_			ation for for this	The second secon	_		as/has	not) be	een pro	vide	d by the	!
		Correcti	ve action	n specifi	ed by t	he Lic	eņsee:					
		Equi Equi Relo Veri Equi	pment rep pment mod pment rel cate or s fy qualif pment rel ification	dification shield equipments to the contraction location location or the contraction of t	on above si quipment by addi to a mi	ubmerg from tional ld env	ence le radiati (testi	evel ion souting/anai			`)	
			nsee has be const n.									
-			nsee (has ve actior									
			states t d be exem							uali	fication	l
		CION OF R	ESULTANT NLY: (Se	NRC QUAI ee Sectio						ED O	N REVIEW	<u> </u>
I.a	Mod Qua	alified lificatio alificati . Qualifi	on Not Es	stablishe	ed	III.a	Exempt Not in	ied Life Scope ntation				

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 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. ____

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	•
• ====	NATION: FICIENCY
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 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 Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied	
 -	GIGNATION: 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	<u>X</u>
IV Documentation Not Made Available	•

See review of equipment item 114



NRC Contract No. NRC-03-79-118
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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

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

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 409

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

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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

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
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	42, 16, 40, 4d, 40, 4E
Equipment Environmental Qualification Review	Sa, 5b, 5c, 5d, 5e, 51, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	5 2,-65-

Maintenance and Replacement Schedule Summary

72, 76, 7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend) I.a Qualified II.c Qualified Life Deficiency	SUMA	MARY	OF I	LICEN	SEE	RESPO	NSES	TO T	HE NI	C SER	_	ONLY CHECKED ITEMS ARE APP	LICABLE:
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. Yhe Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: X Equipment replacement with qualified equipment Equipment 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. Y The Licensee (hea/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 III.a Exempt 1.1.b Modification Not Established III.b Not in Scope	太	Tne	Lice	ensee	(ha	s/ hac	-not ;) pro	vided	la res	sp	onse to the SER concerns.	
outstanding qualification deficiencies. The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: X Equipment replacement with qualified equipment Equipment modification Requipment 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. X 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.a Exempt II.b Modification Not Established III.b Not in Scope	乂	qua:	lifi d	:d-an	d/o r	will	func	ction	when				
item whose qualification has not been fully established. X Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: X 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 (:*										ıi.	ch shows there are no	,
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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 (X	Cor	ecti	ve a	tion	spec	ifie	gd E	the Li	.Ce	ensee:	
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corrective action. (Schedule for accomplishing the corrective action	,		that	can	be o								em
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 III.a Exempt N.a Qualification Not Established III.b Not in Scope		×	corr	ecti									
- 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.b Not in Scope													tion
I.b Modification III.a Exempt N.a Qualification Not Established III.b Not in Scope													VIEW ,
	I.b V.a	Mod	lific Lifi	ation catio	on No	ot Es	tabli	.shed		III.a III.b	I	Exempt Not in Scope	

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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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 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 Pressure 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy 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						



NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. 469/478

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

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 EEFOR; 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 EEFOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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. 12

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,SENQI,RPS,None,

Not stated, Not applicable

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3o, 3d
System Consideration Review	12, 1b, 10, 10, 10, 16
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5£, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation	fa, fb.

Maintenance and Replacement Schedule Summary

7a. 7b, 7c

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa, 19103 (215) 448-1000 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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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

SUMMARY OF LICENSEE RESPONSES TO THE NE	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/becomet) provided	l a response to the SER concerns.
X The Licensee (has/harmune) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informat outstanding qualification deficience	
X The Licensee (has/harrost) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
Justification for interim operation Licensee for this equipment ite	ation (has/ basenot) been provided by the
X Corrective action specified by	the Licensee:
<pre></pre>	•
Equipment relocation above	submergence level
Relocate or shield equipmen Verify qualification by add	nt from radiation source
Equipment relocation to a m	nitional (testing/analysis)
Qualification testing of eq	quipment in progress
Other ·()
	: information for this equipment item is for justification for interim
	vided a schedule for the proposed for accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from environment.	ment item does not require qualification ironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATION OF CIRCLED ITEM ONLY: (See Section 3 of	FION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Qualified (I.b) Modification	<pre>II.c Qualified Life Deficiency III.a Exempt</pre>
I.a Qualification Not Established	III.b Not in Scope
I.b Not Qualified	IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 46914701471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM

1 NO. <u>/</u>	2
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DESIGNATION NRC REQUIREMENTS X = DEFICIEN	
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 Radiation Satisfied Criteria Regarding Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
DESIGNATION CATEGORY 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	

SEE DETAILED REVIEW ON EQUIPMENT ITEM 113



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/970/47/

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DUIPMENT 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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

Not stated, Not applicable

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 2b, 30, 3d
System Consideration Review	4a, 4b, 40, 4d, 40, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j,
Installed TMI Lessons Learned Implementation	_6 2,_6b_

Maintenance and Replacement Schedule Summary

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

SUM	MARY	OF LICENSEE RESPONSES TO THE NRC	SER -	ONLY CHECKED ITEMS ARE A	PLICABLE
V	Ψno.	Licensee (has/ has not) provided	a regr	onse to the SER concerns.	
_		•		•	
X	The qua env	Licensee (has/has not) specifical lified and/or will function when ironmental service conditions.	illy st expose	ated that the equipment is d to the applicable DBE	S
		Licensee has presented informati standing qualification deficienci		ch shows there are no	
		Licensee (has/has not) proposed m whose qualification has not bee			ipment
		Justification for interim operat Licensee for this equipment item		as/has not) been provided	by the
		Corrective action specified by t	he Lic	ensee:	
		Equipment replacement with c	[ualifi	ed equipment.	
		Equipment relocation above s	ubmerg	ence level	•
		Relocate or shield equipment			
		Verify qualification by addi			
4.		Equipment relocation to a mi			
ı		Qualification testing of equalification testing of equalification)
		The Licensee has provided other that can be construed as a basis operation.			tem
	и	The Licensee (has/has not) provi corrective action. (Schedule for action			_•)
		Licensee states that the equipmed for should be exempted from envir			ication
DES	IGNA IRCL	TION OF RESULTANT NRC QUALIFICAT: ED ITEM ONLY: (See Section 3 of	ION EVA	LUATION CATEGORY BASED ON TER for Legend)	REVIEW
		alified	II.c		
		dification alification Not Established		Exempt Not in Scope	
		allification NOT Established bt Qualified	IV	Documentation Not Availab	le
		A Xeepseed			

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

•	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	ORM
NRC REQUIRE	MENTS .	DESIGNATION: X = DEFICIENCY
Adequate Sir Aging Degra Qualified L Program Est Criteria Re Criteria Re O Peak O Peak O Dura O Requ O Stea Criteria Re Test Durati	Evidence of Qualification Adequate milarity Between Equipment and Test Specimen Establation Evaluated Adequately ife or Replacement Schedule Established (If Require ablished to Identify Aging Degradation garding Aging Simulation Satisfied (If Required) garding Temperature/Pressure Exposure: Temperature Adequate Pressure Adequate tion Adequate ired Profile Enveloped Adequately m Exposure (If Required) Adequate garding Spray Satisfied garding Submergence Satisfied garding Radiation Satisfied garding Test Sequence Satisfied garding Test Failures or Severe Anomalies Satisfied garding Functional Testing Satisfied garding Instrument Accuracy Satisfied on Margin (1 hour + Function Time) Satisfied garding Margins Satisfied (NUREG-0588, Cat. I)	·
I.a Equ I.b Equ II.a Equ II.b Equ II.c Equ or III.a Equ III.b Equ	ipment Qualified ipment Qualification Pending Modification ipment Qualification Not Established ipment Not Qualified ipment Satisfies All Requirements Except Qualified Replacement Schedule Justified ipment Exempt From Qualification ipment Not in the Scope of the Qualification Revieumentation Not Made Available	

See review of equipment item 114



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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122,

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment I 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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

Equipment Item No. 123

Solenoid Valve Located in the NW Corner Room

ASCO Model HTX8300C61U

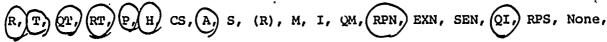
Core Spray Cooling System Isolation Valve (FSV-75-57)

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)



Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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	5 a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	Ga, Gb

Equipment Summary .

Maintenance and Replacement Schedule Summary

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1/23

SUMMARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE:
•	
X The Licensee (has/has-not) provided	a response to the SER concerns.
The Licensee (has/has not) specifical equalified and/or will function when environmental service conditions.	
The Licensee has presented information outstanding qualification deficience	
The Licensee (has/has-not), proposed item whose qualification has not been seen as a second control of the	
Justification for interim operat Licensee for this equipment item	tion (has/ has not) been provided by the
Corrective action specified by t	the Licensee:
Equipment replacement with of Equipment modification	qualified equipment
Equipment relocation above s	ubmergence level
Relocate or shield equipment	: from radiation source
Verify qualification by addi	tional '(testing/analysis)
Equipment relocation to a mi	.ld environment
Qualification testing of equalification testing equalification equalifi	ipment in progress
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
The Licensee (has/has not) provi corrective action. (Schedule for action	ded a schedule for the proposed or accomplishing the corrective
The Licensee states that the equipme and/or should be exempted from envir	ent item does not require qualification conmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT: - CIRCLED ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Qualified I.b Modification	II.c Qualified Life Deficiency III.a Exempt
1.a Qualification Not Established	III.b Not in Scope
II.b Not Qualified -	IV Documentation Not Available

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy 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 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	



NRC Contract No. NRC-03-79-118
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UIPMENT 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).

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

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)

 (H_i) CS, (A_i) S, (R), M, I, QM, (RPN_i)

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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. 40, 4d, 40, 45
Equipment Environmental Qualification Review	5a, 5b, 5a, 5d, 5a, 5f, 5a, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	62, 65

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12.4

SUMA	1ARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X	Tne	Licensee (has/ has not) provided a response to the SER concerns.
	q ual	Licensee (has/ has not) specifically stated that the equipment is ified and/or will function when exposed to the applicable DBE ronmental service conditions.
		Licensee has presented information which shows there are no tanding qualification deficiencies.
K		Licensee (has/ has-not) proposed a corrective action for this equipment whose qualification has not been fully established.
	<u>X</u>	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.
	<u>×</u>	The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
<u>.</u>		Licensee states that the equipment item does not require qualification or should be exempted from environmental qualification.
		ION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW D ITEM ONLY: (See Section 3 of this TER for Legend)
1	Mod a Qua	II.c Qualified Life Deficiency ification

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

17	

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 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 Z = CATEGOR	
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.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available	•



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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NUIPMENT 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 FEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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. 12

13

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

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 2b, 30, 3d
System Consideration Review	12, 4b, 10, 4d, 10, 48
Equipment Environmental Qualification Review	5a, 5b, 5a, 5d, 5c, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	.6a, -6b

Maintenance and Replacement Schedule Summary 72, 75,

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/41/</u>

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	<u>E</u> :
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.	
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-net) 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 III.a Exempt III.b Not in Scope II.b Not Qualified IV Documentation Not Available	

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 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.



EQUIPMENT ENVIRONMENTAL QUAL	IFICATION SUMMARI FORM
	DESIGNATION:
AIDO DECUTDENENES	X = DEFICIENCY
NRC REQUIREMENTS	
Documented Evidence of Qualification Adequ	ate Test Specimen Established
Adequate Similarity Between Equipment and	Test Specimen Established
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Est	ablished (If Required)
Program Established to Identify Aging Degr	adation
Criteria Regarding Aging Simulation Satisf	ied (If Required)
Criteria Regarding Temperature/Pressure Ex	posure:
o .Peak Temperature Adequate	<u></u>
o Peak Pressure Adequate	,
o Duration Adequate .	•
o Required Profile Enveloped Adequate	ly
o Steam Exposure (If Required) Adequa	
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 Sati	
Criteria Regarding Instrument Accuracy Sat	
Test Duration Margin (1 hour + Function Ti	
Criteria Regarding Margins Satisfied (NURE	G-0588, Cat. I)
	· ·
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
	*
I.a Equipment Qualified	
I.b Equipment Qualification Pending Mo	
II.a Equipment Qualification Not Establ	ished
II.b Equipment Not Qualified	to Bosont Augustales vile
II.c Equipment Satisfies All Requiremen	cs excebt Angilised File
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualificatio	
III.b Equipment Not in the Scope of the	Qualification Review
IV Documentation Not Made Available	

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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UIPMENT 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 EEEOR 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 EEEOR (R1).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/0/4/70/47/

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 MOTOR-
,	IZED 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 MOTOR-IZED 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. 469

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IPMENT 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, 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, F, 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	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3o, 3d
System Consideration Review	4a, 4b, 40, 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	7 2, 75, 70-

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED	ITEMS ARE APPLICABLE
	ER concerns.
The Licensee (has/has-not) specifically stated that the qualified and/or will function when exposed to the appl environmental service conditions.	
The Licensee has presented information which shows ther outstanding qualification deficiencies.	e are no
The Licensee (has/has not) proposed a corrective action item whose qualification has not been fully established	
Justification for interim operation (has/has not) b Licensee for this equipment item.	een provided by the
Corrective action specified by the Licensee:	
Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation sou Verify qualification by additional (testing/ana Equipment relocation to a mild environment Qualification testing of equipment in progress Other (rce lysis)
The Licensee has provided other information for this that can be construed as a basis for justification operation.	
The Licensee (has/has not) provided a schedule for corrective action. (Schedule for accomplishing the action	
The Licensee states that the equipment item does not reamind and/or should be exempted from environmental qualifications.	quire qualification ion.
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY CONTROL OF CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	
I.a Qualified II.c Qualified Life I.b Modification III.a Exempt II.a Qualification Not Established III.b Not in Scope	_
II.b Not Qualified IV Documentation	Not Available

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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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124;

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

•	NATION: FICIENCY
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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied riteria 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)	
	IGNATION: 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	<u>×</u>

SEE EVALUATION ON PAGE 5 F



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. YG 9/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. \angle



LICENSEE RESPONSE TO NRC SER

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

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下, (A) , (A) · (A) ·		1
EVALUATION:	`.,	
1. The Licensee has not	r.provided	
do cumentation from	om the manu	fact
urer which states	That the ci-	ted
Hest report(s) are		
This equipment ite.		
2. The Licensee has i	not identifie	<u>.</u>
.The motor manufact	uren The cla	50
of insulation, or wh		IUH
incorporates a moto	r brake.	
	•	
Conclusion:		
	accuract to	
This equipment item is		
NRC' Qualification C	ategory II.a	
because traceability	has not bee	n
established.	•	
<u></u>		
<u> </u>		
:		•
		,
•		
•		

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. .

-

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 2b, 3c, 3d
System Consideration Review	4 a, 4b, 4c, 4d, 4c, 4£
Equipment Environmental Qualification Review	5 2,,55, 50, 5d, 50, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>4/69/470/471</u>

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	<u>:</u>
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.	
envilonmental 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.	
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 Lb Modification III.a Exempt	
.a Qualification Not Established III.b Not in Scope	
II.b Not Qualified IV Documentation Not Available	

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

1-	
4	

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
•	ESIGNATION: - 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 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	E
IV Documentation Not Made Available	



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

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UIPMENT 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 EEDOR 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 EEDOR (R1).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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.
- 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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IPMENT 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3h, 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	ба бb

Maintenance and Replacement Schedule Summary

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. \underline{T}

SUMMARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE	
The Licensee (has/has-not) provide	d a response to the SER concerns.	
The Licensee (has/has-not) specifi qualified and/or will function whe environmental service conditions.		
The Licensee has presented informa outstanding qualification deficien		
The Licensee (has/has-not) propose item whose qualification has not b	d a corrective action for this equipment een fully established.	
	ation (has/ has-not) been provided by the em.	
Corrective action specified by	the Licensee:	
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme X Verify qualification by ad Equipment relocation to a Qualification testing of e- Other (submergence level nt from radiation source ditional (testing/ analysis) mild environment	
	r information for this equipment item is for justification for interim	
corrective action. (Schedule	vided a schedule for the proposed for accomplishing the corrective	
The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.		
	TION EVALUATION CATEGORY BASED ON REVIEW	
- CIRCLED ITEM ONLY: (See Section 3 o	r this TER for Legend)	
I.a Qualified [I.b Modification]	II.c Qualified Life Deficiency III.a Exempt	
II.a Qualification Not Established	III.b Not in Scope	
II.b Not Qualified	IV Documentation Not Available	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No.469/470/47/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYEquipment Qualified I.a 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

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 EEEOR 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 EEEOR (R1).

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/4つか</u>47/

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🙈

"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 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.

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Task No. 46

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 9by 3c; 3d≤
System Consideration Review	4a, 4b, 4c, 4d, 4e, 41
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5c , 5f, 5 g, 5h, 5i, 5j
Tuckelled MWT Terror Transport Townson the	(

Installed TMI Lessons Learned Implementation 6a7 6b
Equipment Summary

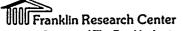
Maintenance and Replacement Schedule Summary 7a, 7b, 7c

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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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129.

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICATE	3LE:
Y 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.)
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.	1
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	4
I.a Qualified II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope II.b Not Qualified IV Documentation Not Available	



A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFIC	ATION SUMMARY FORM
,	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	
, , , , , , , , , , , , , , , , , , ,	·
Documented Evidence of Qualification Adequate	Cresimon Batchlighed
Adequate Similarity Between Equipment and Test	: Specimen Escapitaned
Aging Degradation Evaluated Adequately	Tall 1 (TE Domisional)
Qualified Life or Replacement Schedule Establi	ished (If Required) ;
Program Established to Identify Aging Degradat	:10n
Criteria Regarding Aging Simulation Satisfied	(Ir Required)
Criteria Regarding Temperature/Pressure Exposu	ire:
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	1
Criteria Regarding Test Sequence Satisfied	
Criteria Regarding Test Failures or Severe And	omalies ·
(If Any) Satisfied	•
Criteria Regarding Functional Testing Satisfic	
Criteria Regarding Instrument Accuracy Satisf:	ied <u> </u>
Test Duration Margin (1 hour + Function Time)	Satisfied
Criteria Regarding Margins Satisfied (NUREG-0	588, Cat. I) ,
•	
	•
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
	•
I.a Equipment Qualified	************
I.b Equipment Qualification Pending Modif.	ication
II.a Equipment Qualification Not Established	ed
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements	Except Qualified Life
or Replacement Schedule Justified	<u> </u>
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qua	lification Review
IV Documentation Not Made Available	
24 DAAMMII MATAII 1140 11400 1	



NRC Contract No. NRC-03-79-118
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FRC Task No. <u>469/470/47</u>/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129:

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

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

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 MOTOR-IZED 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 MOTOR-IZED 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 Assignment No. 13
FRC Task No. 469

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DIP

JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

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]

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>	Checksheet Page No.
Equipment Item	la
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 5 g, 5h, 5i, 5 j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7 a, 7b, 7c

20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1



SUMMARY OF LICENSEE RESPONSES TO THE NE	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has-not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informate outstanding qualification deficiency	
The Licensee (has/has-not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
	tion (has/ has not) been provided by the m.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	
Equipment relocation above Relocate or shield equipmen	
X Verify qualification by add	itional (testing/ analysis),
Equipment relocation to a m	ild environment
Qualification testing of eq Other (ulpment in progress
The Licensee has provided other that can be construed as a basi operation.	information for this equipment item s for justification for interim
The Licensee (has/has not) prov corrective action. (Schedule f action See Section	or accomplishing the corrective
The Licensee states that the equipm and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Qualified	II.c Qualified Life Deficiency
I.b Modification II.a Qualification Not Established	III.a Exempt III.b Not in Scope
II.b Not Qualified	IV Documentation Not Available



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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IV

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: NRC REQUIREMENTS 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 diteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY 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

Documentation Not Made Available



NRC Contract No. NRC-03-79-118
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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 EEEDOR 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 EEEDOR (R1).

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/478/47</u>/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

"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 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. 🗹

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, AS, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>131</u>

SUMM	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
太	Tne Licensee (has/ has not) provided a response to the SER concerns.
	The Licensee (has/ has not) specifically stated that the equipment is- q ualified 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)
ं बी∉ा	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 (hus/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action <u>See Section</u> 5.)
	The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available

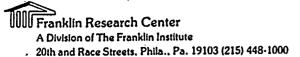
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
NRC REQUIREMENTS DESIGNATION X = DEFICI			
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 Radiation Satisfied Criteria Regarding Test Sequence 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 X = CAT			
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	<u>×</u>		
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available			



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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IIPMENT 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 EEFOR 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 EEFOR (R1).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/69/470/47/

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z

"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 MOTOR-IZED 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.

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

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>132</u>

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:

Maintenance and Replacement Schedule Summary

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

7a, 7b, 7c

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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.
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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4691470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 132

DESIGNATION: = DEFICIENCY
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DESIGNATION: X = CATEGORY
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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/470/47</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 43



LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.



IPMENT 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.
- THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE Motified 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. #69

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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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	5 a, 5b, 5o, 5d, 5e , 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation .	-6a, -6b

7b, 70

20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/411

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

	•	
SUMMARY	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CH	ECKED ITEMS ARE APPLICABLE
_X Tne	Ine Licensee (has/has-not) provided a response to	the SER concerns.
	The Licensee (has/has-not) specifically stated the qualified-and/or will function when exposed to the environmental service conditions.	
	The Licensee has presented information which shows outstanding qualification deficiencies.	there are no
	The Licensee (has/ has-not) proposed a corrective a item whose qualification has not been fully establ	
	∠ Justification for interim operation (has/has r Licensee for this equipment item.	been provided by the
赵	Corrective action specified by the Licensee:	
	Equipment replacement with qualified equipment modification Equipment relocation above submergence lever relocate or shield equipment from radiation and the verify qualification by additional (testing Equipment relocation to a mild environment qualification testing of equipment in proceedings.)	rel on source ug/ analysis) uress)
	The Licensee has provided other information for that can be construed as a basis for justification.	
× .	The Licensee (has/has net) provided a schedule corrective action. (Schedule for accomplishing action	
	The Licensee states that the equipment item does rand/or should be exempted from environmental qual	
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION RCLED ITEM ONLY: (See Section 3 of this TER for 1	
I.b Mo a Qu	Modification III.a Exempt Qualification Not Established III.b Not in S	ed Life Deficiency Scope Cation Not Available

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	•
•	DESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 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)	ned X
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 Lift 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	Ee .

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>133</u>

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 EEEOR 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 EEEOR (R1).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



"X"	DENOTES	APPROPRIATE	EVALUATION
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	EQUIPMENT IT	, ban-,	- *	•	# ⁼	·	; .

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 OUALIFIED 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 CF THE INSULATION SYSTEM AND WHETHER OR NOT THE MOTORIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.

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UUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>13</u>4

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]

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 40, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5o, 5d, 5e , 5f, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	<u>6a, 6b</u>

7a, 7b, 7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/411

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

SUMMARY	OF LICENSEE RESPONSES TO THE NR	C SER -	ONLY CHECKED I	TEMS ARE	APPLICABLE
The que	e Licensee (has/ has not) provided e Licensee (has/ has not) specific hlified and/or will function when vironmental service conditions.	ally st	: ated that the e	quipment 4	
	E Licensee has presented informat Estanding qualification deficienc		ch shows there	are no	
	e. Licensee (has/ has not) proposed em whose qualification has not be			or this ed	quipment
<u>لا</u> ـ	Justification for interim opera Licensee for this equipment ite		as/ has not) bee	n provided	d by the
×	Corrective action specified by	the Lic	ensee:		
	Equipment replacement with a Equipment modification Equipment relocation above Relocate or shield equipmen X Verify qualification by add Equipment relocation to a m Qualification testing of equipment ('	submerg t from itional ild env	ence level radiation sourc (testing/ analy ironment		
w Territori	The Licensee has provided other that can be construed as a basi operation.				item
×	The Licensee (has/has-not) province corrective action. (Schedule for action les sections)	or acco			a)
	e Licensee states that the equipmed/or should be exempted from envi				Eication
	ATION OF RESULTANT NRC QUALIFICAT LED ITEM ONLY: (See Section 3 of			Y BASED O	N REVIEW
I.b Mc II.a Qu	nalified odification nalification Not Established ot Qualified	III.a III.b	Qualified Life Exempt Not in Scope Documentation N	_	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NDC DECUT DEMENDS	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ. Aging Degradation Evaluated Adequately	ished ×
Qualified Life or Replacement Schedule Established (If Required	d)
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 Literia Regarding Test Sequence Satisfied	
Literia Regarding Test Sequence Satisfied Literia 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)	
Clicella Regarding Margins Datistica (Mount 1909) edit 1,	
	DESIGNATION:
The sub-language of miles in	X = CATEGORY
NRC QUALIFICATION CATEGORY	A - CAILGOAI
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	



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. 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 EEEOR 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 EEEOR (R1).

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>46 9/4 70/47</u>/

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/3</u>ダ

"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 MOTOR-IZED 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 Textor AN EXACT COMPLETION DATE FOR THIS Textor 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.

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. .

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a7 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

7a. 7b. 78

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/41/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 135

SUMM	IARY	OF LICENS	EE RESPON	ISES TO THE 1	NRC SER	- ONLY C	CHECKED :	ITEMS ARI	APPLICABLE:
<u>~</u> ×	The	Licensee Lified-and ;	(has/ has- /or will	not) provide not) specifi function whe conditions.	ically s	: tated th	nat the	equipment	: <u>is</u>
_	The	Licensee l	nas prese	ented information deficien		ich show	s there	are no	
×				not) propose on has not b				for this	equipment
	<u>×</u>			interim oper equipment it		has/ has	-not) bed	en provid	led by the
	丛	Corrective	action	specified by	the Lie	censee:			
*****		Equipor Equipor Reloca Verify Equipor	ment modi ment relo ate or sh y qualifi ment relo fication	acement with fication ocation above ield equipme cation by acceptation to a testing of e	submergent from ditional mild en	gence le radiati l (testi vironmer	evel ion sourcing/ anal it		· · · · · · · · · · · · · · · · · · ·
		The Licens that can l	be constr	provided other ued as a bas	er information	mation í justific	or this	equipmer or interi	it Ítem im
	×			(Schedule					
	The and	Licensee : /or should	states the be exemp	nat the equipoted from env	oment it vironmen	em does tal qual	not requ Lification	uire qual on.	Lification
		TION OF RE		NRC QUALIFICA Section 3 of				RY BASED	ON REVIEW
Ĭ.b	Mo Qu	alified dification alification t Qualifie	n Not Est	cablished		Exempt Not in	Scope	Deficier	_



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
DESIGNATE REQUIREMENTS 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	GNATION: EFICIENCY
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)	
	SIGNATION: = 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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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>135</u>

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 EEEOR 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 EEEOR (R1).

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/470/4</u>7/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 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.



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

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/36</u>

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)

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la '
Summary of Licensee Responses to the NRC SER	lb
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	5 a, 5b, 5e, 5d, 5e, 5f 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.
•	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4/49/470/411

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS	S ARE APPLICABLE:
The Licensee (has/has-not) provided a response to the SER con	
The Licensee (has/has-not) specifically stated that the equipolar qualified and/or will function when exposed to the applicable environmental service conditions.	
The Licensee has presented information which shows there are outstanding qualification deficiencies.	no .
The Licensee (has/has-not) proposed a corrective action for item whose qualification has not been fully established.	this equipment
	rovided by the
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 equitable that can be construed as a basis for justification for in operation.	-
The Licensee (has/has/nd) provided a schedule for the process corrective action. (Schedule for accomplishing the correction	
The Licensee states that the equipment item does not require and/or should be exempted from environmental qualification.	qualification
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BOOK - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	ASED ON REVIEW
I.a Qualified II.c Qualified Life Def:	iciency
I.b Modification III.a Exempt	
II.a Qualification Not Established III.b Not in Scope	America de la compansión de la compansió
-II.b Not Qualified IV Documentation Not a	Avallable .



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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	
diteria Regarding Test Sequence Satisfied	
fiteria 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)	•
Clicate waderend warding and	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
I.a Equipment Qualified	$\overline{\mathbf{x}}$
I.b Equipment Qualification Pending Modification II.a Equipment Qualification Not Established	
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified	Life
II.c Equipment Satisfies All Requirements Except Qualified 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. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔏



LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

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FRC Project No. C5257
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FRC Task No. 469/470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/ 3</u>6

"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 MILLIAN 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.

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Task No. #6 9

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	l a
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 , .

7a-7b-70

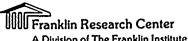
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>4/69/470/411</u>

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMM	IARY	OF LICENSEE RESPONSES TO THE NR	SER -	- ONLY CHECKED ITEMS ARE APPLICABLE:
_×	Tne	Licensee (has/has-not) provided	a resp	conse to the SER concerns.
丛	qual	Licensee (has/has not) specificatification when ironmental service conditions.	ally so expose	ed to the applicable DBE
		Licensee has presented informat standing qualification deficienc		ich shows there are no
×		Licensee (has/ has not) proposed m whose qualification has not be		rective action for this equipment Ly established.
	X	Justification for interim operationsee for this equipment item		nas/ has-not) been provided by the
	赵	Corrective action specified by	the Li	censee:
	۵.	Equipment replacement with one of the control of th	submerq t from itional	gence level radiation source L (testing/ analysis) rironment
		The Licensee has provided other that can be construed as a basi operation.	inform s for	nation for this equipment item justification for interim
	×	The Licensee (has/has not) provious corrective action. (Schedule faction	ided a	schedule for the proposed omplishing the corrective
	The and	Licensee states that the equipm /or should be exempted from envi	ent it	em does not require qualification tal qualification.
-		TION OF RESULTANT NRC QUALIFICAT ED ITEM ONLY: (See Section 3 of	ion Ev	ALUATION CATEGORY BASED ON REVIEW TER for Legend)
b b	Mod a Qua	alified dification alification Not Established t Qualified		Qualified Life Deficiency Exempt Not in Scope Documentation Not Available



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20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
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FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUM	MARY FORM
NRC REQUIREMENTS	DESIGNATION: $X = DEFICIENCY$
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Requi 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 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.	Required)
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 III.a Equipment Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification IV Documentation Not Made Available	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>V69/47047</u>/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🖄

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

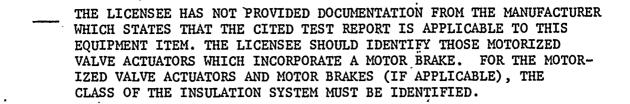
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>464/47</u>0/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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. 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.

<u> </u>	THE LICENSEE HAS WITH A QUALIFIED FOR THIS REPLACE	STATED THAT REPLACEMENT MENT HAS NOT	THIS EQUIPMENT COMPONENT. AN BEEN PROVIDED.	ITEM WI	LL BE COMPLET	models ION DA	red TE
	radio de Republique Andre A		4444 pms		•		

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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IPMENT 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:

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

Page Ib

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. X 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)
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
II.b Not Qualified IV Documentation Not Available

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

Page 2

DUIPMENT 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 Establishaging 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
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 II.c Equipment Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available	DESIGNATION: X = CATEGORY X

SEE PAGE 5f for EVALUATION



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>\$\(\psi\(G\frac{9}{470}\frac{47}{27}\)\]</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



LICENSEE RESPONSE TO NRC SER

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

UNIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

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EVALUATION:
1. The Licensee has not provided document
ation from the manufacturer which
states That The cited test reports) are
applicable to this equipment item.
2. The Licensee has not identified the
motor manufacturer or the class of
insulation for these MVA's
Insulation for these 111113
Conclusion:
This equipment item is assigned to NRC
4/5 1
Qualification Category II. a because
traceability has not been established
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Page I a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/411</u>

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS A	DE ADDITCARIE
SUMMARY OF BICENSEE RESPONSES TO THE NAC BER - ONE! CHECKED TIMES !	*
The Licensee (has/has-not) provided a response to the SER conce	
The Licensee (has/has-not) specifically stated that the equipme qualified and/or will function when exposed to the applicable penvironmental 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 thi item whose qualification has not been fully established.	s equipment
Justification for interim operation (has/has-not) been prov Licensee for this equipment item.	rided by the
Corrective action specified by the Licensee:	1
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 that can be construed as a basis for justification for interpretation.	
The Licensee (has/has not) provided a schedule for the proportive action. (Schedule for accomplishing the correct action	
The Licensee states that the equipment item does not require quand/or should be exempted from environmental qualification.	alification
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASE - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	D ON REVIEW
I.a Qualified II.c Qualified Life Defici	.ency
a Qualification Not Established III.b Not in Scope b Not Qualified IV Documentation Not Ava	ilable ,



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. $\mathcal{L}_{\mathbf{i}}$



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARI	PORM
NRC REQUIR	REMENTS	DESIGNATION: $X = DEFICIENCY$
Adequate S Aging Degr Qualified Program Es Criteria F Criteria F O Per O Per O Per O Ste Criteria F Test Duras	Evidence of Qualification Adequate Similarity Between Equipment and Test Specimen Est radation Evaluated Adequately Life or Replacement Schedule Established (If Requistablished to Identify Aging Degradation Regarding Aging Simulation Satisfied (If Required) Regarding Temperature/Pressure Exposure: ak Temperature Adequate ak Pressure Adequate ration Adequate quired Profile Enveloped Adequately eam Exposure (If Required) Adequate Regarding Spray Satisfied Regarding Submergence Satisfied Regarding Test Sequence Satisfied Regarding Test Sequence Satisfied Regarding Test Failures or Severe Anomalies) Satisfied Regarding Functional Testing Satisfied Regarding Instrument Accuracy Satisfied Regarding Margins Satisfied (NUREG-0588, Cat. I)	ired)
NRC QUALI	FICATION CATEGORY .	DESIGNATION: $X = CATEGORY$
I.b Edil.a Edil.b Edil.c Edil.a Edil.a Edill.a Edill.b Edill.b	quipment Qualified quipment Qualification Pending Modification quipment Qualification Not Established quipment Not Qualified quipment Satisfies All Requirements Except Qualifier r Replacement Schedule Justified quipment Exempt From Qualification quipment Not in the Scope of the Qualification	
	ocumentation Not Made Available	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 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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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 此

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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 -

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/41/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1



	•	•	
SUMMARY C	OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS AF	E APPLICABLE:
_X The I	vicensee (has/ has not) provided	a response to the SER concer	ns.
quali	icensee (has/ has not) specifica fied and/or will function when onmental service conditions.	lly stated that the equipment exposed to the applicable DE	t is.
	icensee has presented informati anding qualification deficienci		
	icensee (has/ has not) proposed whose qualification has not bee		equipment
	Justification for interim operaticensee for this equipment item		ded by the
丛	Corrective action specified by t	he Licensee:	
- - -	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment addition by additionation by additionation to a minus Qualification testing of equipment (ubmergence level from radiation source tional (testing/ analysis) ld environment	· · · · · · · · · · · · · · · · · · ·
t	The Licensee has provided other that can be construed as a basis operation.		
	The Licensee (has/h as-net) provi corrective action. (Schedule for action <u>See Sactor</u>	r accomplishing the correcti	
	Licensee states that the equipment or should be exempted from envir		alification
	ON OF RESULTANT NRC QUALIFICAT: O ITEM ONLY: (See Section 3 of		ON REVIEW
		II.c Qualified Life Deficiential III.a Exempt III.b Not in Scope IV Documentation Not Avai	

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
•	ESIGNATION: - 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 Radiation Satisfied iteria Regarding Test Sequence Satisfied iteria Regarding Test Failures or Severe Anomalies (If Any) 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 Lift or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review	e = ==================================
IV Documentation Not Made Available	



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. A



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 EEEOR 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 EEEOR (R1).

IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 💯

"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 MOTOR-IZED 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 Project No. C5257
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FRC Task No. #6 9

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3 d
System Consideration Review	4a, 4b, 4c, 4d, 4c, 4£
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e , 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	_6a,_6b

Equipment Summary .

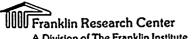
Maintenance and Replacement Schedule Summary 7a, 7b, 7c

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

		•
SUMMAR	RY OF LICENSEE RESPONSES TO THE NRC	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
X In	ne Licensee (has/ has not) p rovided	a response to the SER concerns.
dn	he Licensee (has/has not) specifica walified and/or will function when nvironmental service conditions.	
	he Licensee has presented informati utstanding qualification deficienci	
	he Licensee (has/h as-not) proposed tem whose qualification has not bee	a corrective action for this equipment en fully established.
	Yustification for interim operat Licensee for this equipment item	tion (has/h as not) been provided by the m.
×	Corrective action specified by t	the Licensee:
1958 - 19	Equipment replacement with q Equipment modification Equipment relocation above s Relocate or shield equipment Verify qualification by addi Equipment relocation to a mi Qualification testing of equ Other (submergence level t from radiation source itional (testing/analysis) ild environment
	The Licensee has provided other that can be construed as a basis operation.	information for this equipment item s for justification for interim
>	The Licensee (has/has not) provi corrective action. (Schedule fo action	ided a schedule for the proposed or accomplishing the corrective
	he Licensee states that the equipme nd/or should be exempted from envir	ent item does not require qualification ronmental qualification.
	NATION OF RESULTANT NRC QUALIFICATI CLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
T.b M	Qualified Modification Qualification Not Established Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



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FRC Assignment No. 13
FRC Task No. 46 9/47 5/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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_	_	

	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMAR	Y_FORM
NRC REQUIREMEN	I <u>TS</u>	DESIGNATION: $X = DEFICIENCY$
Adequate Simil Aging Degradate Qualified Life Program Establ Criteria Regarmon Peak To Peak Program On Steam On Steam On Steam On Criteria Regarmon Criteria Regarmo	dence of Qualification Adequate arity Between Equipment and Test Specimen Estion Evaluated Adequately or Replacement Schedule Established (If Requished to Identify Aging Degradation Eding Aging Simulation Satisfied (If Required Eding Temperature/Pressure Exposure: emperature Adequate established eding Temperature/Pressure Exposure: emperature Adequate en Adequate en Adequate en Adequate end Profile Enveloped Adequately exposure (If Required) Adequate ending Spray Satisfied ending Submergence Satisfied ending Test Sequence Satisfied ending Test Sequence Satisfied ending Test Failures or Severe Anomalies entified ending Functional Testing Satisfied ending Instrument Accuracy Satisfied ending Instrument Accuracy Satisfied ending Margin (1 hour + Function Time) Satisfied ending Margins Satisfied (NUREG-0588, Cat. I)	uired)
NRC QUALIFICA	TION CATEGORY	DESIGNATION: $X = CATEGORY$
I.b Equiporation II.a Equiporation Equiporation or Re III.a Equiporation or Re III.a Equiporation Equip	ment Qualified ment Qualification Pending Modification ment Qualification Not Established ment Not Qualified ment Satisfies All Requirements Except Qualif placement Schedule Justified ment Exempt From Qualification ment Not in the Scope of the Qualification Re entation Not Made Available	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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DUIPMENT 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 EEEOR; 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 EEEOR 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. 18
FRC Task No. 469 477

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 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.



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

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JIPMENT 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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, 4c, 4f
Equipment Environmental Qualification Review	5a, 5b, 5e, 5d, 5e, 5f, .5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a ₇ -6b
•	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>U/29/470/471</u>

Page 1 b

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.
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-net) 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 III.a Exempt II.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

Page



JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>ゲス</u>

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	NCY
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o Peak Pressure Adequate o Duration Adequate .	
o Duration Adequate	
o Steam Exposure (If Required) Adequate	
Criteria Regarding Spray Satisfied	
* Criteria Regarding Submergence Satisfied	
Criteria Regarding Radiation Satisfied	
iteria Regarding Test Sequence Satisfied	
iteria 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)	
Clicella wedarding margins basis-in (months)	
DESIGNAT	'ION:
NRC QUALIFICATION CATEGORY $X = CATE$	GORY
MIC VORDITION CONTROL .	
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	

Equipment Satisfies All Requirements Except Qualified Life

Equipment Not in the Scope of the Qualification Review

Equipment Qualification Not Established

or Replacement Schedule Justified Equipment Exempt From Qualification

Documentation Not Made Available

Equipment Not Qualified

II.a

II.b

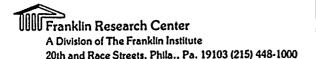
II.c

III.a

III.b

IV

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/476/471.

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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 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).

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/47

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>ノゾ</u>ス

"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 MOTOR-IZED 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 AN EXACT COMPLETION DATE
FOR THIS . TEXTURE 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. 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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3 d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6 2, 6b-

7a, 7b,

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46914701471

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14.3

SUMM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u>	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.
•	
	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.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. L'



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
NRC REQ	UIREMENTS Z	DESIGNATION: C = DEFICIENCY
Adequat Aging D Qualifi Program Criteri Test Du	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establis egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Required) Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies any) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	ALIFICATION CATEGORY	DESIGNATION: X = CATEGORY
I.a II.a II.b III.c III.a III.a	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified L or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	ife =



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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DUIPMENT 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).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/4>0/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 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.



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

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DIPMENT 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:

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

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 1469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM N

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ICABLE:	

SUM	MARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
工	The Licensee (has/has-nob) provide	d a response to the SER concerns.
2	The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
	The Licensee has presented informa outstanding qualification deficien	
	The Licensee (has/has not) proposed item whose qualification has not be	d a corrective action for this equipment een fully established.
	Justification for interim oper- Licensee for this equipment it	ation (has/has not) been provided by the
	Corrective action specified by	the Licensee:
-	Equipment replacement with Equipment modification Equipment relocation above	
	Relocate or shield equipment	nt from radiation source
	Verify qualification by ad-	ditional (testing/analysis)
	Equipment relocation to a general Qualification testing of each	mild environment
	Other ()
		r information for this equipment item is for justification for interim
		vided a schedule for the proposed for accomplishing the corrective
	The Licensee states that the equipment and/or should be exempted from envi	ment item does not require qualification ironmental qualification.
	IGNATION OF RESULTANT NRC QUALIFICATION 3 OF RESULTANT NRC QUALIFI	TION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a	Qualified	II.c Qualified Life Deficiency
	Modification	III.a Exempt
	a Qualification Not Established b Not Qualified	III.b Not in Scope IV Documentation Not Available
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Franklin Research Center
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A Division of The Franklin Institute
20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

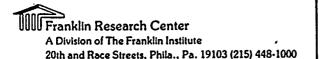
Page 2

DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

,	SIGNATION: 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 Radiation Satisfied iteria Regarding Test Sequence Satisfied iteria 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)	
	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	<u>×</u>

SEE EVALUATION ON PAGE 59



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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 (RO) or February (R1) submittal of the BFN EEEQR to NRC.

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EVALUATION:
1. The Licensee has not provided documenta-
tion 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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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🛂

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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]

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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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, 5c, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6ay6b-

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/41/</u>

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

SUMM	ARY	OF LIC	ENSE	E RE	SPONS	SES 1	HT O	NRC	SER	<u> </u>	NLY	CHE	CKED	ITE	MS I	ARE	APP	LICAB	<u>LE</u> :
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	The	Licens	ee (has/	has r	10t)	provi	ded	a res	pon	ise	to t	he S	ER c	once	erns	•		
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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	<u> PRM</u>
•	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	X = DEFICIENCE
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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 Radiation Satisfied Criteria Regarding Test Sequence 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)	
NDG OUNT TET CAMECODY	DESIGNATION: X = CATEGORY
NRC QUALIFICATION 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 Revie	w
IV Documentation Not Made Available	



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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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>145</u>

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).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46 9/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



"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 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.

Page la



IIPMENT 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

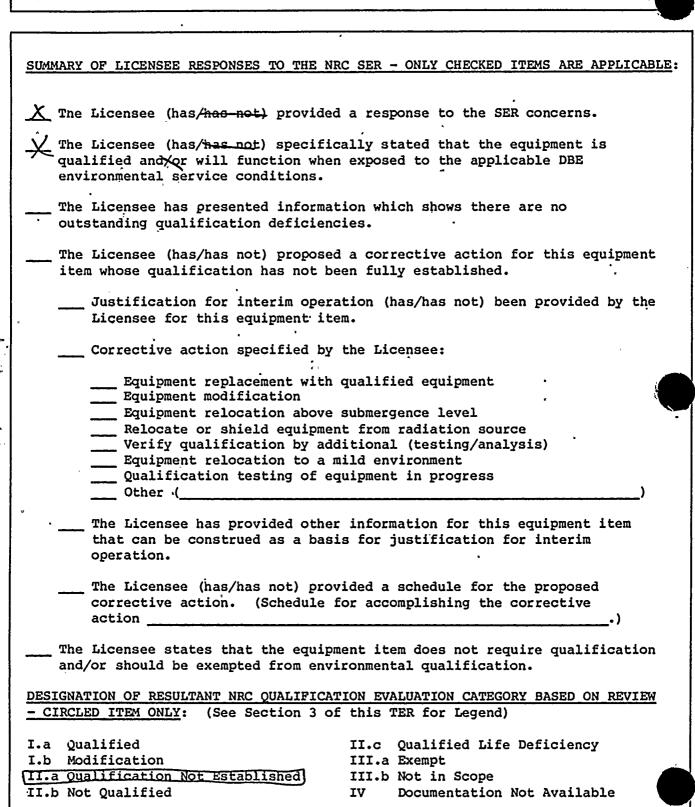
LISTING OF APPLICABLE CHECKSHEETS:

	Contents	Checksheet Page No.
	Equipment Item	la
	Summary of Licensee Responses to the NRC SER	lb
•	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	5 a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
į	Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.
	Maintenance and Replacement Schedule Summary	7a, 7b, 7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4





NRC Contract No. NRC-03-79-118
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FRC Task No. 469470471

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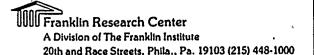


UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Estab Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requir 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied iteria 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 or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Revie IV Documentation Not Made Available	

SEE EVALUATION ON PAGE 54.



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4696470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



LICENSEE RESPONSE TO NRC SER

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

Franklin Research Center A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

•
EVALUATION:
1. The Licensee has not provided document.
ation from the manufacturer which
states That The cited test report(s) are
applicable to this equipment item.
2. The Licensee has not identified the
2. The Licensee has not then the
motor manufacturer, the class of insul-
ation, 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.
•
•
•

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. 🗵

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb '
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4c, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b-

NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. <u>469/470/47</u>

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

SUMM	ARY OF LICENSEE RESPONSES TO THE NR	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
_X :	Tne Licensee (has/ has_not) provided	a response to the SER concerns.
X	The Licensee (has/has_not) specific qualified and/or will function when environmental service conditions.	A
	The Licensee has presented informat outstanding qualification deficienc	
	The Licensee (has/has not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
-	Justification for interim opera Licensee for this equipment ite	tion (has/has not) been provided by the
_	Corrective action specified by	the Licensee:
	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of equipment (submergence level t from radiation source itional (testing/analysis) ild environment
-	The Licensee has provided other that can be construed as a basi operation.	information for this equipment item s for justification for interim
-		ided a schedule for the proposed or accomplishing the corrective
	The Licensee states that the equipm and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
	GNATION OF RESULTANT NRC QUALIFICAT RCLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.b	Qualified Modification Qualification Not Established Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/478/477

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

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	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>™</u>
NRC REQU	JIREMENTS .	DESIGNATION: X = DEFICIENCY
Adequate Aging De Qualifie Program Criteria O I O I O I Criteria Test Du	eed Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establic egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Required Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Pressure (If Required) Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies may) Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a II.a II.b II.c III.a III.a	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	

SEE EVALUATION ON PAGE 54



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 142

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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 (RO) or February (R1) submittal of the BFN EEDQR to NRC.

20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

•
EVALUATION:
1. The Licensee has not provided docu-
mentation 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 insul-
·
ation, or whether this MVA incorporate
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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·
,
. •

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

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. #2

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

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14

	•			
SUMMARY	OF LICENSEE RESPONSES TO THE NRC	SER -	ONLY CHECKED ITEMS ARE API	PLICABLE
				•
_X The	Licensee (has/has-not) provided	a resp	onse to the SER concerns.	4
qual	Licensee (has/has-not) specification when ronmental service conditions.			-
	Licensee has presented informati standing qualification deficienci		ch shows there are no	
	Licensee (has/h as-not) proposed whose qualification has not bee		-	ipment
	Justification for interim operat Licensee for this equipment item		as/ has not) been provided l	oy the
×	Corrective action specified by t	he Lic	ensee:	
	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment Yerify qualification by additional Equipment relocation to a minute of Equipment relocation to a minute of Equipment ()	submerg : from .tional .ld env	ence level radiation source . (testing/ analysis) rironment	<u>·</u> ,
	The Licensee has provided other that can be construed as a basis operation.			em
	The Licensee (has/has not) provi corrective action. (Schedule for action See Section 5			.)
	Licensee states that the equipme or should be exempted from envir			cation
•	TION OF RESULTANT NRC QUALIFICATION OF COUNTY: (See Section 3 of			REVIEW
II.a Qua	alified dification alification Not Established Qualified	III.a III.b	Qualified Life Deficiency Exempt Not in Scope Documentation Not Available	· .

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No.4691470/47/

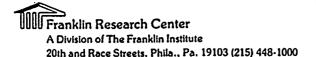
Page

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>148</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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 Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Submergence Satisfied Criteria Regarding Radiation Satisfied iteria Regarding Test Sequence Satisfied riteria 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 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	



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).

JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 💯

"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 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. 🗸



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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb v
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, 5c , 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b ·

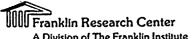
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/411

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IPMENT 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.
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 III.a Exempt III.b Not in Scope IV Documentation Not Available



A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u> </u>
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establi 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 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 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	
•	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/470/47</u>/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

LICENSEE RESPONSE TO NRC SER

- 2. Those noted deficiencies <u>circled</u> in attachment 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 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 <u>circled</u> have been addressed in Revision 2 of the EEDOR 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"X" DENOTES APPROPRIATE EVALUATION

- THE LICENSEL 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 MONTH 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.



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

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>150</u>

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]

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	la
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	4 a, 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	7 2, 75, 70.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/69/470/411

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.
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-net) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action 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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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JUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC_REQUIREMENTS	DESIGNATION: X = DEFICIENCY
MC REQUIREMENTS	A - DEFICIENCI
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established 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 Radiation Satisfied Friteria Regarding Test Sequence Satisfied Friteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Functional Testing 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 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	



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 EEEOR 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 EEEOR (R1).

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>ムシ</u>ご

"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 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. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 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]

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	5 2, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a7-6b-

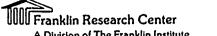
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/411

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 151

	·
SUMM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>×</u>	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.
	IGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW IRCLED ITEM ONLY: (See Section 3 of this TER for Legend)
a	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available



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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>M</u>
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 L 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	ife =
IV Documentation Not Made Available	



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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>151</u>

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

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FRC Task No. 46 9/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. \angle



"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 MOTOR-IZED 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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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>152</u>

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)

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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, 5o, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b
•	•

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/411

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



·	
SUMMARY OF LICENSEE RESPONSES TO THE NRC S	ER - ONLY CHECKED ITEMS ARE APPLICABLE
_X The Licensee (has/has-not) provided a	response to the SER concerns.
The Licensee (has/has-not) specificall qualified-and/or will function when exervironmental service conditions.	y stated that the equipment is posed to the applicable DBE
The Licensee has presented information outstanding qualification deficiencies	
The Licensee (has/has-not) proposed a item whose qualification has not been	
Justification for interim operation Licensee for this equipment item.	on (has/ has-not) been provided by the
Corrective action specified by the	Licensee:
Equipment replacement with qualification Equipment relocation above subsequence or shield equipment for the control of the co	mergence level from radiation source conal (testing/ analysis) l environment
The Licensee has provided other in that can be construed as a basis for operation.	
The Licensee (has/hasnot) provide corrective action. (Schedule for action	
The Licensee states that the equipment and/or should be exempted from environ	
DESIGNATION OF RESULTANT NRC QUALIFICATION - CIRCLED ITEM ONLY: (See Section 3 of the	
I.b Modification II	i.c Qualified Life Deficiency II.a Exempt II.b Not in Scope Documentation Not Available

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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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
,	
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Estab	lished X
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requir	red)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
oPeak 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	
iteria Regarding Test Sequence Satisfied	
Citeria Regarding Test Sequence Satisfied Citeria Regarding Test Failures or Severe Anomalies	
	•
(If Any) Satisfied Criteria Regarding Functional Testing 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)	* **
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
NRC QUALIFICATION CAIDGONI	
I.a Equipment Qualified	<u></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	l Life
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	* h
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. <u>469/470/47/</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEFOR 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.

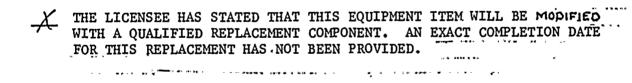
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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

"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 MOTOR-
4	IZED 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 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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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)

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4/69/470/41/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
Man Tinana (har (har wat) purpidad a vagnanga ta the GED gangarna
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 III.a Exempt III.b Not in Scope b Not Qualified IV Documentation Not Available



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 169 1470 1471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	EQUIPMENT ENVIRONMENTAL QUALIFICATION BOUNTED TO	
NDC DEO	UIREMENTS	DESIGNATION: X = DEFICIENCY
MAC REO	UTREMENTS ,	
Adequat Aging D Qualifi Program Criteri Test Du	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establ egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Require Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies any) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
		DECTONATION.
		DESIGNATION:
NRC QUA	LIFICATION CATEGORY	X = CATEGORY
	•	
I.a	Equipment Qualified	-\
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.b	Equipment Not Qualified	T ! 6.
II.c	Equipment Satisfies All Requirements Except Qualified	rrre
	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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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 163.

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EFFOR 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.

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>U69/478/478</u>

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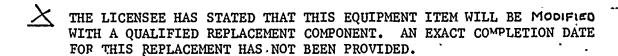
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. A



"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 MOTOR-
IZED 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 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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PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

Equipment Item No. 154

Cable

Times Wire & Cable, Brand Rex 936,

(COAX, TRIAX, signal XLPE)

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,

Observation of Deman Ma

7a, 7b, 7c

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, PH CS, A, S, (R), M, I, M RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

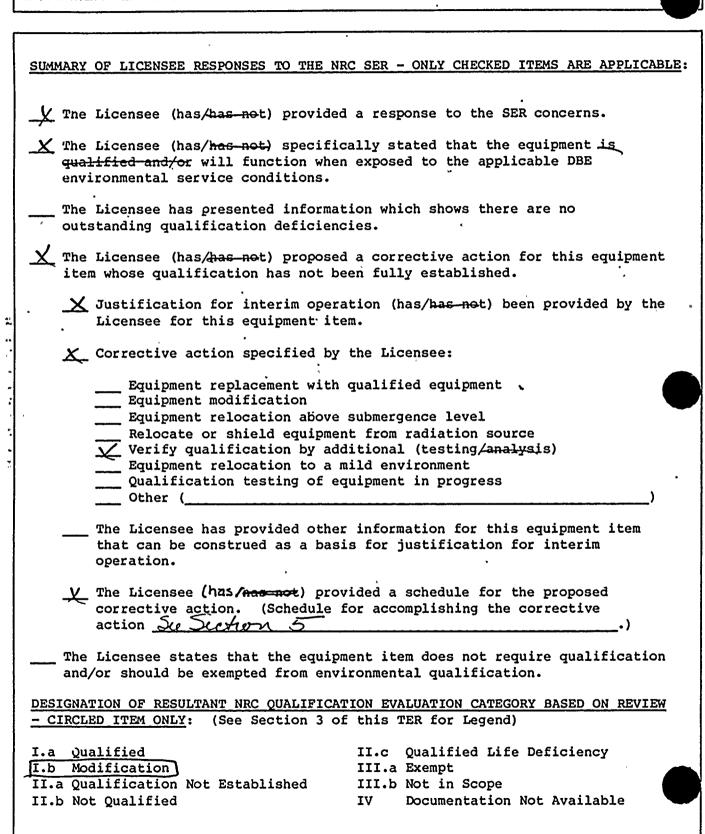
Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z





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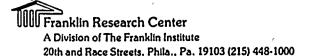
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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 454

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 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 iteria Regarding Test Sequence Satisfied iteria 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 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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FRC Project No. C5257
FRC Assignment No. 13,
FRC Task No. 469470471

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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).

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

	·
res:	
•	
Th	e licensee EEQ evaluation sheets for the cables identified on page la
do	not provide sufficient information (Insulation thickness, Insulation
ma	terial ie specific compound, jacket thickness, Jacket material ie
sp	ecific compound, sizes and types of conductors etc) to provide a
co	rrelation between installed cables and test reports. In the test
pr	ogram to be conducted on the installed Browns Ferry Cable the .
11	censee should ensure adequate description of cable characteristics
to	demonstrate Type testing which satisfies DOR guideline requirements
or	IEEE-383-74 requirements.
Th	e licensee should also provide evidence of test and analysis to
	tablish the qualified life of the cable.
	•
	
•	

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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. 4



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, 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:

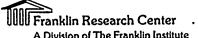
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2 ,
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c,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

Maintenance and Replacement Schedule Summary 7a, 7b, 7c

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🛫

SUMM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
_X	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)
	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.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW IRCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.a	Qualified II.c Qualified Life Deficiency
I.b	Modification III.a Exempt
	Qualification Not Established III.b Not in Scope
7.k	Not Qualified IV Documentation Not Available



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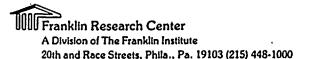
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

1	

	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	RM
		DESIGNATION: X = DEFICIENCY
NRC REQ	<u>UIREMENTS</u> .	<u>R - DDI 10121101</u>
Documen Adequat Aging D Qualifi Program Criteri	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Estable egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Require Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Exposure (If Required) Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies any) Satisfied a Regarding Functional Testing Satisfied	
Criteri	la Regarding Instrument Accuracy Satisfied	
Test Du Criteri	ration Margin (1 hour + Function Time) Satisfied La Regarding Margins Satisfied (NUREG-0588, Cat. I)	
•		DESIGNATION:
NRC QUA	ALIFICATION CATEGORY	X = CATEGORY
I.a I.b II.a	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified	<u></u>
II.b II.c	Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified	Life
III.a	Equipment Exempt From Qualification	
III.b	Equipment Not in the Scope of the Qualification Review	w
IV	Documentation Not Made Available	
		i.

* inside drywell only.



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FRC Task No. 46 9/470/47/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🕰

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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.

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Task No. 44947047

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



Criteria: DOR Guidelines X; NUREG-0588, Cat. I; NUREG-0588, Cat. II NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II) EQUIPMENT DESCRIPTION Equipment Type Manufacturer's Name (5.2.2/-/-) Model Number Model Number MA MA MA MA MA MA DEFICIENCY QUALIFICATION (X OR DOCUMENTATION NOTE NO.) ELECTRICAL Cable Anacondo Anacondo Model Number MA MA NAA NAA NAA NAA NAA NAA	-
WITH SECTION REFERENCE LICENSEE QUALIFICATION (X OR (DOR/0588-I/0588-II) SUBMITTAL DOCUMENTATION NOTE NO.) EQUIPMENT DESCRIPTION Equipment Type Manufacturer's Name (5.2.2/-/-) Model Number (5.2.2/-/-) Model Number (5.2.2/-/-) Serial Number N/A. See page 5-f. Note N/A.	-
Equipment Type Elichical Electrical Cable Coble Manufacturer's Name (5.2.2/-/-) Model Number (5.2.2/-/-) Serial Number N/A Elichical Electrical Cable Coble Ansendo Ansendo N/A N/A N/A N/A	
Model Number (5.2.2/-/-)	
; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	
· · · · · · · · · · · · · · · · · · ·	
Features/Mounting	
Connections/Interfaces Notstated: (5.2.6/-/-)	
Equipment ID No. CP55 NA	•
Equipment ID No. $alo, cpss$	
QUALIFICATION REPORT (8.0/5.0/5.0) (8.0/5.0/5.0) 79//7 Report ID Number 79//7	
Report Date . 4/79 4/79	
Issued by answords answords	
Prepared for Brian. TVA.	
Referenced Reports	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	
QUALIFICATION TEST PROGRAM Functional Test Description (5.2.5/2.2.9/2.2.9) Resulting Resulting Hi Pot	
Operating Conditions ! current Judy ! (-/2.2.10/2.2.10)	
Load/Cycles/Voltage/ Current/Freq. Not see pages f. Notes.	,

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20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LSS

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)	NA	Nationated	•
Accuracy (5.2.5/-/-)	NA	MA	
Number of Specimens	NA	21 se pry 5 f	(NALI)
Test Instruments Calibrated	MA	ges	:
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	actine	NA	! .
Test Duration (5.2.1/-/-)	NA	16 days	• !
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	>24 his	NA	1.
equired Function Time	year	MA	:
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	NA	ægenj	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	NA	indeation LOCA Semulation	
1. Representative Sample 2. Baseline Data	1	!	:
3. Performance Extremes 4. Thermal Aging 5. Radiation Aging	1	: 1	:
6. Wear Aging 7. Vibration/Seismic	1 '	•	:
8. DBE Exposure 9. Post-DBE Exposure 10. Inspection	! !	1 1 1	
Aging	1	! !	!
(5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	N/A.	2 Fday @ 2100	1
Material Aging Evaluation (7.0/-/-)	NA NA NA	7 dag @ 210°C 2Fdag @ 210°C anhener Yes	; ;
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	N/A.	: ! !	!
Radiation Aging, Type	NA .	Gama	1

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



WITH SECTION REFERENCE (DOR/0588-I/0588-II) Radiation Aging, Dose (rd) Radiation Aging, Dose (rd) Radiation Aging, Dose Rate Radiation Aging, Method Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Humidity On-Going Surveillance and Preventive Maintenance (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				
Radiation Aging, Dose (rd) Radiation Aging, Dose Rate Radiation Aging, Method Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Humidity 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 (+108, 10 psig max) 3. Radiation (not required) 4. Time (+108, +1 hour		•		DEFICIENCY
Radiation Aging, Dose (rd) Radiation Aging, Dose Rate Radiation Aging, Method Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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				•
Materials Süsceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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°P) 2. Pressure (+10%, 10 psig max) 3. Radiation (not required) 4. Time (+10%, +1 hour	(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
Radiation Aging, Method Materials Süsceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Humidity 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	,	i		:
Radiation Aging, Method Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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	Radiation Aging, Dose (rd)	! Nat Stated!	200 acadent	1
Radiation Aging, Method Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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 (+10°, 10 psig max) 3. Radiation (not required) 4. Time (+10%, +1 hour			hine	1
Radiation Aging, Method Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Humidity 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 (+10*, 10 psig max) 3. Radiation (not required) 4. Time (+10*, +1 hour	Radiation Aging, Dose Rate	! Natstalk!		!
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-) Operational Aging (-/4.2/-) Other Age-Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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				•
Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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 (+10*, 10 psig max) 3. Radiation (not required) 4. Time (+10*, +1 hour	Radiation Aging, Method		1/	• •
Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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 (+10*, 10 psig max) 3. Radiation (not required) 4. Time (+10*, +1 hour	Materials Suscentible	1 40 1 - 1 . 1 . 1 . 1	V	!
Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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 (+10*, 10 psig max) 3. Radiation (not required) 4. Time (+10*, +1 hour		MARSHARA		į
Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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 (+10*, 10 psig max) 3. Radiation (not required) 4. Time (+10*, +1 hour	(1.0.2.0.2011) (3.2.2.1) (1.0)))			1
Other Age Conditioning (-/4.2/-) Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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 (+10%, 10 psig max) 3. Radiation (not required) 4. Time (+10%, +1 hour	Operational Aging	: uspotates:	Not stales	! (
Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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	(-/4.2/-)	-	, .	:
Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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		1/1	N. todatel	:
Qualified Life Claimed/ Established (5.2.4/4.10/-) Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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	-		The process	.
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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	(-/4.2/-)	; 1		•
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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	Qualified Tife Claimed/	1////	- 1/2/10/10	•
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity 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	~	40 ges	340ge23	!
Normal Ambient Radiation Normal Ambient Humidity 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	, , , , , , , , , , , , , , , , , , , ,	!	Ο .	!
Normal Ambient Humidity 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		Wat day!	1110	
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			NIFF	•
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	Normal Ambient Humidity	!	-	1
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%,	On-Coing Surveillange and	•	NA	•
(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%,	——————————————————————————————————————	Burns	11/1/	•
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%,		Ferry		
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%,		! Program!	. /	•
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	<u>-</u>	:	N/A	
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		! \\/	, ,,,	
(6.0/3.0/3.0) Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%,	(7.0/-/-)	: V :		•
(6.0/3.0/3.0) Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%,	Margin (Conoral)		ula	• • 1
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			NIT	i
Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%,	(000,000,000,		1	!
1. Temperature (+15°F) 2. Pressure (+10%, 10 psig max) 3. Radiation (not required) 4. Time (+10%, +1 hour	Margin (NUREG-0588,	: !		•
2. Pressure (+10%,		! !		!
10 psig max) 3. Radiation (not required) 4. Time (+10%, +1 hour		: :		
3. Radiation : : : : : : : : : : : : : : : : : : :				
(not required) ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !				•
4. Time (+10%, +1 hour ! \(\frac{1}{2} \) !		; \ ;		•
			J	i
	+ function time minimum)	•	V	

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

	,				
NRC REQUIREMENTS		, , , , , , , , , , , , , , , , , , ,	DEFICIENCY		
WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	(X OR NOTE NO:)		
(DOR/0388-1/0388-11)	SUBMITTAL	BOCOMENTATION	1		
ACCIDENT CONDITIONS		of .	. !		
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)	LOCAMSIB	LOCA	1		
Radiation Type	Demond Speta	Gamma	:		
Radiation Dose (rd) (4.1.2/1.4/1.4)	1X108 **	1.2×10	•		
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	NA	0.56 Mrd/h	1		
Proximity to Concentrated Radiation 4.1.2/1.4.6/1.4.6)	NA	NA.	• • • • •		
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	Not shaked	at States	:		
Radiation Dose (Normal + Accident) (4.1.2/-/-)	· 1/2		:		
Plateout Dose Considered (-/1.48/1.48)	yla	\bigvee	:		
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	2×1097	Art States	Note 2		
•	•	•	•		
* in containment					
* in Congs	* in Congratment ? - steams value vinet				
0	•				

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NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE No.
ENVIRONMENTAL PROFILE			<u>.</u>
OF ACCIDENT CONDITIONS	· •	-	:
,	~150/sec	1000	1
Rate of Temp./Press.	10/3/		:
Increase,	1	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	!
Peak: °F/psig/RH/Time	: 325/60/10/10M	280/35/100/3hs	XNOX
Peak: °F/psig/RH/Time	1 1 1 1	240/11/100/3 his	3.
Decrease To: °F/psig/RH/Time	300 /31/10 /5M	240/11/00/37	1
	in the leader	215/0-5/1m/4h	1 ,
Decrease To: °F/psig/RH/Time	: 230/20/10 /4hr		:
	1830-1561 2 - deal	203/0/100/3.5d. 180/0/100/12 L.	!
Decrease To: °F/psig/RH/Time	130 130 130 141	180/0/100/ 12 2.	:
Equipment Surface Tempera-	!	,	•
cure (MSLB) (-/1.2.5.C,	1	NA	:
2.2.6/1.2.5.C, 2.2.6)	!		1
	•		!
Spray Qualification Method	NA		1'
(5.3.2/1.3, 2.2.8/1.3,	1	tlat	
2.2.8)	!	,	<u>:</u>
Spray Composition	· Denni	2000 ppm Burn (H3 BO3)	
(4.1.4/1.3, 2.2.8/	Demin.	1 200 ppm(serre(113 503)	!
1.3, 2.2.8)	wa-	p#-8.2	!
· · · · · · · · · · · · · · · · · · ·			!
Spray Density (gpm/ft ²)	Natstated	0.15	:
Spray Duration .	NA	10 dans	
	•	16 days	!
Submergence Duration	NA	NA	!
(4.1.3/2.2.5/2.2.5)		10177	:
'n-Tonkago Congidovod	1/6		:
In-Leakage Considered	Note	NA	: 1
3.3.2, -, -,	, serving,	,	:
lime to Submergence	stated,	NA	!
	! ",		!
Oust Environment	NA	OV A	:
(-/2.2.11/2.2.11)	: ///	OS St	:

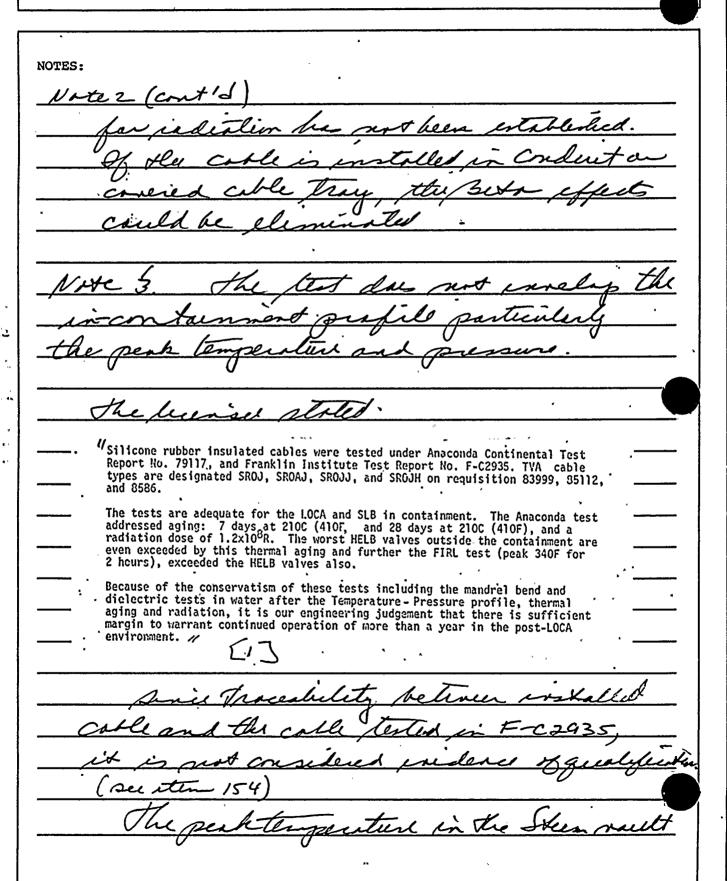
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FRC Assignment No. 13
FRC Task No. 469/470/47/

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NOTES:	•				
Note-1.	•		b)		
_	B. SPECIMEN DESCR	IPTION		-	
- Decemination	on of the cable speci	mane and	their rec	uined -	
-	entials and currents				
energizing pore	entials and currents	are prese	ill III Idr	·,	
	TABLE I	>		_	
CABLE SPEC	CIMEN DESCRIPTION & E	ELECTRICAL	LOADING	•	
•	•	•			
CABLE SPECIMEN NUMBER	DESCRIPTION .	DESIGN	MEASURED OUTSIDE DIAMETER	LOADING -	
NUMBER DESCRIPTION DIAMETER VAC/AMPS 49.1.1-49.1.3 Low voltage power and control cable, 49.3.1-49.3.3 KSG 1/C 12 AWG (7/0305), tinned copper conductor, 49.6.1-49.6.3 45 mil wall of CC-2193, Nuclesil silicone rubber insulation, 6 mil wall of glass braid covering.					
•			<i>*</i>	•	
Note 2 Have judication lesting					
Note 2 Have radiation lasting envelopes the Samma since for					
- applications used and outside puning					
Seta effects					
inside consument would exceed					
	ested value.				
		0			

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NOTES:
Nexte 3 (cont'd)
_ sidenlified by the licensee as 308°F.
This temperature is not exclassed by
the anounda test. The sesson
aging data (accellerated air onen testing)
the stand law and the fine
steam egging test insulateitest
- Stein espisier qualification: Vill
oven aging as would establish
- a qualified lift after which
The design base accident must
te superimposed,
Does therefore concluded that
the required sufile and
seak temperature view not enveloped by the anamala test conducted for TVA.
Comment to the American
17 de la terre
_ res conducted for 1 VV.
· · · · · · · · · · · · · · · · · · ·
•
••

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Task No. 469

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🗹



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,QT, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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	50, 56, 50, 5d, 5e, 5f, 5g, 5h, 5i, 5j
	Co. Ch.
Installed TMI Lessons Learned Implementation Equipment Summary	-027-02-

Maintenance and Replacement Schedule Summary 7a, 7

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/ ろ</u>ら

SUMMARY	OF LICENSEE RESPONSES TO THE NR	SER - ONLY CHECKED ITEMS ARE APPLICABLE
_X Ine	e Licensee (has/ has not) provided	a response to the SER concerns.
que	e Licensee (has/ has not) specific hlified and/or will function when vironmental service conditions.	ally stated that the equipment is . exposed to the applicable DBE
	Licensee has presented informatestanding qualification deficience	
	e. Licensee (has/ has not) proposed em whose qualification has not be	a corrective action for this equipment en fully established.
	Justification for interim opera Licensee for this equipment item	tion (has/ has not) been provided by the
×	Corrective action specified by	the Licensee:
	Equipment replacement with a Equipment modification Equipment relocation above a Relocate or shield equipment Verify qualification by add Equipment relocation to a man Qualification testing of equipment (submergence level t from radiation source itional (testing/ analysis) ild environment
		information for this equipment item s for justification for interim
X	The Licensee (has/has-not) proving corrective action. (Schedule faction See Section 5	
	Licensee states that the equipmed/or should be exempted from envi	ent item does not require qualification conmental qualification.
	ATION OF RESULTANT NRC QUALIFICAT LED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
a Qu	nalified odification nalification Not Established ot Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



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FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARS	FORM
•	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	- haldahad V
Adequate Similarity Between Equipment and Test Specimen Est	ablished X
Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requ	uired) X
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
oPeak Temperature Adequate	× × ×
o Peak Pressure Adequate	<u> </u>
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	<u> </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)	•
	· · · · · · · · · · · · · · · · · · ·
	DESIGNATION:
NRC QUALIFICATION CATEGORY	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 Qualif	led Life
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Re	view
IV Documentation Not Made Available	

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IIPMENT 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 EEEOR 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 EEEOR (R1).

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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	•		************
EQUIPMENT EN	VIRONMENTAL QU	JALIFICATION REVIEW	4
Criteria: DOR Guidelines X	; NUREG-0588,	Cat. I ; NUREG-0588, Cat.	II
• ,		•	
NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE	OUALIFICATION	EFICIENCY (X OR
(DOR/0588-I/0588-II)	SUBMITTAL	-	NOTE NO.)
		-	
EQUIPMENT DESCRIPTION Equipment Type	Bresene Switch	stata - O-ring.	• ! •
Manufacturer's Name	! ATTI: - O Praise	stata - O-ring.	!
(5.2.2/-/-)	There are any	7	: X
Model Number (5.2.2/-/-) .	6N-AA21	ISN/AAY	wółe3
Serial Number	NA	NA	• ! !
Features/Mounting	· Watnessel	perisontal.	:
(5.2.6/-/-)		J. J.	!
Connections/Interfaces (5.2.6/-/-)	War stated	Not Stated.	
Location/Elevation	! Reader Buldy	· N/A	! !-
Equipment ID No.	Vanies	NA	!
QUALIFICATION REPORT			• 1
(8.0/5.0/5.0)	!		•
Report ID Number	31203-2	30203-2	1
Report Date .	NA	20/Navember 1973	!
Issued by	NA	Vehing For	•
Prepared for	NA	Belilone Co.	•
Referenced Reports	N/K	N/O.	•
Qualification Method	1	fish	1
(5.1, 5.3/2.1, 2.4/2.1, 2.4)	NA.	: 7220	:
QUALIFICATION TEST PROGRAM	:	1	!
Functional Test Description	NA	1 At sunt	: _
(5.2.5/2.2.9/2.2.9)	: ////	culling	:
Operating Conditions	:	J - I	
(-/2.2.10/2.2.10)	Nat	:	:
Load/Cycles/Voltage/	stated.	NIA	1
Current/Freq.		!	
	•		

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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)	NA	Not stated	1
Accuracy (5.2.5/-/-)	NA	Not stated	:
Number of Specimens	NA	2	1
Test Instruments Calibrated	NA	yes " yes	!
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	setime	NA	
Test Duration (5.2.1/-/-)	N/A.	6 hours	•
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	Nat stated	NIA	! !
quired Function Time	30days	NA	!
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	MA	Frenetions	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	NA	Sterm	
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	Notates	Nat stated	*
Material Aging Evaluation (7.0/-/-) aterials Susceptible (Thermal) (5.2.4, 7.0/-/-)	Not steel Nostated	: : : :	:
Radiation Aging, Type	Norstoles	!	:

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NRC REQUIREMENTS	LICENSEE	QUALIFICATION	DEFICIENCY (X OR NOTE NO.)
(DOR/0588-I/0588-II)	SUBMITTAL !	DOCUMENTATION	:
Radiation Aging, Dose (rd)	Not stated	mon?	:
Radiation Aging, Dose Rate	; 1 ;		:
Radiation Aging, Method	. ↓	;	
Materials Süsceptible (Radiation) (5.2.4, 7.0/-/-)	Notpotates		1 • •
Operational Aging (-/4.2/-)			
Other Age Conditioning (-/4.2/-)	<i>y</i>	\int	1
Qualified Life Claimed/ Established (5.2.4/4.10/-)	Not posited	not states.	X
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	[Nit states	NB	
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	Beners Ferry Program	NA	•
On-Going Analysis of Failures and Degradation (7.0/-/-)	Program		1
Margin (General) (6.0/3.0/3.0)	MA		
Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%,	NA		1
10 psig max) 3. Radiation	: !		• !
<pre>(not required) 4. Time (+10%, +1 hour</pre>		Ψ	:
+ Eunction time minimum,	:		:

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>15</u>6

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
ACCIDENT CONDITIONS			
IOCA/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	Games		
Radiation Dose (rd) (4.1.2/1.4/1.4)	3X10 ^{>}		Xxxx 2
Radiation Dose Rate (rd/hr) Radiation Qual. Method ~(5.3.1/-/-)	Nat states		
Proximity to Concentrated diation .1.2/1.4.6/1.4.6)	Nat States		
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)	1	\downarrow	
	u state	o this a mate	wal

the beine stated that a material enoberation had been conducted. but did not preside any data.

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION . DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS	1		:
Rate of Temp./Press. Increase	ND	sex 212/0.25/100/th ambient.	1
Peak: °F/psig/RH/Time	300/13/1009/25	sec 212/0.25/100/uth	is Nike 1
Decrease To: °F/psig/RH/Time	228 /0/101/201.	ambient.	X
Decrease To: °F/psig/RH/Time	dont not	1	:
Decrease To: °F/psig/RH/Time	States	•	•
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	MA	NA	
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)	1		
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)	. ↓	<u>.</u>	: : :

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•
NOTES:
1. The test profile does not envelope the environmental
service conditions specified by the licensee.
& the because EEqus states.
The radiation dose of 1 X 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 X 10 ⁶ rad. A
•
specific details on the analysis
energie details of the anolysis
indicases a required dipe of 3 ×1070
which is not inveloped
by the analysis. Therefore radiation
and idication has not been established
qualification has not been established
· 3. The licensee should provide evidence of similarity of
the test specimen to that which is inetalled

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



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

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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d -
System Consideration Review	4a, 4b, 4c, 4d, Ac, 4f.
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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SUM	IARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
	The qua	Licensee (has/has not) provided a response to the SER concerns. Licensee (has/has not) specifically stated that the equipment is lified and/or will function when exposed to the applicable DBE ironmental service conditions.
	The	Licensee has presented information which shows there are no standing qualification deficiencies.
		Licensee (has/has not) proposed a corrective action for this equipment 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:
<u> </u>		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)
		Licensee states that the equipment item does not require qualification for should be exempted from environmental qualification.
		TION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW ED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Mod Qua	alified dification alification Not Established E Qualified III.a Exempt III.b Not in Scope IV Documentation Not Available



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FRC Task No. 4/69

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ${\it L}_{\rm I}$



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>an</u>
•		DESIGNATION:
NRC REQUIR	REMENTS	X = DEFICIENCY
Documented Adequate S Aging Degr Qualified Program Es Criteria R Criteria R O Pea O Dur O Req O Ste Criteria R Test Durat	Evidence of Qualification Adequate Similarity Between Equipment and Test Specimen Establication Evaluated Adequately Life or Replacement Schedule Established (If Required Stablished to Identify Aging Degradation Regarding Aging Simulation Satisfied (If Required) Regarding Temperature/Pressure Exposure: ak Temperature Adequate ak Pressure Adequate ak Pressure Adequate quired Profile Enveloped Adequately eam Exposure (If Required) Adequate Regarding Spray Satisfied Regarding Radiation Satisfied Regarding Radiation Satisfied Regarding Test Sequence Satisfied Regarding Test Failures or Severe Anomalies) Satisfied Regarding Functional Testing Satisfied Regarding Instrument Accuracy Satisfied Regarding Instrument Accuracy Satisfied Regarding Margins Satisfied (NUREG-0588, Cat. I)	_X_
NRC QUALIE	FICATION CATEGORY	DESIGNATION: $X = CATEGORY$
	•	
I.a Eq	quipment Qualified	
	quipment Qualification Pending Modification	
	quipment Qualification Not Established	
	quipment Not Qualified	
OI	quipment Satisfies All Requirements Except Qualified r Replacement Schedule Justified	_X_
	quipment Exempt From Qualification	
	quipment Not in the Scope of the Qualification Review	
IV Do	ocumentation Not Made Available	



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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 167

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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 (RO) or February (R1) submittal of the BFN EEDQR to NRC.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 3



"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 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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VIPMENT 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 .

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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	-6ay-6b

Maintenance and Replacement Schedule Summary 7a, 7b,

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		*
SUMM	MARY OF LICENSEE RESPONSES TO THE NE	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X '	The Licensee (has/has-not) provided The Licensee (has/has-not) specific	cally stated that the equipment is
	qualified—and/or will function where environmental service conditions.	exposed to the applicable DBE
	The Licensee has presented informat outstanding qualification deficient	
	The Licensee (has/has-not) proposed item whose qualification has not be	d a corrective action for this equipment een fully established.
•	Justification for interim opera	ation (has/h as not) been provided by the em.
•	Corrective action specified by	the Licensee:
	Equipment replacement with Equipment modification	
	Equipment relocation above Relocate or shield equipmen	
	X Verify qualification by add	
	Equipment relocation to a m	
	Qualification testing of eq	<pre>juipment in progress</pre>
•		r information for this equipment item is for justification for interim
•		vided a schedule for the proposed for accomplishing the corrective
	The Licensee states that the equipmend/or should be exempted from envi	ment item does not require qualification ironmental qualification.
	· · · · · · · · · · · · · · · · · · ·	FION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
II.a	Qualified Modification Qualification Not Established Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available
	•	

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establishaging 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies	<u> </u>
(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 Li	<u>×</u>
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.



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 EEFOR 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 EEFOR (R1).

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IPMENT 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.

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. 2



Equipment Item No. 159

Solenoid Valves Located in the Reactor Building

Atkomatic Model 15830WP-VPI RHR Service Water (FSV-23-56)

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)

RTPH CS, A S, (R), M, I, QM RPN, EXN, SEN, QI RPS, None,

Not stated, Not applicable

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	1a
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation	6a, 6b .

Maintenance and Replacement Schedule Summary 72, 76, 7c

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	· ·	
SUMMAR	RY OF LICENSEE RESPONSES TO THE NRO	SER - ONLY CHECKED ITEMS ARE APPLICABLE
Tn	ne Licensee (has/ has-not) provided	a response to the SER concerns.
-qu	ne Licensee (has/h as no t) specificandified and/or will function when avironmental service conditions.	ally stated that the equipment is exposed to the applicable DBE
	ne Licensee has presented information testanding qualification deficience	
	ne Licensee (has/h as not) proposed em whose qualification has not bee	a corrective action for this equipment in fully established.
X	Justification for interim operat Licensee for this equipment item	ion (has /has-n oţ) been provided by the
X	Corrective action specified by t	the Licensee:
	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment X Verify qualification by additionation to a minum Qualification testing of equipment (submergence level : from radiation source :tional (testing/analysis) .ld environment
	The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
X	The Licensee (Mas / hac not) provi corrective action. (Schedule for action See Seehow	or accomplishing the corrective
	ne Licensee states that the equipmend/or should be exempted from envir	ent item does not require qualification conmental qualification.
	NATION OF RESULTANT NRC QUALIFICATE CLED ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
μ.b M L.a Q	Qualified Modification Qualification Not Established Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

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1	
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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
• ——	SIGNATION: 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 Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	a	
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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IPMENT 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 EEEOR 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 EEEOR (R1).

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. 🗸

Equipment Item No. 160 Penetration Assembly GE Model NSO4 Electrical Distribution Licensee References 25, 812 Required Operating Time: Continuous TER Checksheet No. 160

Licensee Submittal: Page EEB-76-0024 [1]

20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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, 5i, 5i, 5i, 5i, 5i, 5i, 5i
Installed TMI Lessons Learned Implementation Equipment Summary	.6a, .6b

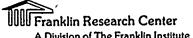


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FRC Project No. C5257
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FRC Task No. 469

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SUMI	MARY	OF LICENS	EE RESPON	ISES TO TI	HE NRC	SER -	ONLY	CHECKE	DITEM	S ARE	APPLICABLE
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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46 9

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NRC QUALIFICATION CATEGORY X = CAT	 -
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	<u>K</u>



Page 3a

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 162

LICENSEE RESPONSE TO NRC SER

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.



NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

Checksheets 5a - 5g 5ii - 5i have been removed due to the proprietary nature of information contained therein.

Franklin Research Center

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NRC Contract No. NRC-03-79-118
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UIPMENT 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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
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System Consideration Review .	4a, 4b, 4c, 4d, 4c, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5c, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	Ga, Gb ·
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NRC Contract No. NRC-03-79-118
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IPMENT 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 EEEOR 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 EEEOR (R1).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. &



"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 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 censee's response to the NRC SER, it is appropriate to highlight for the ensee 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 <u>circled</u> 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

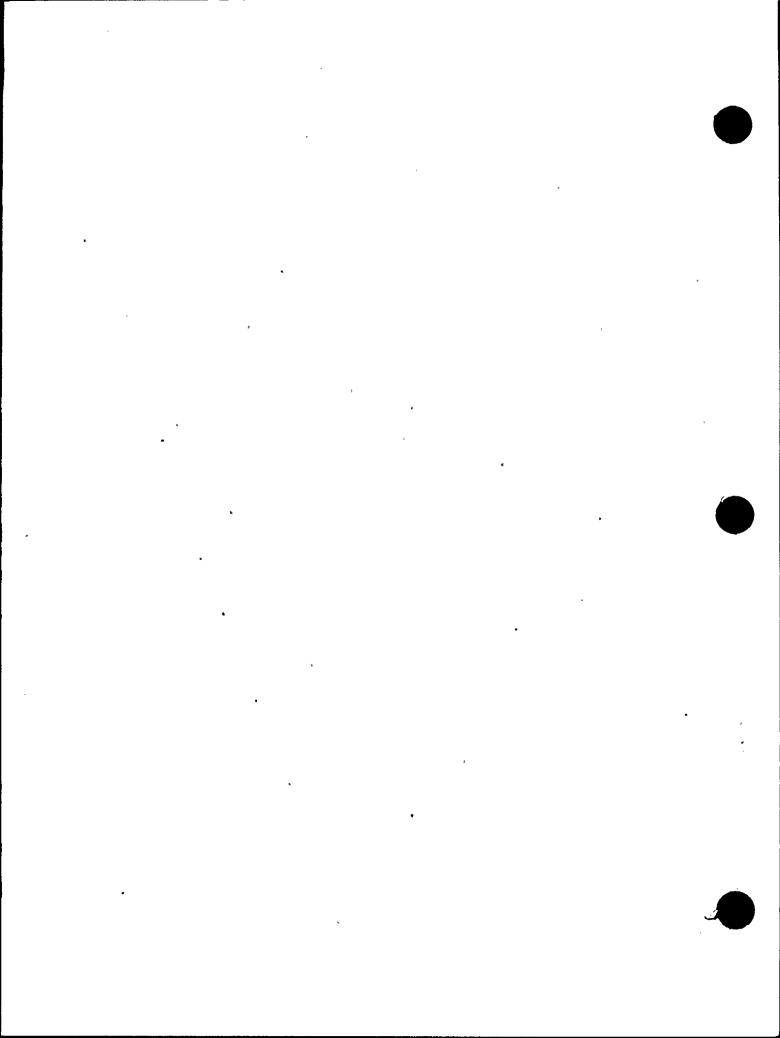


the BWS; therefore, the deficiencies noted will be addressed when this testing is complete. This status is reflected on the Evaluation Work Sheet and Table 5.2 or reflected in Revision 2 of the EEEQR contained in Attachment 3. The schedule for testing was given in Wyle Laboratories Qualification Program 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."



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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 orts 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.

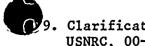




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- 13. Office of Nuclear Reactor Regulation
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APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

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.O (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 Licenseenumbered 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 steamline 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 (RECU) 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 RWCU 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 RWCU 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 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. 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

Room No.	Room Name	Plant Location* (Sheet 1-6)	
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)

Room No.	Room Name	Plant Location* (Sheet 1-6)	
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.O - Sheet 1 of 6

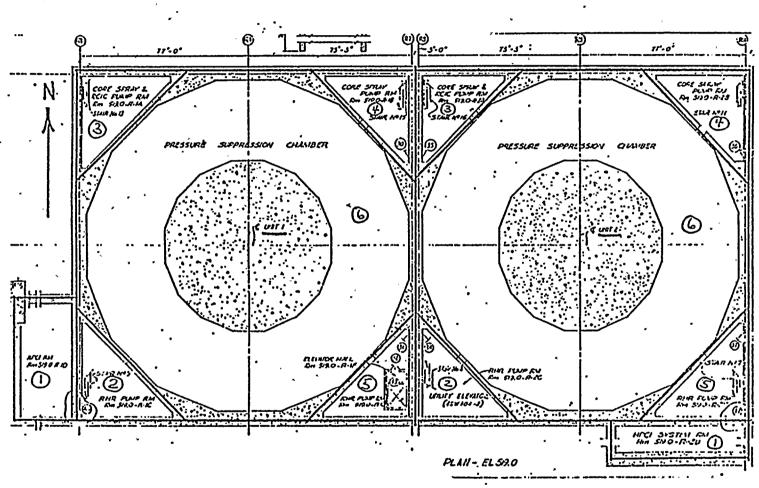
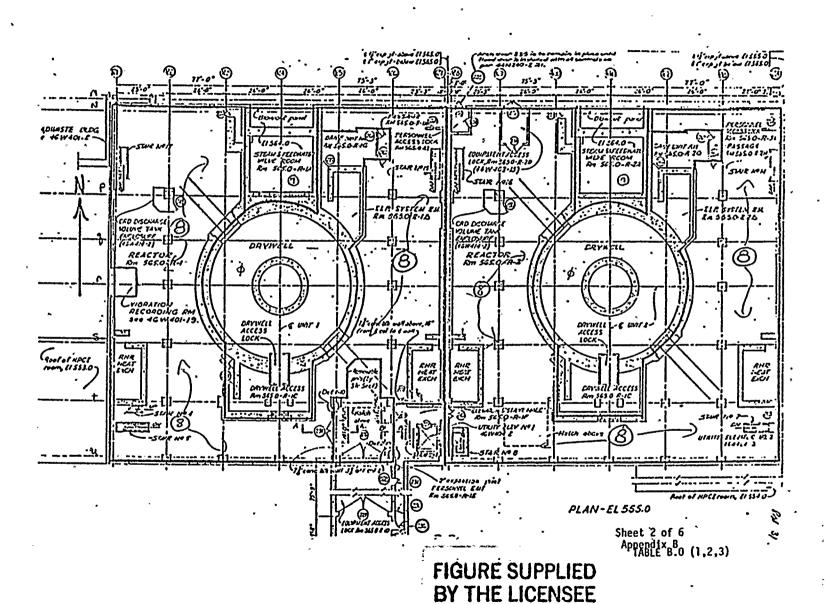
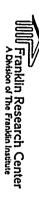
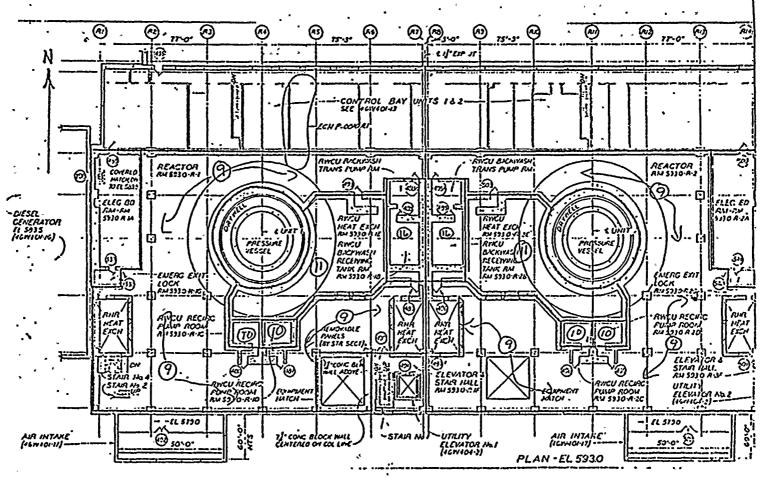


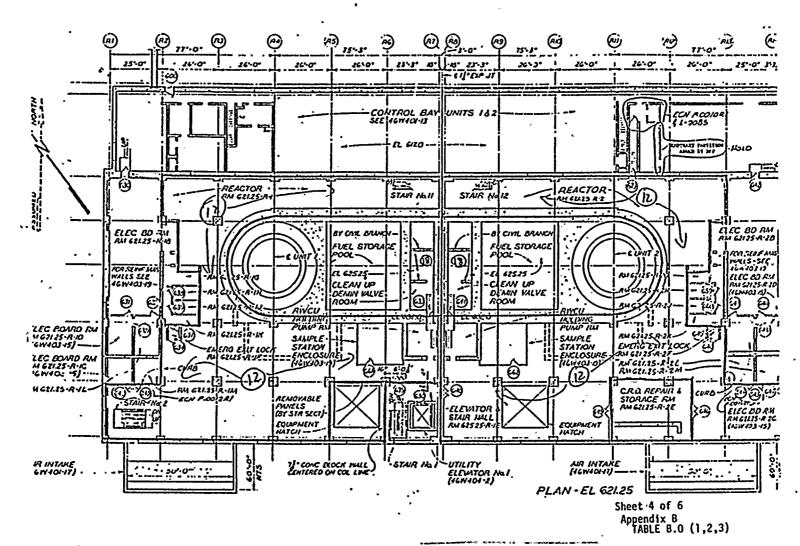
FIGURE SUPPLIED BY THE LICENSEE Sheet 1 of 6
Appendix B
TABLE B.0 (1,2,3)



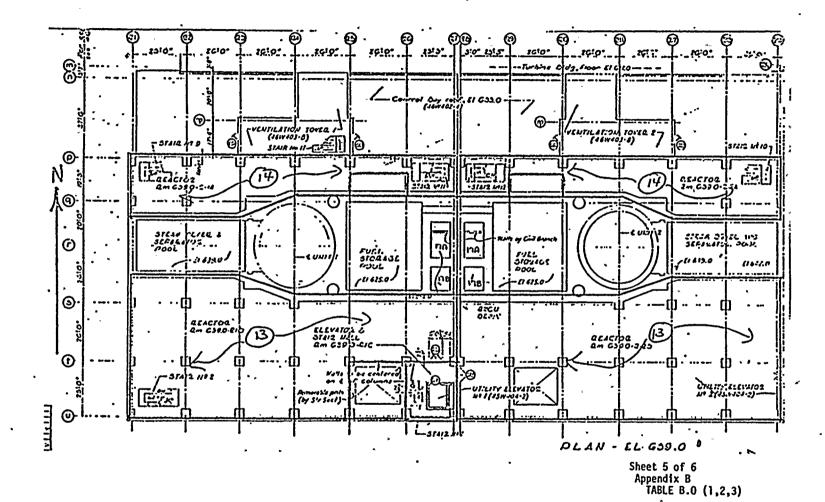


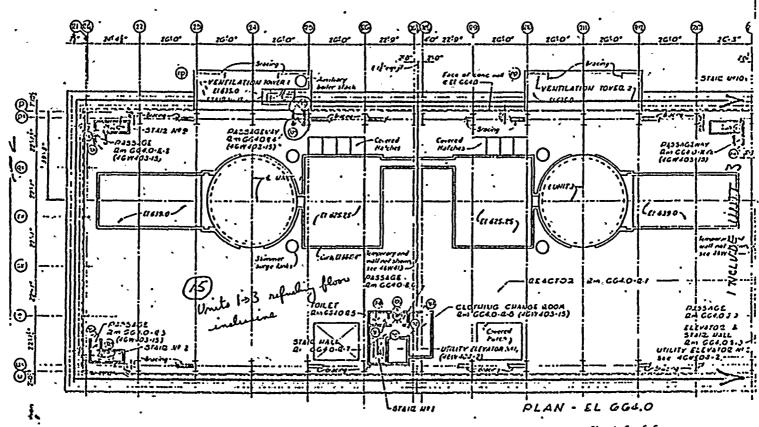


Sheet 3 of 6 Appendix B TABLE B.O (1,2,3)



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Sheet 6 of 6 Appendix B TABLE B.O (1,2,3)

TABLE B.00 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS*

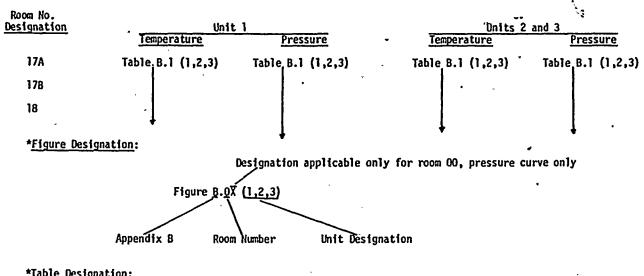
Room No. <u>Designation</u>	Unit 1 ~		Units 2 and 3	
	Temperature	Pressure	Temperature	Pressure
0	Figure B.O (1,2,3)	Figure B.O (1,2,3)	Figure B.O (1,2,3)	Figure B.O (1,2,3)
00 (Wetwell)	B.00 (1,2,3)	B.00.0 _(1,2,3)	B.00 (1,2,3)	B.00.0 (1,2,3)
1	B.1 (1)	Table B.1 (1,2,3)	B.1 (2,3)	Table B.1 (1,2,3)
2 -	B.2 (1)		8.2 (2,3)	
3	B.3 (1)		8.3 (2,3)	
4	B.4 (1)		B.4 (2,3)	
5	B.5 (1)		8.5 (2,3)	
6	B.6 (1)		B.6 (2,3)	V
. 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)**	1	B.16 (2,3)**	. 🗼

^{**}Same as room 9 for units 1, 2, and 3

Table A-2. Licensee Table B.00 (Cont.)

TABLE B.00 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS* (Continued)



*Table Designation:

Table number 1 (not unit designation)

Table B. T (1,2,3)

Appendix B, Unit designation



- TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (^O F)	Peak Humidity (\$)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Outside		<u> </u>	2 5	ATM 11.4	96-100 Na	100 NA -	5 x 10 ² Na	NA NA
Reactor Building	541.5	Drywell	· 1 2 3	15.6 15.6 69.4	140 150 325	100 100 100	1 x 108 1 x 108 NA	NA NA Center 8 1 x 109 2 x 109 Edge 7 4 x 109 4 x 109
			4 5	NA 15.6	NA NA	NA NA	NA NA	NA NA
	519 . 0	Wetwell	1 2 3 4 5	ATM ATM 43.2 NA ATM	95 105 158 Na Na	100 100 100 NA NA	ан Ал Ал Ал Ал	NA NA 2 × 10 ⁸ NS NA
•	519 . 0	HPCI Room	1 2 3 4 5	ATH* ATH* ATH* 15.7 11.4	95 105 150 300 Na	98 98 100 100 NA	2 x 10 ⁴ 2 x 10 ⁴ NA NA NA	NA NA 3 × 10 ⁴ NS NA
	519.0 `	SW Pump Room	1 2 3 4	ATM* ATM* ATM* 15.0	95*** 105*** 160 292(U1) 158(U2&3) NA	98 98 100 100	2 x 10 ⁴ 2 x 10 ⁴ NA NA	NA NA 3 x 10 ⁷ NS

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TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (^O F)	Peak Humidity (\$)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor Building	519.0	NW Pump Room	1 2	ATH*	95 105	98 98	2 x 10 ⁴ 2 x 10 ⁴	NA NA 7
			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	1	ATH*	95	98	2 x 10 ⁴	NA
		Room	2	ATM*	105	- 98	2 x 10 ⁴	37.A
			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
	519.0	SE Pump	1	ATM [®]	95	98	2 x 10 4	NA
		Room	2 .	*MTA	105	98	2 x 10"	NA ~
			3	MTA	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	1	ATH*	95***	98	1.5 x 10 ⁵	NA
		Suppression	2	*MTA	105***	98	1.5 x 10°	NA 7
		Chamber .	3	HTA	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	1	ĕMTA .	140	98	$2 \times 10_6^6$	NA
		Valve Vault	2 3	*HTA	160	98	2 x 10°	NA h
				MTA	140	100	NA	3 x 10 ⁴
			4	21.5	308 *	100	NA	ns
			5	11.4	NA	NA	NA	NA

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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 (1)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor Building	565	General Floor Area	1 2 3	ATM* ATM* ATM	90 100 140	98 98 100	1 × 10 ⁵ 1 × 10 ⁵ NA	NA NA 2.1 x 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 2	ATM [®] «	90 100	98 98	2 x 10 4 2 x 10	NA NA
			2 3 4	ATM 15.0	135 214(U1)	100 100	NA NA	2.1 x 10 ⁷ **
	•		5	11.4	211(U2&3) NA	NA.	NA NA	NA
	593	.Reactor Water	•				_	
	232	Cleanup Pump	2	[#] MTA [#] MTA	120 · 130	98 98	1.4 x 10 ⁷ 1.4 x 10 ⁷	NA NA
		Rooms	2 3 4	ATM 15.9	135 220	100 100	NA . NA	3 x 10 ⁴ NS
			5	11.4	NA	NA _	NA	NA
	593	Heat Exchanger Room	1 2	emta Pmta	125 135	98 98	1.4×10^{7} 1.4×10^{7}	NA NA 7
			2 3 4	ATM 18.2	135 227(U1) 221(U2&3)	100 100	na na •	3 x 10 ⁷ . NS
			5	11.4	NA NA	. NA	NA ³⁻³	NA
	621	General Floor	1	ATH*	90	. 98	1×10^{3}	NA
		Area	2	#HTA	100	98	1 x 10 ³	NA _{It}
			2 3 4	MTA	185	100	NA	3 x 10 ⁴
			•	. 15.0	174(U1) 199(U2&3)	100	NA	нS
			5	11.4	NA	NA	NA	AK

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 (^O F)	Peak Humidity (1)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor	639	General Floor	1	*MTA	90	. 98	1 x 103	NA
Building	V 33	Area (South)		*HTA	100	98	1 x 10 ³	***
244442110		04 (5040)	3	ATM	130	100	na	3 x 10 ⁴
		•	2 3 4	15.0	135(U1) 178(U2&3)	100	XA	NS
			* 5	11.4	NA	NA	AK	NA
	639 -	General Floor	1	*****	90 ,	98	1 x 103	NA
	039 .	Area (North)		ATM*	100	98	1 x 10 ³	47.4
		Area (north)	2 3	HTA	130	100	NA.	3 x 10 ⁴
			3 4	15.0	, 153(U1)	100	NA NA	NS
•			•		174(U2&3)			
		•	5	11.4	NA	NA	NA	NA
	664	Refueling Floor	1	#MTA	90 ×	98	1 x 10 ³ 1 x 10 ³	NA
	001	werecrang races		*HTA	100	98	1 x 10 ³	374
			2 3 4	15.0	120	100	XX.	3 x 10 ⁴
			j Li	HA .	na	NA	HA	หร
			5	11.4	, NA	NA	ăК	NA
			,	*11.7	, ···n	****		••••
	593.0	RWCU BW	1	*MTA	95	98	5.3 x 10 ⁷ 5.3 x 10 ⁷	NA
		Receiving Tank	2	ATH [±]	105	98	5.3 x 10'	na ,
		Room	2 3 4	MTA	135	100	" NA	3 x 10 ⁴
			4	15.0	214(U1)	100	na	ns
				•	211(01&2)		-44	
			5	11.4	HA	NA	r 4	HA
	639.0	RWCU	1	ATH# ·	90	90	2.1 x 108	NA
		Demineralizer	2	ATH*	100	90	2.1 x 10°	na _u
		A	2 3 4	- ATH	100	90	ЖĄ	3 x 10"
			ğ	ATM	105	90	НA	NS
	-		5	11.4	NA	NA	AK	NA
			-					





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	639.0	RWCU	1	#MTA	90	90	2.1 x 10 ⁸	NA
Building		Demineralizer	2	ATM#	100	90	2.1 x 10 ⁸	MA
		В	· 3	MTA	100	90	NA	3 x 10 ⁴
			4	ATH	105	90	NA	NS
			5	11.4	NA	NA	NA	NA
	621.5°	Cleanup	1	*HTA	95	90	1.7 x 10 ⁵	NA
	02113	Demineralizer	,	ATH*	105	90	1.7 x 10 ⁵	NA .
		Valve Room	5	ATH	105			
		MATAG VOOM	3			90	NA	
			4	HTA	110	90	NA	NS
			5	11.4	NA	- NA	NA	NA

FIGURE SUPPLIED BY THE LICENSEE TER-C5257-469

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Table A-3. Licensee Table 1 (Cont.)

NOTES:

- A. Operational condition definitions:
 - 1. Normal average day.
 - 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. ATH* 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 valves 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 appleiable for this operating condition.

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FIGURE SUPPLIED BY THE LICENSEE

D E :

Table A-4. Licensee Table B.1 (1,2,3)

TABLE B.1 (1,2,3)

TEMPERATURE -- PRESSURE (Selected Areas)

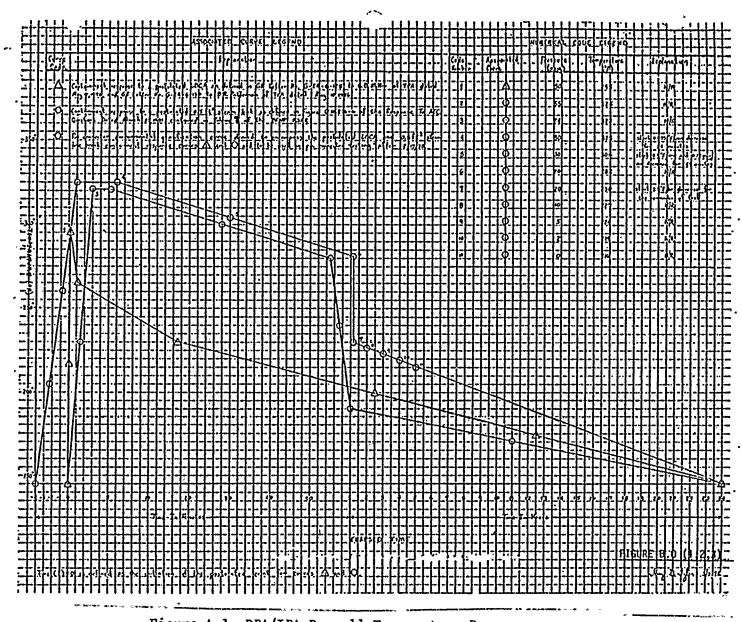
	Unit 1	<u>Ur</u>	nit 2 & 3
Time	Compartment (1)	Time	Compartment (1),(10),&(11)
2 sec 5 ". 11 " 30 " 50 "	1.3 psig 1.1 " .8 " .1 "	Same a	as for unit 1
Time	Compartment (10)	Time	All Remaining Area
.02 sec .6 m 5' m 45 m 47, m	2.4 psig .8 m 1.3 m 1.3 m .2 m	1 sec 30 " 45 " 50 " 120 "	.1 psig .5 # .5 # .1 #
Time	Compartment (11)		
1 sec 10 # 45 # 47 # 55 #	2.4 psig 3.4 ** 3.8 ** .4 **	All t	Units Compartment 7 Steam Valve Vault
120 "	0. " .	.1 sec 3 4 n 5 n	1.7 psig 7.1 # 4.5 "
Time 1 " - 30 "	All Remaining Areas .1 psig .5 "	5 # 6 # 10 # 150 #	2.7 # 2.0 # 1.8 # 1.8 ##
45 m 50 m	.6 m	155	140

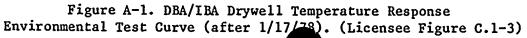
Temperature-Pressure (Compartment 15, 17A, 17B, 18) - All Units

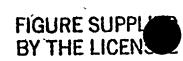
Room No.	Temperature (° F)	Pressure (PSIA)
15	120	15.0
17A	105	Atm.
17B	105	Atm.
18	110	Atm.

FIGURE SUPPLIED BY THE LICENSEE









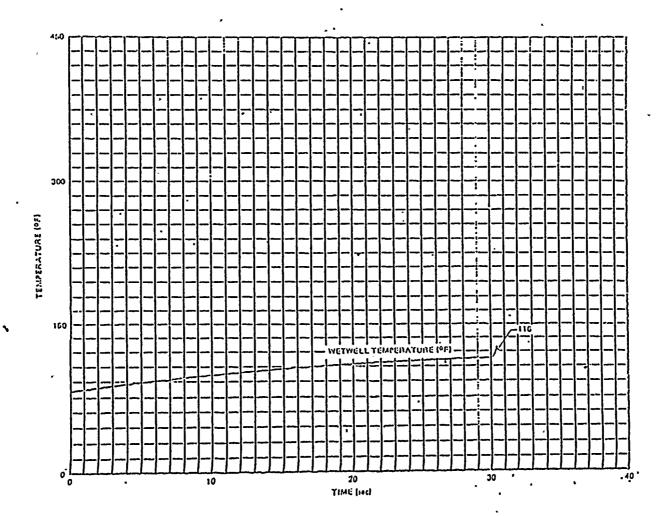


Figure A-2. DBA Wetwell Temperature Response (Licensee Figure C.1-1)

FIGURE SUPPLIED BY THE LICENSEE

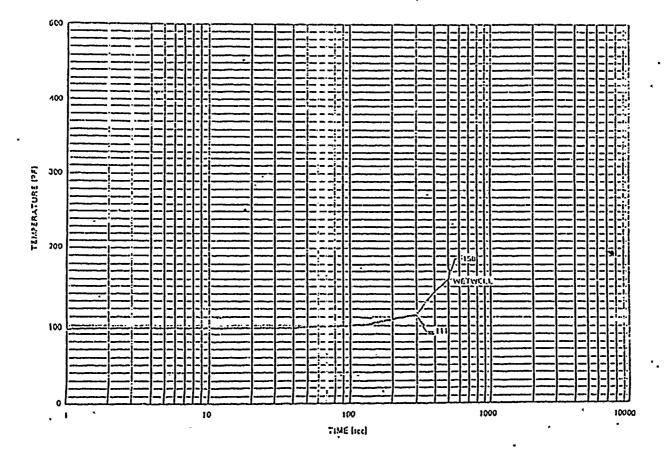


Figure A-3. IBA Wetwell Temperature Response (Licensee Figure C.1-2)

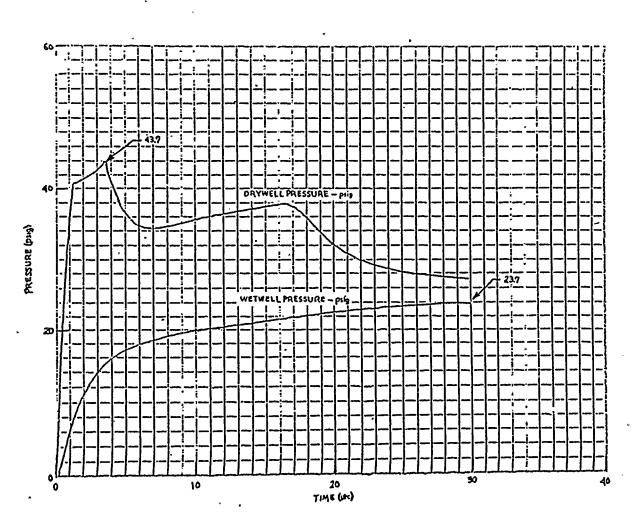


Figure A-4. DBA Containment Pressure Response (Licensee Figure C.1-4)

FIGURE SUPPLIED BY THE LICENSEE

A-2

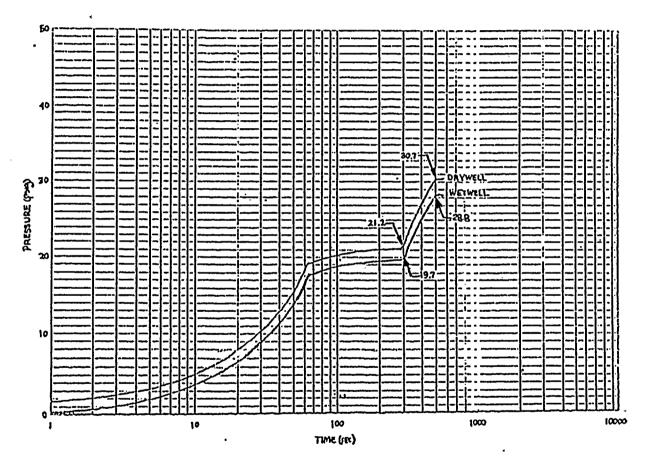


Figure A-5. IBA Containment Pressure Response (Licensee Figure C.1-5)

FIGURE SUPPLIED BY THE LICENSEE



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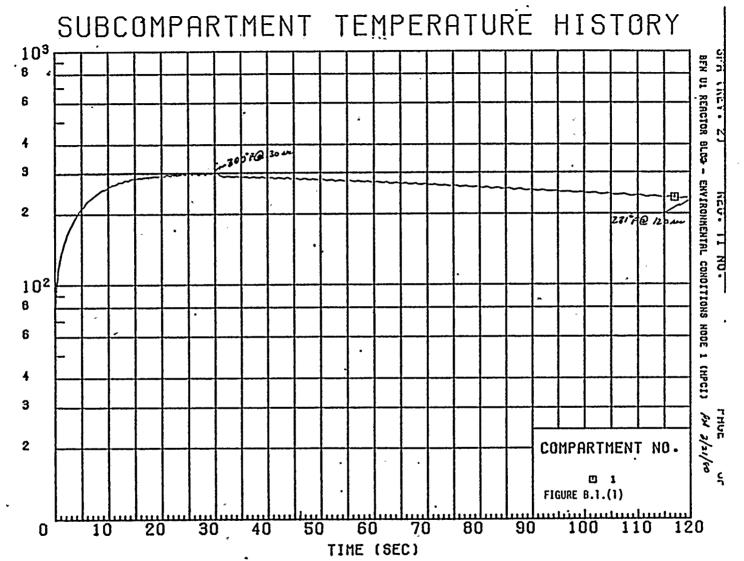


Figure A-6. Licensee Figure B.1 (1)

FIGURE SUPPLIED BY THE LICENSEE

TEMPERATURE (DEG. F)

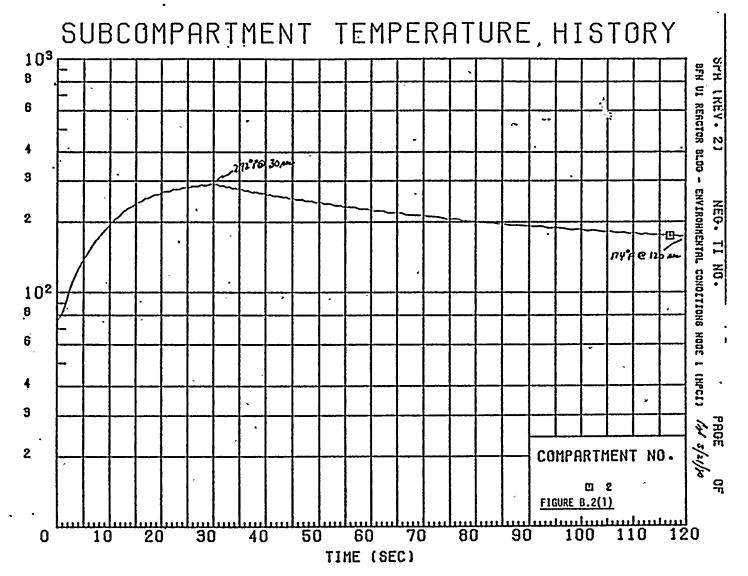


Figure A-7. Licance Figure B.2 (1)

FIGURE SUPPLIED BY THE LICENSEE

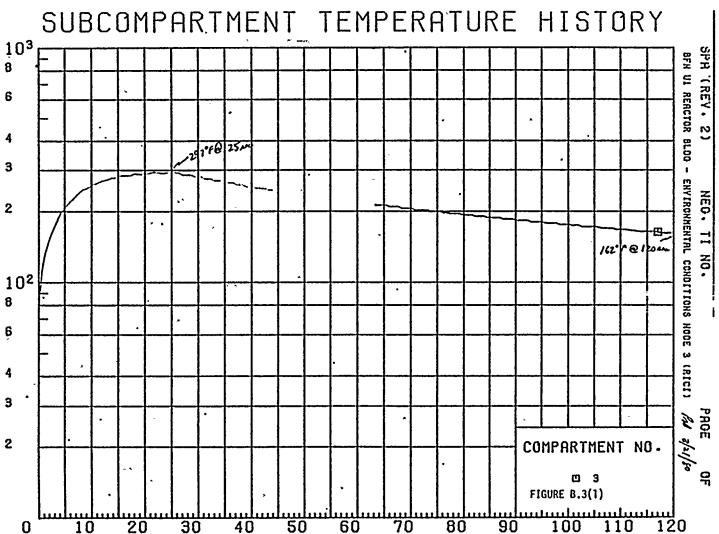


Figure A-8. Licensee Figure B.3 (1)

TIME (SEC)

FIGURE SUPPLIED BY THE LICENSEE TER-C5257-469

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TEMPERATURE (DEG.

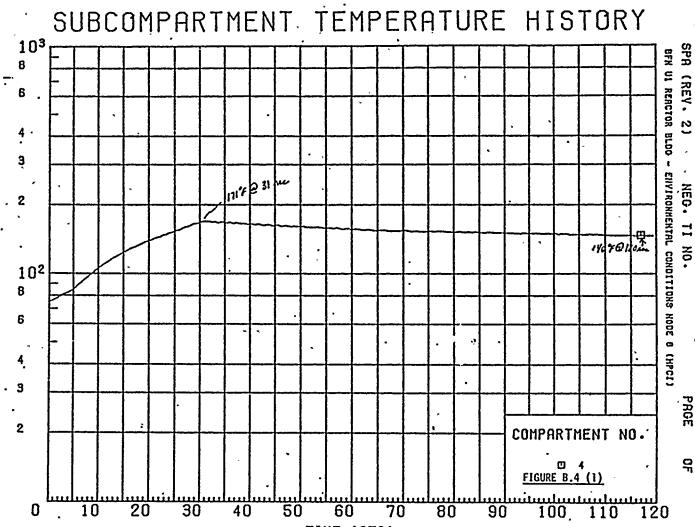


Figure A-9. Licensee Figure B.4 (1)

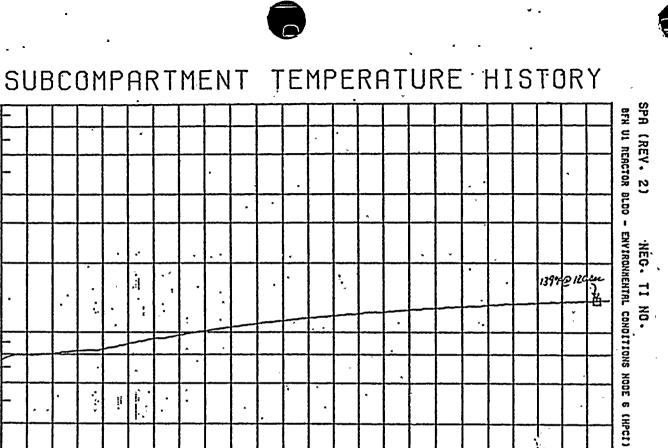


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TEMPERATURE (DEG.

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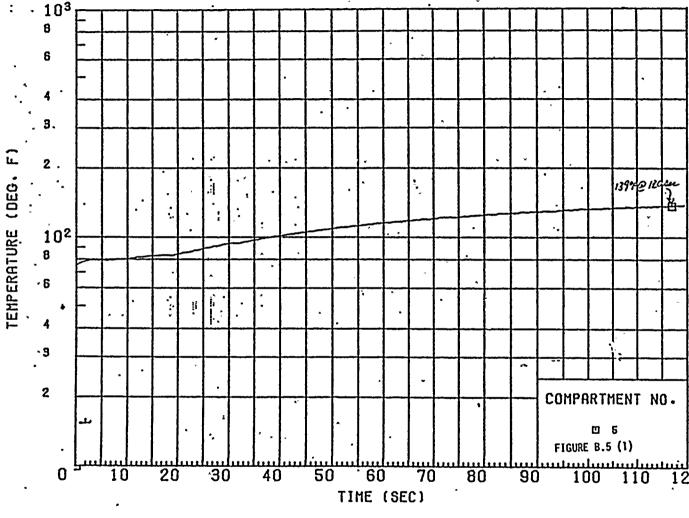


Figure A-10. Licensee Figure B.5 (1)

FIGURE SUPPLIED BY THE LICENSEE

TER-C5257-469

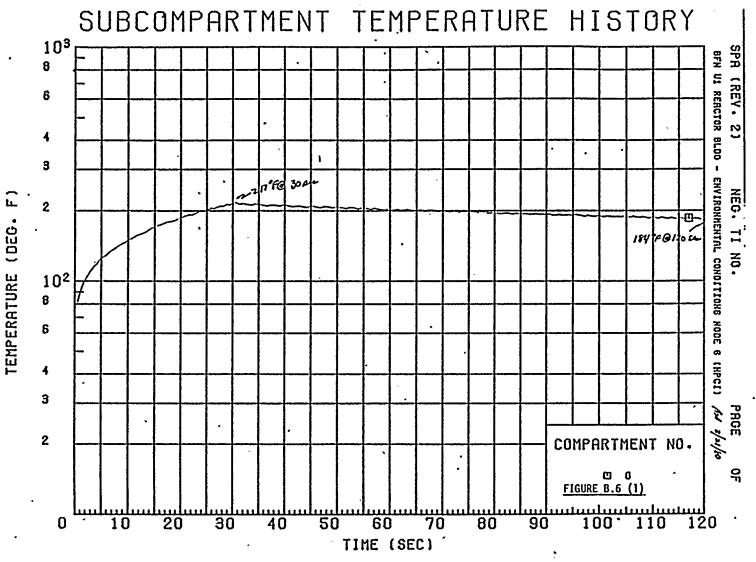


Figure A-11. Licensee Figure B.6 (1)

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Figure A-12. Licensee Figure B.7 (1)

FIGURE SUPPLIED BY THE LICENSEE



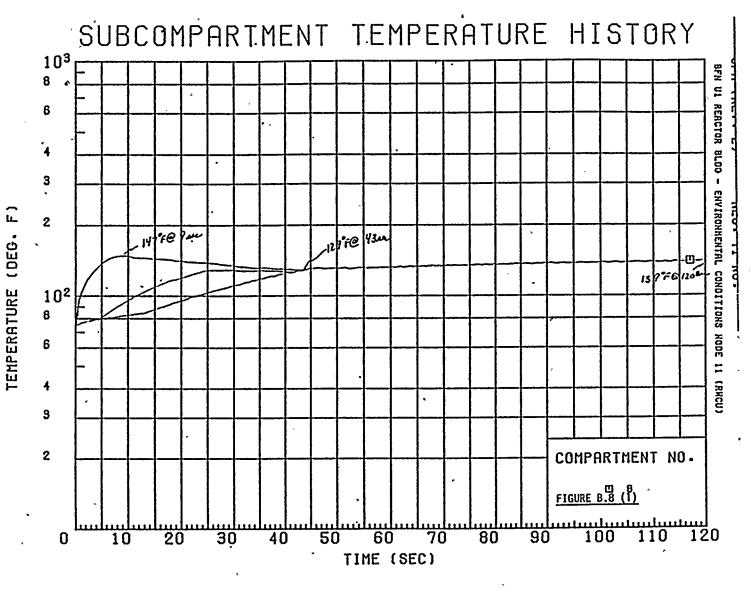


Figure A-13. Licensee Figure B.8 (1)

FIGURE SUPPLIED

BY THE LICENSEE



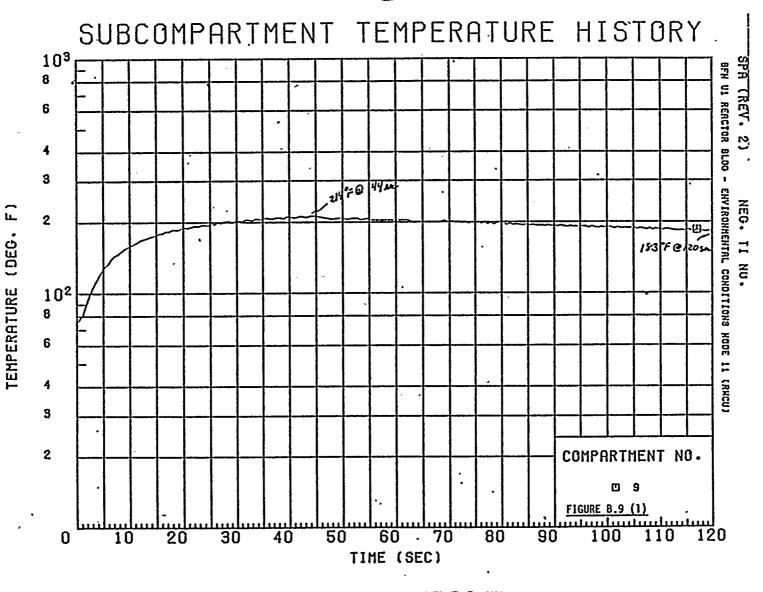


Figure A-14. Licensee Figure B.9 (1)

Center

-37

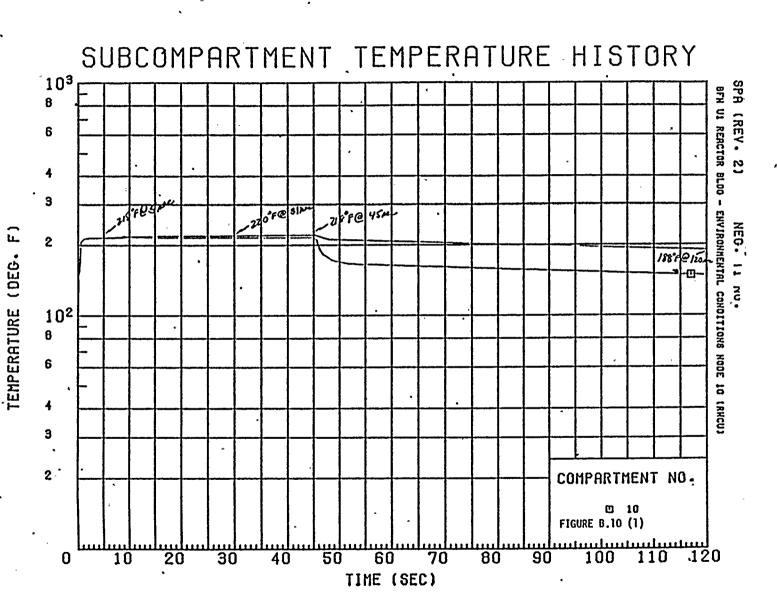


Figure A-15. Licerce Figure B.10 (1) FIGURE SUPPLIED

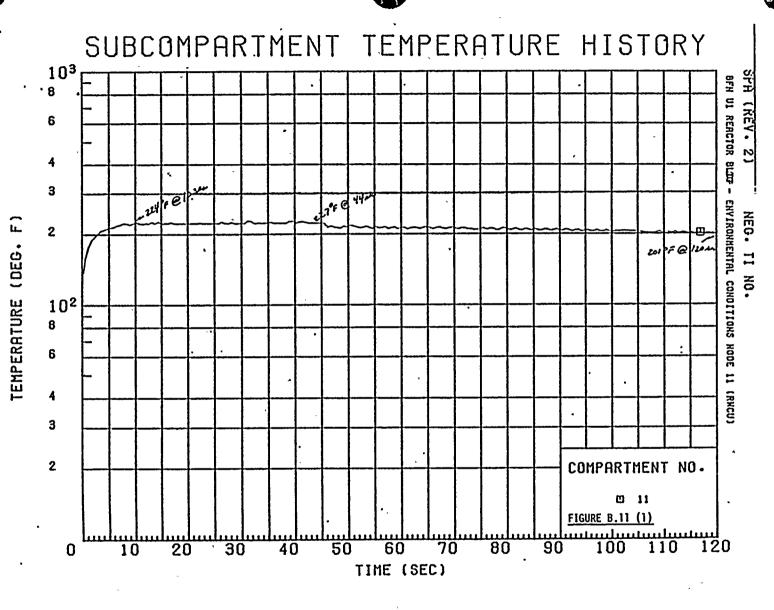


Figure A-16. Licensee Figure B.11 (1)

FIGURE SUPPLIED BY THE LICENSEE

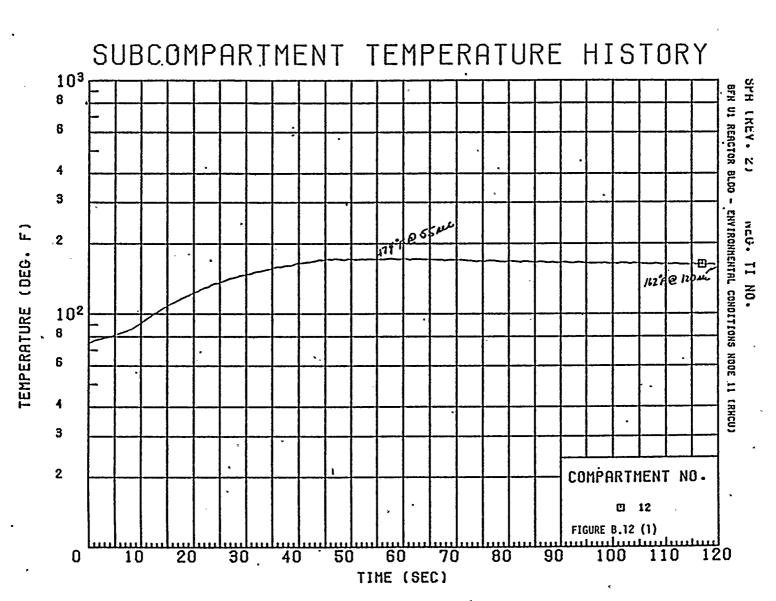


Figure A-17. License Figure B.12 (1)



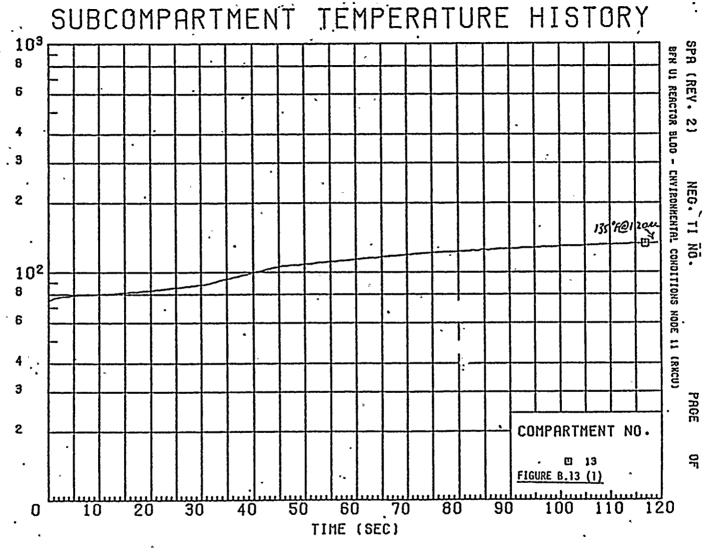


Figure A-18. Licensee Figure B.13 (1)

FIGURE SUPPLIED BY THE LICENSEE



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TEMPERATURE

Figure A-19. Licensee Figure B.14 (1)

FIGURE SUPPLIED BY THE LICENSEE

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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 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 manufacturer and model, which is representative of all identical equipment 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 SO2 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]



ipment Item No. 6 Ressure 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 Checksheet No. 8
censee 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: 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]



ipment Item No. 16 Pessure 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 Checksheet No. 18 Censee 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





Licensee reference not cited Required Operating Time: 1 year

Licensee Submittal: Page MEB-64-02 [1]

TER Checksheet No. 20

Pump Motor Temperature Controller (TS-64-68, -69, -70, -71, -72, -73)

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

Licensee Submittal: Page NEB-1-008 [1]

TER Checksheet No. 25

ipment Item No. 26 emperature 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: 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) ensee Reference 4265 quired 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
Limitorque 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
Limitorque 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]



Dipment Item No. 36 How 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 (TS1A, 1B, 1E) Licensee reference not cited uired Operating Time: 1 year R 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

Licensee Submittal: Pages EEB-67-1006 and -1011 [1]

TER Checksheet No. 40

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, -34Licensee 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]



ipment Item No. 46
Frow 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

ensee 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 Reference's 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

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

Licensee Submittal: Page EEB-74-0397, Typical [1]

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]



ipment 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 SIC/HPCI, Turbine Exhaust Pressure Monitoring (PS-71-13A, B; PS-73-22A, B) ensee reference not cited 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 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-M85SS-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]



ipment 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

quired Operating Time: Continuous

Checksheet No. 68

censee 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 Limitorque 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]



pment Item No. 76 Wel 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: 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 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 Pensee 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 Limitorque 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]



pment Item No. 86 rerminal 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 knsee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 $\begin{bmatrix} 1 \end{bmatrix}$ 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

Licensee Submittal: Pages EB-1-1004, -1005, -1007, and -1009 [1]





TER Checksheet No. 90

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]



TER-C5257-469 lpment Item No. 96 mit 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 Checksheet No. 98 Censee 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 0₂ 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]

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
Quired Operating Time: 1 year

Checksheet No. 108 Acensee 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]





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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]
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ipment 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 equired Operating Time: 1 year Checksheet No. 118 Censee 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

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]



pment Item No. 126 ptorized 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 equired Operating Time: 1 year Checksheet No. 128 Zensee 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]

ipment 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) censee References 662, 659 Quired Operating Time: 1 year R 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]



ipment 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]

Licensee Submittal: Page NEB-/3-130 [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
Dequired Operating Time: 30 days
Checksheet No. 148

Checksheet No. 148 censee 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

Times Wire & Cable, Brand Rex 936,

(COAX, TRIAX, signal XLPE)

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]



ipment 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

equired Operating Time: 30 days

Checksheet No. 157

censee 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 Reference's 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 NSO4
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
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]



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.





Function

System¹

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

Core Residual Heat Removal

Prevention of Significant Release of Radioactive Material to Invironment

Supporting Systems

System¹

Reactor Building Closed Cooling Water Raw Cooling Water

Standby Gas Treatement
Containment Air Dilution
Radwaste
Reactor Water Cleanup
Radiation Monitoring
Neutron Monitoring
Containment Inerting
Sampling

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

Monitored Parameter ·	Instrument	E.W.S Number
Reactor Water Level	LITS-3-46A LITS-3-46B	NEB-3-016 NEB-3-016
	LITS-3-52	NEB-3-24
	LITS-3-62 ·	NEB-3-24
Reactor Pressure	PT-3-22A PT-3-22B	NEB-3-015 NEB-3-015
	PT-3-22C	NEB-3-015
	PT-3-22D PT-3-54	NEB-3-015
•	PT-3-64	



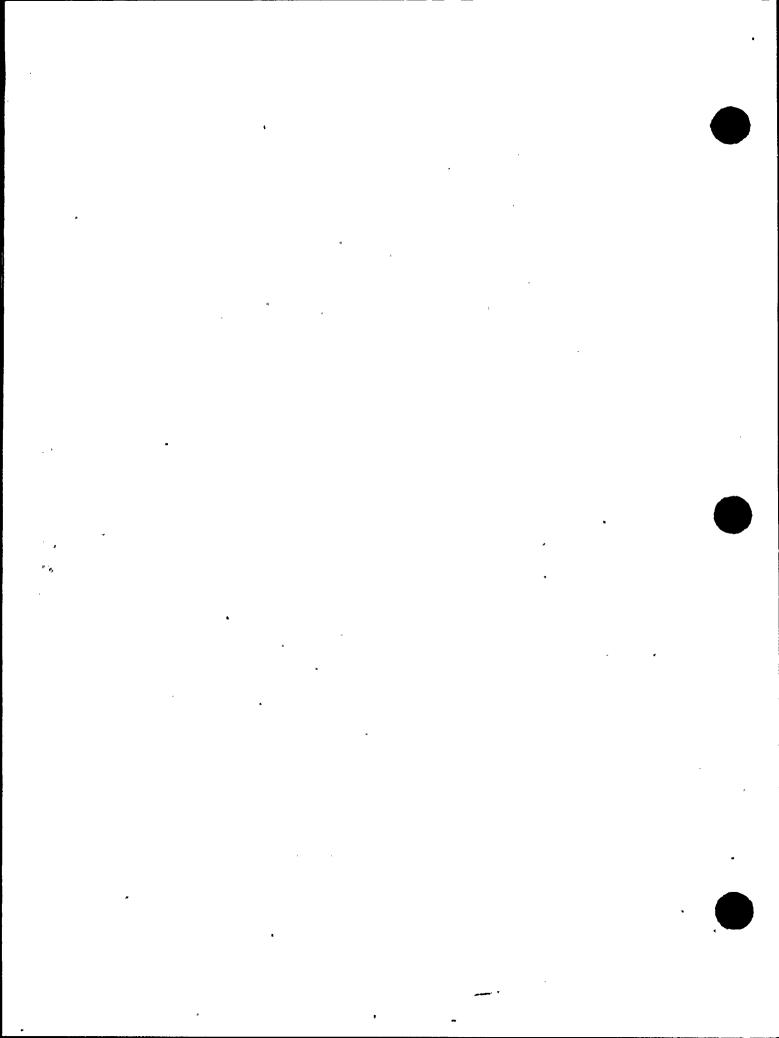
Well Pressure	PT-64-50 PT-64-67 PT-64-160A PT-64-160B	NEB-64-058 NEB-64-068 *
Drywell Temperature	TE-64-52A TE-64-52C	EEB-64-1039 EEB-64-1040
Torus Water Temperature	TE-64-55A TE-64-55B TE-64-55C TE-64-55D	NEB-64-062 NEB-64-062 NEB-64-062 NEB-64-062
Torus Water Level	LT-64-54 PX-64-54 LT-64-66 PX-64-66 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

It is considered that the Licensee has provided a satisfactory response to the concern of the SER regarding safety-related display instruments.



luation

^{*}These instruments are not presently installed."





APPENDIX D - REVIEW OF LICENSEE'S RESPONSE TO NRC EEQ SER CONCERNING JUSTIFICATION FOR INTERIM OPERATION

BACKGROUND

The NRC Safety Evaluation Report (SER) concerning equipment environmental qualification (EEO) 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 ensing 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

Licensees' Responses to NRC EEQ SER Concerning Justification for Interim Operation

FRC, 25-Jan-82

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



^{*} C. J. Crane

Letter to R. A. Clark, NRC. Subject: Transmittal of FRC Review of

^{**} C. J. Crane

bling 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 cluations were performed, the licensees determined that, although full lification 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



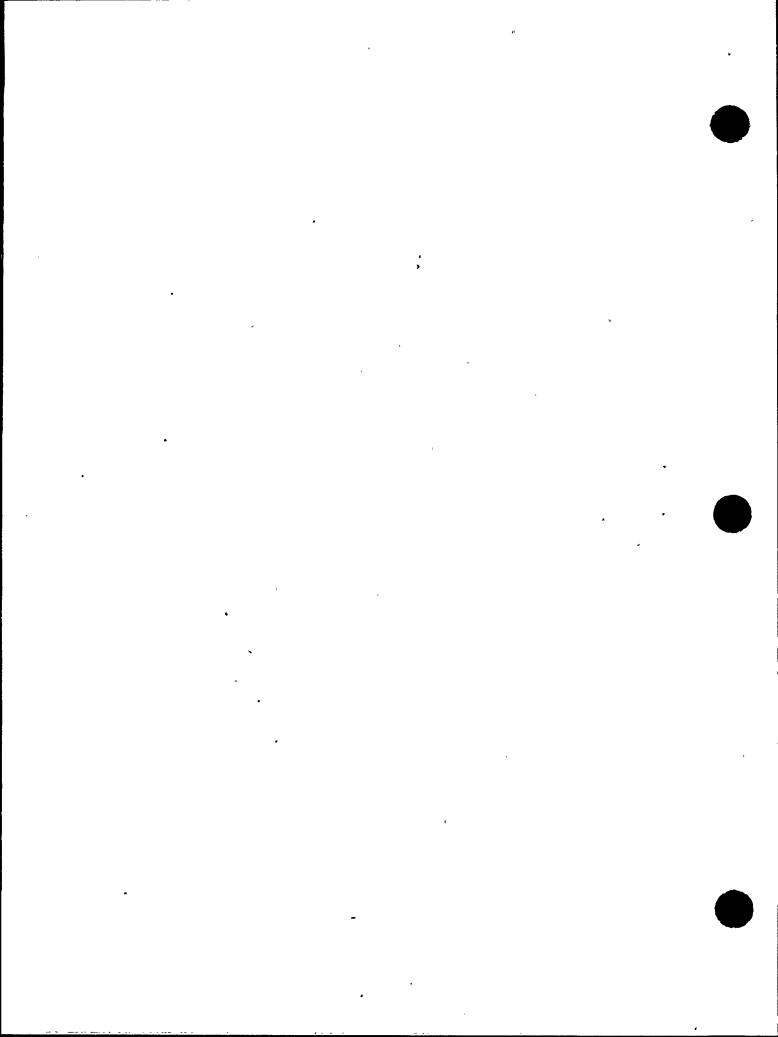
The Licensee has submitted technical information in Reference a in response to the NRC SER [b] on environmental qualification. FRC has reviewed these documents [a, b, c]. As a result of this review, FRC concludes that the Licensee has stated that the equipment items are environmentally qualified; or 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:

Equipment	Equipment Description/	SCEW Sheet		Basis for
Item	Function	No.	Status Code	Deficiency

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 closs 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.	4/13/82·[7](2)
2.	Wyle Lab Report 43854-1.	4/13/82 [7](2)
3.	TVA Engineering Report 1946.	4/13/82·[7](2)
4.	TVA Engineering Report 1944.	4/13/82 · [7](2)
5.	Parkinson and Sisman, October 1970.	$4/13/82 \cdot [7]^{(2)}$
6.	Anaconda-Continental Test Report No. 79117.	4/13/82·[7](2)
7.	TVA Engineering Report 1942.	$4/13/82 \cdot [7]^{(2)}$
8.	TVA Engineering Report 1928.	4/13/82·[7](2)
9.	TVA Engineering Report 1923.	4/13/82·[7](2)
10.	TVA Engineering Report 1945.	4/13/82·[7](2)
11.	TVA Engineering Report 1947.	4/13/82-[7](2)
12.	TVA Engineering Report 1950A.	4/13/82·[7](2)
13.	TVA Engineering Report 1950B.	4/13/82 · [7](2)
14.	Deleted (same as 2)(1)	
15.	TVA Engineering Report 1926.	4/13/82 [7](2)
16.	TVA Engineering Report 1921.	4/13/82-[7](2)
17.	GE Letter, February 3, 1978 to H. J. Green.	4/13/82 [7](2)
18.	BWR Owners Group Report 081-A-01, September 23, 1980.	4/13/82 [7](2)
19.	Target Rock Report 1827A, November 4, 1976.	4/13/82 [7](2)
20.	NMC Test Report NMC-PT-7630 Rev. O.	4/13/82 [7](2)
21.	NMC Drawing 0082445 Rev. D, February 9,	4/13/82 [7](2)

1978.

() '	•	DATE RECEIVED BY FRC***
22.	Target Rock Test Report 2199A.	$4/13/82 \cdot [7]^{(2)}$
23.	Fenwal Engineering Report 6350.	4/13/82 · [7] (2)
24.	Wyle Lab Report QSR-018-A012.	$4/13/82 \cdot [7]$ (2)
25.	Barksdale Quelification Procedure 9993.	4/13/82-[7](2)
26.	Barton Engineering Report R3288A-1.	4/13/82 · [7] (2)
27.	Wyle Summary Report QSR-027-A-02.	4/13/82·[7](2)
28.	Conax Test Report TR-39.	Deleted [7](2)
29.	Wyle Summary Report QSR-146-A-01.	Deleted·[7](2)
30.	Deleted (same as 26) (1)	
31.	Wyle Summary Report QSR-029-A-01.	Deleted·[7](2)
32.	Wyle Summary Report E12-3.	Deleted [7] (2)
3.	Wyle Summary Report E12-N010.	Deleted [7](2)
34.	Rosemount Test Report 37327B.	$4/13/82 \cdot [7]$ (2)
35.	Rosemount Test Report 127227.	4/13/82·[7](2)
36.	Wyle Report QSR-048-A-01.	4/13/82 · [7] (2)
37.	Louis Allis Document S40EJ4-099-630, October 10,1979.	4/13/82 · [7] (2)
38.	TVA Engineering Report 1927.	4/13/82 [7](2)
39.	Wyle Lab Report QSR-002-A-02.	4/13/82 [7](2)
40.	Rotork Report, "A" Range Nuclear Qualification.	4/13/82 [7](2)
41.	Wyle Lab Report QSR-040-A-01.	4/13/82 [7](2)
42.	Deleted (same as 2)(1)	
43.	Deleted (same as 27)(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 BT 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
- 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

NRCTACNO. 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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Group Leader

Approved by:

Project Manager

Department Director

Franklin Research Center

A Division of The Franklin Institute
The Benjamin Franklin Parkway, Phila., Pa. 19103 (215) 448-1000

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REGULATORY DOCKET FILE COPY

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Page I a



JIPMENT 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:

Contents	Checksheet Page No.
Equipment Item	la .
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3o, 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

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118 FRC Project No. C5257. FRC Assignment No. 13 FRC Task No. <u>469/470/41/</u>

Page 16

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available

Page 2

DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🙈

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
	•
Documented Evidence of Qualification Adequate	<u> </u>
Adequate Similarity Between Equipment and Test	
	Specimen nacabitanea
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Establi	shed (If Required)
Program Established to Identify Aging Degradat	ion
Criteria Regarding Aging Simulation Satisfied	(If Required)
Criteria Regarding Temperature/Pressure Exposu	re:
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	
iteria Regarding Test Sequence Satisfied	
Citeria Regarding Test Failures or Severe Ano	malies .
K (If Any) Satisfied	
Criteria Regarding Functional Testing Satisfie	A
Criteria Regarding Instrument Accuracy Satisfi	
Test Duration Margin (1 hour + Function Time)	Satisfied
Criteria Regarding Margins Satisfied (NUREG-05	88, Cat. I)
•	·,
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
MAG CONDITION GIZZONI	
T - Deviewant Ourlified	••
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modifi	
II.a Equipment Qualification Not Establishe	a
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements E	xcept Qualified Life
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	**
III.b Equipment Not in the Scope of the Qual	ification Review
IV Documentation Not Made Available	



Page 3a

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 EEEOR 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 EEEOR (R1).

Page I a

RUIPMENT 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:

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

Page 1b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



•	
SUMMARY OF LICENSEE RESPONSES TO THE NR	SER - ONLY CHECKED ITEMS ARE APPLICABLE
	a response to the SER concerns.
The Licensee (has/has-not) specific qualified and/or will function when environmental service conditions.	- - -
The Licensee has presented informat outstanding qualification deficienc	
The Licensee (has/has-not) proposed item whose qualification has not be	
	tion (has/ has-not) been provided by the
Corrective action specified by	the Licensee:
Equipment replacement with a Equipment modification Equipment relocation above a Relocate or shield equipment Verify qualification by additionation to a management relocation to a management restring of equipment (submergence level from radiation source itional (testing/ analysis) ild environment
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item s for justification for interim
The Licensee (has/has net) proving corrective action. (Schedule for action	ded a schedule for the proposed or accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from environmental and/or should be exempted from the e	ent item does not require qualification conmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	
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

Page 2

2

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: <u>X = DEFICIENCY</u>
	\checkmark
Documented Evidence of Qualification Adequate	olished
Adequate Similarity Between Equipment and Test Specimen Estab	Tisued
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requir	
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	V
o .Peak Temperature Adequate	
o Peak Pressure Adequate	<u> </u>
o Duration Adequate .	
o Required Profile Enveloped Adequately	
o Steam Exposure (If Required) Adequate	·
Criteria Regarding Spray Satisfied	
Criteria Regarding Submergence Satisfied	A
Criteria Regarding Radiation Satisfied	
iteria Regarding Test Sequence Satisfied	
titeria 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)	· ·
	DESIGNATION:
NDG OUR TRIGRATON CRAFCORY	X = CATEGORY
NRC QUALIFICATION CATEGORY	
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	$\overline{\mathbf{x}}$
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements Except Qualified	l Life
or Replacement Schedule Justified	-
III.a Equipment Exempt From Qualification	••
III.b Equipment Not in the Scope of the Qualification Review	<u></u>
IV Documentation Not Made Available	
TA POCHMENTACTON NOT MAKE WASTISTE	



Page 3a

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 EEEOR 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 EEEOR (R1).

Page 5 f

DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

NOTES:	
	• The licensee has provided an analysis that extremely conservative
	extremely conservative establishes originalified life of 11.5 yes. for the entire
	motor generation set. However the licensee has not provided
	Ledocumentation that substatiation 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 + hreshold value of a proximately 105 R.
	However + Le licensee has not provided the qualification
	documentation that presents a motival list for the notor
	generatoriset and radiation damage threshold value for these
	materials.
-	
	· The licensee has not provided qualification documentation
	For operating time, temperature and pressure. The motor
	and generator are to tally enclosed for sooled 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 rum merely to establish satisfactory performance
	in a room temperature (23°-26°C) environment. (not 40°C)

Page la

EQUIPMENT ENVIRONMENȚAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. \underline{S}



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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la .
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, 4c, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	. 6a, −6b.

7a, 7b, 7c

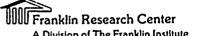
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>U/49/470/411</u>

Page 1b



INIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>24</u>

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/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/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/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/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically stated that the equipment is qualified.** **The Licensee (has/has not) specifically
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.
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 III.a Exempt III.b Not in Scope III.b Not Qualified IV Documentation Not Available



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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 1691470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARI FORM	
	ESIGNATION: = DEFICIENCY

Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish Aging Degradation Evaluated Adequately	ned _X
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:	
oPeak 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	,—— i
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)	
<u>. </u>	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
m m m m m m m m m m m m m m m m m m m	
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 Li	re
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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UNIF

IPMENT 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 EEEOR 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 EEEOR (R1).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

<u></u>\$

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:

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:

Maintenance and Replacement Schedule Summary

(See Section 3 of this TER for Legend)

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
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	62, 6b

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

SUMMARY OF LICENSEE RESPONSES TO	THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/ has not) p	provided a response to the SER concerns.
	pecifically stated that the equipment is- on when exposed to the applicable DBE ions.
The Licensee has presented i outstanding qualification de	nformation which shows there are no ficiencies.
The Licensee (has/has-not) p item whose qualification has	roposed a corrective action for this equipment not been fully established.
	m operation (has/ has not) been provided by the ent item.
Corrective action specif	ied by the Licensee:
Equipment modification Equipment relocation Relocate or shield experify qualification Equipment relocation	above submergence level quipment from radiation source by additional (testing/ analyst e)
Qualification testing Other (g of equipment in progress
	d other information for this equipment item a basis for justification for interim
	t) provided a schedule for the proposed edule for accomplishing the corrective
	equipment item does not require qualification om environmental qualification.
DESIGNATION OF RESULTANT NRC QUA- - CIRCLED ITEM ONLY: (See Section	LIFICATION EVALUATION CATEGORY BASED ON REVIEW on 3 of this TER for Legend)
I.a Qualified I.b Modification a Qualification Not Established b Not Qualified	II.c Qualified Life Deficiency III.a Exempt ed III.b Not in Scope IV Documentation Not Available
on wor Anattried	TA POGGMENTACTION NOT WASTITUTE

Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	EQUIPME	NT ENVIRONMENTAL	QUALIFICATION S	UMMARY FOR	<u>M</u>	
					DESIGNAT X = DEFIC	
NRC REQUI	REMENTS			•	Y = DEFIC	LENCI
Documente Adequate Aging Deg Qualified Program E Criteria Criteria O Pe O Do O Re O St Criteria Criteria Criteria Criteria Criteria Criteria Criteria	ed Evidence of Similarity Be gradation Evaluation Evaluation Evaluation Evaluation Evaluation Evaluation Evaluation Evaluation Evaluation Exposure Regarding Suluation Regarding Rangarding Rangarding Teres Exposure Regarding Evaluation Exposure Regarding Evaluation Evaluation Evaluation Exposure Regarding Evaluation Ev	luated Adequated lacement Schedul o Identify Aging ing Simulation Smperature/Pressure Adequate Adequate ate le Enveloped Ade (If Required) Aray Satisfied bmergence Satisfied st Sequence Satisfies Sequence Satisfies	and Test Specimy e Established (I Degradation atisfied (If Rec re Exposure: quately dequate ied	nen Establi If Required quired)	sheđ	× = = = = = = = = = = = = = = = = = = =
	y) Satisfied	nctional Testing	Satisfied			
Criteria	Regarding Fu	strument Accura	v Satisfied		•	
Tost Dur:	negalulng in stion Mardin	(1 hour + Funct:	on Time) Satisf	ied		
Criteria	Regarding Ma	rgins Satisfied	(NUREG-0588, Ca	t. I)		
CLICELIA	vedarariid iia	1191110 040110-	(4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,	•		·
NRC QUAL:	IFICATION CAT	PEGORY	,			NATION: ATEGORY
I.b II.a III.b III.a III.b III.a III.b	Equipment Qua Equipment Not Equipment Sat or Replacement Equipment Exe Equipment Not	diffication Pend diffication Not : Qualified disfies All Requal the Schedule Just compt From Qualif	irements Except (ified ication f the Qualificat	Qualified I		<u>×</u>
TA	Documenta CIVI	, Ive inde iven				



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JIPMENT 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 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. .

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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.

Which 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.

TABLE 1

260 . Temperature °F. 320 320 Pressure PSIG 21 100 100, 300 100 100 -Relative Humidity & 1.5 days 1.5 hrs 3 hrs 4.5 hrs. 8 days Duration o decision to be made by the systems engineer in

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.

Page

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🕿 💪

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)

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d-
System Consideration Review	4a, 4b, 40, 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-

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



	•		
SUMMARY OF	LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE	APPLICABLE
-			
_X The Lic	censee (has/ has-not) provided	a response to the SER concern	s.
qualifi		lly stated that the equipment exposed to the applicable DBE	
	censee has presented informatinding qualification deficienci		1
	censee (has/ has not) proposed nose qualification has not bee	a corrective action for this n fully established.	equipment .·
	stification for interim operat censee for this equipment item	ion (has/ has-not) been provid	ed by the
∠ Cor	rrective action specified by t	the Licensee:	
	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by additionable Equipment relocation to a minimum Qualification testing of equipment (submergence level : from radiation source :tional (testing/ analysis) :ld environment	
tha		information for this equipmen for justification for interi	
cor		ded a schedule for the proposor accomplishing the correctives	
	censee states that the equipme should be exempted from envir	ent item does not require qual conmental qualification.	ification
	N OF RESULTANT NRC QUALIFICATION ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED this TER for Legend)	ON REVIEW
I.a Qualif II.b Modifi II.a Qualif II.b Not Qu	ication fication Not Established	II.c Qualified Life Deficien III.a Exempt III.b Not in Scope IV Documentation Not Avail	4

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCYNRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied Citeria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY Equipment Qualified . I.a Equipment Qualification Pending Modification I.b

Equipment Satisfies All Requirements Except Qualified Life

Equipment Not in the Scope of the Qualification Review

Equipment Qualification Not Established

or Replacement Schedule Justified Equipment Exempt From Qualification

Documentation Not Made Available

Equipment Not Qualified

II.a II.b

II.c

III.a

IV

III.b



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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).

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 26

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.

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 h	rs. 8 days

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 scaled boxes mounted on the penetration thus making the test more conservative than the actual field application of the equipment.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. .



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, OT, 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	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 27

SUM	ARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
K	Tne	Licensee (has/has-not) provided a response to the SER concerns.
关	The qual env	Licensee (has/has-not) specifically stated that the equipment is lified and/or will function when exposed to the applicable DBE ironmental service conditions.
		Licensee has presented information which shows there are no standing qualification deficiencies.
		Licensee (has/has not) proposed a corrective action for this equipment 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:
è	ż	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)
v =		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)
		Licensee states that the equipment item does not require qualification or should be exempted from environmental qualification.
		FION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW ONLY: (See Section 3 of this TER for Legend)
I.b	Mod Qua	Alified II.c Qualified Life Deficiency Rification III.a Exempt Rification Not Established III.b Not in Scope Right Qualified IV Documentation Not Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>km</u>
NDG DEOL	, , ,	DESIGNATION: X = DEFICIENCY
NRC REQU	<u> </u>	
Adequate Aging De Qualifie Program Criteria Criteria O I O I Criteria Test Du	ed Evidence of Qualification Adequate similarity Between Equipment and Test Specimen Establication Evaluated Adequately ed Life or Replacement Schedule Established (If Required Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies may) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a I.b II.a II.b II.c	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 👟

LICENSEE RESPONSE TO NRC SER

 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257 PROPRIETARY
FRC Assignment No. 13 INFORMATION
FRC Task No. 469/470/47/

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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.)
EQUIPMENT DESCRIPTION Equipment Type	Electrical	Electrical Penetration	1
Manufacturer's Name (5.2.2/-/-)	GE	General Electric	. !
Model Number (5.2.2/-/-)	Servis 120	Series 100	•
Serial Number	Varius	various	:
Features/Mounting . (5.2.6/-/-)	in Container	Horizontal in Autoclave	
Connections/Interfaces (5.2.6/-/-)	Not your ty	Crimp with splice sleeve	
Location/Elevation		Not Applicable	
Equipment ID No.	varie	Npt Applicable	
QUALIFICATION REPORT (8.0/5.0/5.0)		,	:
Report ID Number	• / [-] / [-] • • • • • • • • • • • • • • • • • • •	: 100 Series Containment : Penetration	!
Report Date .	Notsteted	March 1974	:
Issued by		General Electric	!
Prepared for .	NotStated	General Electric	!
Referenced Reports	!Notsted!	N074-502-3 San Jose	!
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	N/A	Sequential Test	!
QUALIFICATION TEST PROGRAM Functional Test Description (5.2.5/2.2.9/2.2.9)	NA	Leakage and Insulation Resistance/ Carry Curren	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.	N, t Stated	NO4-95A@460Vac NO10-3A @ 460Vac NO16-1A@125Vac	

5 b

PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. $\ref{eq:constraint}$

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)	Notsbac	< 10 ⁷ ccHe/sec @15psig	:
Accuracy (5.2.5/-/-)	Not Stated	Not Applicable	• · · · · · · · · · · · · · · · · · · ·
Number of Specimens	NA		•
Test Instruments Calibrated	NA	Before and After each	•
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	action	part of test Not Stated	
Test Duration (5.2.1/-/-)	NA	7 days	1
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	>24hrs	Not Applicable	
Required Function Time	1 year	Not Applicable	•
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	NA	Thermal Cycle Irradiation	1
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	NA	LOCA Simulation Post LOCA Inspection	
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 Material Aging Evaluation (7.0/-/-) Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	NA NA	Analysis and tests of Subcomponents Each Material evaluated "O" ring seal Limiting	:
Radiation Aging, Type	Danmor	Gamma	i,

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NRC Contract No. NRC-03-79-118. ARY FRC Project No. C5257
FRC Assignment No. 13MFORMATION FRC Task No. 469/474471

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<u></u>			
NRC REQUIREMENTS	•		DEFICIENCY
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
_	1	•	i
Radiation Aging, Dose (rd)	Not started	See Accident Dose	:
Radiation Aging, Dose Rate	. No Fstated	See Accident Dose	!
Radiation Aging, Method	NA	Test	!
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)		Not Stated	
Operational Aging (-/4.2/-)	NA	Not Applicable '	•
Other Age Conditioning (-/4.2/-)	NA	Thermal Cycle	:
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 yers	40 Years	
Normal Ambient Temperature	1	Not Applicable	÷
Normal Ambient Radiation	Notsted	Not Applicable	,
Normal Ambient Humidity		Not Applicable	i i
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	Bruns Ferrej Pragram	Not Applicable	
On-Going Analysis of Failures and Degradation (7.0/-/-)		Not Applicable	
Margin (General) (6.0/3.0/3.0)	NA	Not Applicable	:
Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F)		Not Applicablê	
2. Pressure (+10%, , ' 10 psig max)		1	•
Radiation (not required)		• !	i !
4. Time (+10%, +1 hour		•	
+ function time minimum)	·	•	
•			

NRC Contract No. NRC-03-79-118
FRC Project No. C5257 PROPRIETARY
FRC Assignment No. 13NFORMATION
FRC Task No. 469 Mad 471

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DUIPMENT 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.)
ACCIDENT CONDITIONS			1
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)	LOCAIMSLB	LOCA -	
Radiation Type	Gamm + Beta	Gamma	
Radiation Dose (rd) (4.1.2/1.4/1.4)	6.5x107 8.	5x10 ⁷	Note 2
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	Nots to ted	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)	米	Not Applicable	:

* The primer 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. Perefore, the integrated 40-year normal operation plus one LOCA dose een by the box contents will be approximately 1.05 x 108 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

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NRC REQUIREMENTS	•		DEFICIENCY
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS		- 	1
Rate of Temp./Press. Increase	~150/sec	Not Stated	:
Peak: °F/psig/RH/Time	325/60/10/10M	340/103/100/3hrs	
Decrease To: °F/psig/RH/Time	3 pm /3./10 /50M	320/81/100/3hrs	!
Decrease To: °F/psig/RH/Time	230/20/100/4h	260/25/100/18hrs ·	•
Decrease To: °F/psig/RH/Time	230-150 20-4/10/	250/16/100/168hrs	:
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	~20 ms	Not Applicable	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	NA	None	Note 1
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	Demin. Water	None	
Spray Density (gpm/ft ²)	Natstaked	None	-
Spray Duration	NA	None	1
Submergence Duration (4.1.3/2.2.5/2.2.5)	NA	None	!
In-Leakage Considered (5.2.6, 5.3.2/-/-)	Notes	Not Applicable	
Time to Submergence	Alt	Not Applicable	•
Dust Environment (-/2.2.11/2.2.11)	NA	Not Applicable	1
	,		

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FRC Project No. C5257 PROPRIZIARY
FRC Assignment No. 1373 FORMATION
FRC Task No. 469/470/97

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•	
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 because his next addressed	
the possible effects of spring except to store	4
_ this gary as minual.	
Note 2. The test irradiation is less than identified by the licensee	
SCEW sheetfor 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 1.05x10 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.	
Condusion: qualification has not	
adequately been established for	•
spray and radiation	
<u> </u>	
•	
·	
•	

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 471

Page la

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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) (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>	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	3 2
Licensee Response to NRC SER	3a, 3b, 3c, 3 d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5n, 5i, 5j

Installed TMI Lessons Learned Implementation 6a, 6b
Equipment Summary

Maintenance and Replacement Schedule Summary 7a, 7b, 7c



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>46 9/470/47</u>/

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SUMMARY OF LICENSEE RESPONSES	TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
Y The Licensee (has/has-not)	provided a response to the SER concerns. specifically stated that the equipment is
qualified and or will function environmental service conditions	tion when exposed to the applicable DBE itions.
The Licensee has presented outstanding qualification	information which shows there are no deficiencies.
	proposed a corrective action for this equipment as not been fully established.
Justification for inter Licensee for this equip	rim operation (has/has not) been provided by the pment item.
Corrective action spec	fied by the Licensee:
Equipment modificat	
——————————————————————————————————————	on above submergence level equipment from radiation source
Verify qualification	on by additional (testing/analysis)
	on to a mild environment
Qualification test: Other (ing of equipment in progress ;
	ded other information for this equipment item as a basis for justification for interim
	not) provided a schedule for the proposed chedule for accomplishing the corrective
	ne equipment item does not require qualification from environmental qualification.
DESIGNATION OF RESULTANT NRC QUE - CIRCLED ITEM ONLY: (See Section 1)	JALIFICATION EVALUATION CATEGORY BASED ON REVIEW tion 3 of this TER for Legend)
I.a Qualified	II.c Qualified Life Deficiency
I.b Modification	III.a Exempt
I.a Qualification Not Establis I.b Not Qualified	III.b Not in Scope IV Documentation Not Available
Mary 1100 Kacawarca	ar accumentation of the contract

A Division of The Franklin Institute · 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
DESIGNATION X = DEFICIE	
NRC REQUIREMENTS X = DEFICIE	MOI
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 Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
DESIGNA' NRC QUALIFICATION CATEGORY X = CAT	
I.a Equipment Qualified	X
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 three 5 f. (also see p-5 f actiched)	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>(69/47/47</u>)

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔏

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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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NOTES:
1. The report States 1 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. +
the dicensee has need connection method. These test procedures the unit via this connection during an actual LOCA."
sed and whether the seal is
gudgied. Resepere ulationship
hetween installed and tested equipment
his not been demonstrated
2. The report sontes
"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 line of the first of
- Vue runice and ges for an guinque
your is the years

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FRC Task No. 47/

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>89</u>

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	5 a, 5b, 5c, 5d, 5c, 5f , 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.

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			*		
SUMMARY OF LICENSEE RE	SPONSES TO THE NE	RC SER -	ONLY CHECKED	ITEMS ARE	APPLICABLI
X The Licensee (has/	aas-not) provided	a respo	nse to the SE	R concerns	·•
The Licensee (has/index of the description of the d	ill function wher				is-
The Licensee has poutstanding qualif			h shows there	e are no	
The Licensee (has/	cation has not be	en fully	established.		:
	for interim opera his equipment ite		s/ has not) be	en provide :	d by the
Corrective act	ion specified by	the Lice	nsee:		
Equipment of Equipment of Relocate of Verify qualifications.	replacement with modification relocation above shield equipment additionaby additionation to a mile of equipment of equipment of equipments.	submerge nt from r ditional nild envi	nce level adiation sour (testing/ anal ronment		
	as provided other nstrued as a basi				
	nas/hacmet) provion. (Schedule f	or accom			
The Licensee states and/or should be ex	that the equipm cempted from envi	ent item ronmenta	does not req l qualificati	uire quali on.	fication
DESIGNATION OF RESULTANT - CIRCLED ITEM ONLY:				RY BASED O	N REVIEW
I.a Qualified I.b Modification II.a Qualification Not II.b Not Qualified	Established	III.a E	ualified Life kempt ot in Scope ocumentation	·	-



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establia 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) 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 L 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	ife
Reference 4662 does not constitute evidence	eofqualification



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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 EEEOR 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 EEEOR (R1).

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>9</u>0

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 9b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4c, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e , 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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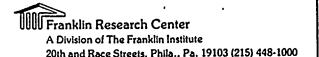


SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:			
\dot{X} The Licensee (has/has not) provided a response to the SER concerns.			
The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental 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			

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	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY	FORM
		DESIGNATION:
NRC REO	UIREMENTS	X = DEFICIENCY
1110_100	(0.32.000.000.000.000.000.000.000.000.000	
Documen	ted Evidence of Qualification Adequate	
Adequat	e Similarity Between Equipment and Test Specimen Esta	blished X
Aging D	egradation Evaluated Adequately	- 11
Qualifi	ed Life or Replacement Schedule Established (If Requi	red)
Program	Established to Identify Aging Degradation	
Criteri	a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure:	
	Peak Temperature Adequate	
	Peak Pressure Adequate	•
	Duration Adequate .	
0	Required Profile Enveloped Adequately	
	Steam Exposure (If Required) Adequate	
	a Regarding Spray Satisfied	
	a Regarding Submergence Satisfied	
	a Regarding Radiation Satisfied	
iteri	a Regarding Test Sequence Satisfied. a Regarding Test Failures or Severe Anomalies	
	any) Satisfied	•
	a Regarding Functional Testing Satisfied	
Criteri	a Regarding Instrument Accuracy Satisfied	
Test Du	ration Margin (1 hour + Function Time) Satisfied	
Criteri	a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
	•	
	•	DESIGNATION:
NDC OUR	ALIFICATION CATEGORY	X = CATEGORY
NAC QUA	RELIFICATION CRIEGORI	
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 Qualifie	d Life
	or Replacement Schedule Justified	
III.a	Equipment Exempt From Qualification	
III.b	Equipment Not in the Scope of the Qualification Revi	.6*
IV	Documentation Not made Available	
_	- 1 'a landustion	
~ F	- or detailed comments	
		_
	= ar detailedersheatin see item 42 pages 50	though -
	were from 40 pages sa	



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ${\mathcal L}$



LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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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Nombe.
NOTES:
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. +
the 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 Liunus his use climbful wheth the user as
sept and whether the sent is
hetween installed and testes equipment
he not been demondrated
fre mi dem aumontantes
2. The report sontes
_ "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.
His beine andysis for the audhed
liff is 28 to 7 years
·

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 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.



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)

RT) (F) (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	la
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, 40, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5£ 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	62-60

Equipment Summary

Maintenance and Replacement Schedule Summary

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SUMMAR	Y OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
	1
X Tn	e Licensee (has/ has not) provided a response to the SER concerns.
੍ਰੰਖ	e Licensee (has/ has not) specifically stated that the equipment is alified and/or will function when exposed to the applicable DBE vironmental service conditions.
	e Licensee has presented information which shows there are no tstanding qualification deficiencies.
Y Th	e Licensee (has/ has-not) proposed a corrective action for this equipment em 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 (har/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
	e Licensee states that the equipment item does not require qualification d/or should be exempted from environmental qualification.
	ATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW LED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b M	ualified II.c Qualified Life Deficiency odification III.a Exempt ualification Not Established III.b Not in Scope ot Qualified IV Documentation Not Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
NRC REQUIREMENTS			DESIGNATION: <u>X = DEFICIENCY</u>
o Steam Exposure Criteria Regarding Spra Criteria Regarding Substitution Criteria Regarding Rad Criteria Regarding Tes Criteria Regarding Tes (If Any) Satisfied Criteria Regarding Func Criteria Regarding Ins Test Duration Margin (ween Equipment and Testated Adequately acement Schedule Estable Identify Aging Degradang Simulation Satisfied perature/Pressure Expose Adequate dequate te . The Enveloped Adequately (If Required) Adequate ay Satisfied mergence Satisfied iation Satisfied	ished (If Required tion (If Required) ure: omalies ed ied Satisfied	
NRC QUALIFICATION CATE	GORY		DESIGNATION: $X = CATEGORY$
II.a Equipment Qual II.b Equipment Not II.c Equipment Sati or Replacement III.a Equipment Exem III.b Equipment Not	ification Pending Modif ification Not Establish	ed Except Qualified	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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UIPMENT 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



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

 \tilde{V}'

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	. 2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4c, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f , 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b

7a, 7b, 7c

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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UIPMEN

SUMMA	RY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
	ne Licensee (has/ has not) provided a response to the SER concerns.
9	walified and/or will function when exposed to the applicable DBE nvironmental service conditions.
	he Licensee has presented information which shows there are no utstanding qualification deficiencies.
<u>K</u> Ti	he Licensee (has/ has not) proposed a corrective action for this equipment tem 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
aen No	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.
7	The Licensee (hac/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
	ne Licensee states that the equipment item does not require qualification ad/or should be exempted from environmental qualification.
	NATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW CLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b h	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available
_	



A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
NRC REQUIREMENTS DESIGNA X = DEFI	
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 Duration Adequate o Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray 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 Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
h .	NATION:
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	<u>×</u>



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>식69</u> (470 / 471

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QUIPMENT 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 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. 2



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 P R 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	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4e, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5 f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b

Equipment Summary

Maintenance and Replacement Schedule Summary 7a, 7b, 7c

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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SUMMARY	OF LICENSEE RESPONSES TO THE NRO	C SER	- ONLY CHECKED ITEMS ARE APPLICABLE:
X The	Licensee (has/ has-not) provided	a res	onse to the SER concerns.
qual	Licensee (has/ has not) specifica ified and/or will function when ronmental service conditions.		
	Licensee has presented information deficience		ich shows there are no
	Licensee (has/ has not) proposed whose qualification has not bee		rective action for this equipment Ly established.
<u> </u>	Justification for interim operat Licensee for this equipment item	ion (l	nas/ has not) been provided by the
× (Corrective action specified by t	he Li	censee:
-	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by additional equipment relocation to a minimum of the control of t	submero : from tional	gence level radiation source L (testing/analysis) vironment
-	Qualification testing of equality Other (iipmen	in progress
	The Licensee has provided other that can be construed as a basis operation.		
,	The Licensee (Nac/ has not) provi corrective action. (Schedule fo action		
	Licensee states that the equipme or should be exempted from envir		em does not require qualification cal qualification.
	ION OF RESULTANT NRC QUALIFICAT: D ITEM ONLY: (See Section 3 of		ALUATION CATEGORY BASED ON REVIEW TER for Legend)
I.b Mod:	lified ification lification Not Established Qualified	III.a	Qualified Life Deficiency Exempt Not in Scope Documentation Not Available

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470/471

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	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	M
		DESIGNATION:
	•	X = DEFICIENCY
NRC REQU	UIREMENTS ,	X - DEFICIENCE
		V
Document	ted Evidence of Qualification Adequate	shed
Adequate	e Similarity Between Equipment and Test Specimen Establi	,sned
Aging D	egradation Evaluated Adequately	
Qualific	ed Life or Replacement Schedule Established (If Required	
Program	Established to Identify Aging Degradation	
Criteri	a Regarding Aging Simulation Satisfied (If Required)	
Criteria	a Regarding Temperature/Pressure Exposure:	
0.1	Peak Temperature Adequate	
0	Peak Pressure Adequate	
	Duration Adequate .	
0	Required Profile Enveloped Adequately	
0	Steam Exposure (If Required) Adequate	•
	a Regarding Spray Satisfied	-
	a Regarding Submergence Satisfied	
Criteri	a Regarding Radiation Satisfied	
Criteri	a Regarding Test Sequence Satisfied	
Criteri	a Regarding Test Failures or Severe Anomalies	
	ny) Satisfied	
	a Regarding Functional Testing Satisfied	,
Criteri	a Regarding Instrument Accuracy Satisfied	•
Test Du	ration Margin (1 hour + Function Time) Satisfied	
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)		
0110011	a negation of the contract of	•
		DESIGNATION:
NRC OUA	LIFICATION CATEGORY	X = CATEGORY
111.0 001.		
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	
4 ▼	PAARIHAHAMATAH MAA MAAA MAAAAAA	



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DUIPMENT 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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.

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

. Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	5 a, 5b, 5c, 5d, 5e, 5£, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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SUMM	ARY 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 tem 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.
2	The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
	he Licensee states that the equipment item does not require qualification nd/or should be exempted from environmental qualification.
	NATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW CLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available

20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No.4691470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
NRC REQUIREMENTS	DESIGNATION: $x = deficiency$		
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Texaging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Estab Program Established to Identify Aging Degrad Criteria Regarding Aging Simulation Satisfied Criteria Regarding Temperature/Pressure Expo 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe A (If Any) Satisfied Criteria Regarding Functional Testing Satisfied Criteria Regarding Instrument Accuracy Satisfiest Test Duration Margin (1 hour + Function Time Criteria Regarding Margins Satisfied (NUREG-	lished (If Required) ation d (If Required) sure:		
NRC QUALIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$		
I.a Equipment Qualified I.b Equipment Qualification Pending Modi II.a Equipment Qualification Not Establis II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements	shed		
or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification IV Documentation Not Made Available	1 1		



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/4</u>7/

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QUIPMENT 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 EFEOR; 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 EFEOR 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.

9

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)(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:

. Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d.
System Consideration Review	Aa, 4b, 4c, 4d, 4e, 41
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/69/470/411

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

		~
SUMMARY	Y OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
_X Ine	e Licensee (has /has not) provid	ed a response to the SER concerns.
que		ically stated that the equipment is en exposed to the applicable DBE
	Licensee has presented inform tstanding qualification deficie	
	e Licensee (has/h as-not) propos em whose qualification has not	ed a corrective action for this equipment been fully established.
۷_	Justification for interim ope Licensee for this equipment i	ration (has/ has not) been provided by the tem.
	Corrective action specified b	y the Licensee:
O	Equipment replacement wit Equipment modification	h qualified equipment
-	Equipment relocation abov	-
•	Relocate or shield equipm	
	Verify qualification by a Equipment relocation to a	
16.0 -	Qualification testing of	
	Other ()
<u></u>	-	er information for this equipment item sis for justification for interim
X		ovided a schedule for the proposed for accomplishing the corrective
	e Licensee states that the equi	pment item does not require qualification vironmental qualification.
DESIGNA	ATION OF RESULTANT NRC QUALIFIC	ATION EVALUATION CATEGORY BASED ON REVIEW
- CIRCI	LED ITEM ONLY: (See Section 3	of this TER for Legend)
	nalified	II.c Qualified Life Deficiency
	odification	III.a Exempt
	ualification Not Established ot Qualified	III.b Not in Scope IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. .



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
DESTGN	ATION:
•	ICIENCY
NRC REQUIREMENTS	
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 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 Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
	GNATION: 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	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>95</u>

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 EEEOR 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 EEEOR (R1).



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/470/4</u>7/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ${\cal G}$



"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 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.

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 47/

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UIPMENT 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) (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	la
Summary of Licensee Responses to the NRC SER	1b :
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3 d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 50, 5f , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b .

Maintenance and Replacement Schedule Summary

7a, 7b, 7c

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



\cdot	
SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	<u>3</u> :
X 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.	
\underline{X} 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)	
II.c Qualified Life Deficiency II.b Modification II.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available	



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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DESIGNATION:



DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established 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 Radiation Satisfied iteria Regarding Test Sequence Satisfied iteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Functional Testing Satisfied	lished
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 or Replacement Schedule Justified	Life
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available	v



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4691470147

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.,



LICENSEE RESPONSE TO NRC SER

4.	This device has a present status or Category TV (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 FEFOR
	contained in attachment 3. The schedule for replacement of these
	devices will be in accordance with NRC requirements (when possible)



NRC Contract No. NRC-03-79-118, FRC Project No. C5257, FRC Assignment No. 13 FRC Task No. 471

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3 d
System Consideration Review	4a, 4b, 4c, 4d, 40, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
installed TMI Lessons Learned Implementation . Equipment Summary	6a, 6b

7a, 7b, 7c

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.
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.b Modification II.a Qualification Not Established III.b Not Qualified III.b Not Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4691470/471

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	
Documented Evidence of Qualification Adequate	·."
Adequate Similarity Between Equipment and Test Specimen Establ	ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	d) ,
Program Established to Identify Aging Degradation	•
Criteria Regarding Aging Simulation Satisfied (If Required)	<u> </u>
Criteria Regarding Temperature/Pressure Exposure:	·
o . Peak Temperature Adequate	
o Peak Pressure Adequate	<u></u>
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	
iteria Regarding Test Sequence Satisfied	
Citeria 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)	
,	•
•	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	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	T.i fo
II.c Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified	HILC
	•
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review	
IV Documentation Not Made Available	•
TA POCHINGUEGETOR WAS MAGNETED TO	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/47 0/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. S



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. _ 47/

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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>98</u>

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 30, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5c, 5f , 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b -

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.,92



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.
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 (har/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.b Modification II.a Qualification Not Established III.b Not Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No.46914701471

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U)JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ${\it 98}$

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure:	ч
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 iteria Regarding Test Sequence Satisfied Citeria 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 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. 469/470/47/

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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 EEEDR; 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 EEEDR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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O Si

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

Equipment Item No. 99
Level Switch Located in the

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) (M) (RT) (F) (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	la	
Summary of Licensee Responses to the NRC SER	lb	
Equipment Environmental Qualification Summary Forms	2 .	
Licensee Response to NRC SER	3a, 3 b, 3c, 3d	
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£	
Equipment Environmental Qualification Review	5a, 5b, 5o, 5d, 5e, 5 f, 5 g, 5h, 5i, 5 j	
T4-11-4 MWT Loggong Loggnod Implementation	6	

Installed TMI Lessons Learned Implementation 6a, 6b.
Equipment Summary

Maintenance and Replacement Schedule Summary 7a, 7b, 7c

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



SUMA	MARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
<u>X</u>	Tne	Licensee (has/ has-not) provided a response to the SER concerns.
大	q ua.	Licensee (has/ has not) specifically stated that the equipment is- ified and/or will function when exposed to the applicable DBE ronmental service conditions.
••		Licensee has presented information which shows there are no tanding qualification deficiencies.
K		Licensee (has/ has-not) proposed a corrective action for this equipment whose qualification has not been fully established.
	X	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 (hat/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
		Licensee states that the equipment item does not require qualification or should be exempted from environmental qualification.
		ION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW D ITEM ONLY: (See Section 3 of this TER for Legend)
II.a	Mod Qua	lified ification lification Not Established Qualified II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Sriteria Regarding Radiation Satisfied La teria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY I.a Equipment Qualified Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a

Equipment Not in the Scope of the Qualification Review

Documentation Not Made Available



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IV

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NRC Contract No. NRC-03-79-118
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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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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IPMENT 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)

RTPH, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary_

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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-
*	•

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. <u>V6 9/47 0/4</u>7)

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



SUMMARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE:
	a response to the SER concerns.
The Licensee (has/has not) specifical qualified and/or will function when environmental service conditions.	
The Licensee has presented information outstanding qualification deficiencies	
The Licensee (has/has not) proposed a item whose qualification has not been	a corrective action for this equipment n fully established.
Justification for interim operat. Licensee for this equipment item	ion (has/has not) been provided by the
Corrective action specified by t	he Licensee:
Equipment replacement with question Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by addition Equipment relocation to a midelication to a midelication testing of equipment (ubmergence level from radiation source tional (testing/analysis) ld environment
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
The Licensee (has/has not) provide corrective action. (Schedule for action	
The Licensee states that the equipment and/or should be exempted from environments.	nt item does not require qualification onmental qualification.
	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.b Modification II.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47

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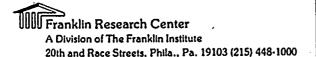
JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Establi	ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required	i)
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	
literia Regarding Test Sequence Satisfied	
Titeria 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)	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
NRC QUADITICATION CAIDONI	
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	 /
TA POORWOILERGTON MAG ASTRONA	

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 <u>circled</u> in attachment 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.

Franklin Research Center
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20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

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JIPMENT 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) (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	la
Summary of Licensee Responses to the NRC SER	
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 51, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

Maintenance and Replacement Schedule Summary

70. 7b. 7c

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.
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 (han/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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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IV

Documentation Not Made Available

JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCYNRC_REQUIREMENTS 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 teria Regarding Test Sequence Satisfied iteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORYI.a Equipment Qualified I.b Equipment Qualification Pending Modification Equipment Qualification Not Established II.a II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified Life or Replacement Schedule Justified Equipment Exempt From Qualification III.a III.b Equipment Not in the Scope of the Qualification Review



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47)

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. \varDelta



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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

NRC Contract No. NRC-03-79-118, FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 47/

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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔼

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) (M) (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	la .
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- 4e- 4d- 4e- 4f
Equipment Environmental Qualification Review	5a, 5h, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation . Equipment Summary	6a, 6b

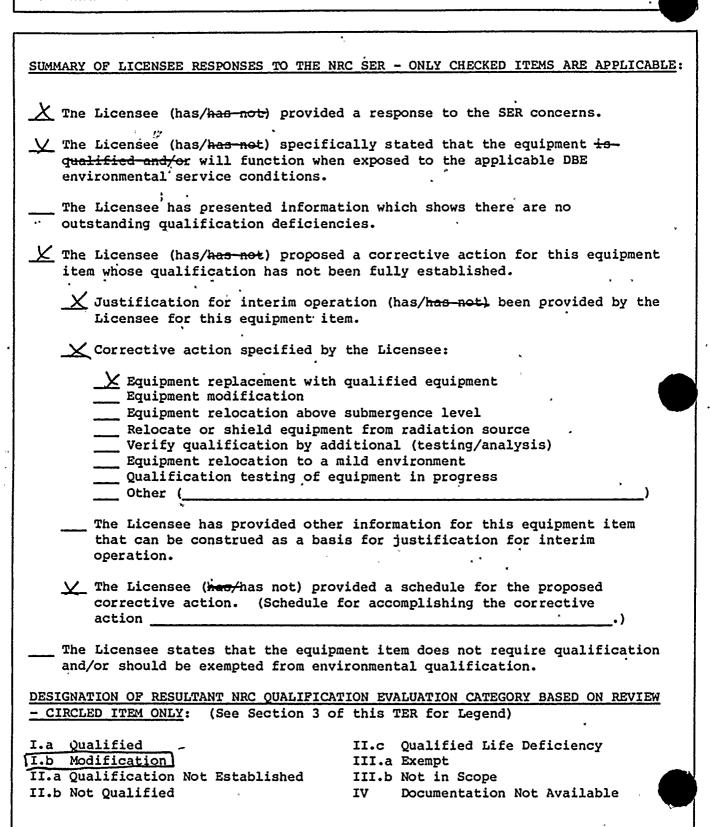
Maintenance and Replacement Schedule Summary

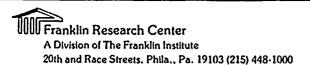
7a-7b-7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14





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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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 402

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied Piteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY 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 Equipment Exempt From Qualification III.a III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 464/470/47/

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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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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

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QUIPMENT 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)

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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, 4e, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 2, 5b, 5c, 5d, 5e, 5£, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X 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.
X 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 II.b Modification . III.a Exempt II.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔼 🗷

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

• · · · · · · · · · · · · · · · · · · ·	DESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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	hed
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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 Li 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	fe



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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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

Page la.

JIPMENT 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)(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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
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, 5e, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMMARY OF LICENSEE RESPONSES TO THE NE	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informat outstanding qualification deficience	
The Licensee (has/has-not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
	tion (has/ has-not) been provided by the m.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of equipment	submergence level at from radiation source itional (testing/analysis) ild environment
	information for this equipment item s for justification for interim
The Licensee (hea/has not) prov corrective action. (Schedule f	ided a schedule for the proposed or accomplishing the corrective)
The Licensee states that the equipm and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Qualified II.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

FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🖊 🖽

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied Fiteria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY I.a Equipment Qualified Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b Documentation Not Made Available IV



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. A



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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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QUIPMENT 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5c, 5f , 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a-6b

Maintenance and Replacement Schedule Summary

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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46914701471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABL
X 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.
<pre> Gerrective action specified by the Licensee:</pre>
Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation source Verify qualification by additional (testing/analysts) 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 II.b Modification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>105</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: K = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establishing 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 iteria Regarding Test Sequence Satisfied	
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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 Lor Replacement Schedule Justified III.a Equipment Exempt From Qualification	ife -
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. 2



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:

Pressure: Atmospheric
Relative Humidity: 100%
Radiation: Gamma Flux 6.2x10¹⁰
Neutron Flux 3.7x10¹⁸

- 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.

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JIPMENT 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)

RTO, RTP, H, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la .
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d-
Systém Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5a, 5d, 5a, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

SUMM	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u>	Tne 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.
	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 (her/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.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b II.a	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b Documentation Not Made Available IV



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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 EEEDR; 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 EEEDR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f , 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation . Equipment Summary	.6a7-6b-

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X 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.
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.b Modification II.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available

Page 2

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

DESIGNATION: X = DEFICIENCYNRC REQUIREMENTS 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 Priteria Regarding Radiation Satisfied Citeria Regarding Test Sequence Satisfied Friteria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b ΙV Documentation Not Made Available

Page 3a

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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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IPMENT 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

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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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 30, 3d
System Consideration Review	4 a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	Ga, Gb
Maintenance and Replacement Schedule Summary	7a, 7b, 70

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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) 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.
\underline{X} 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 (har/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.b Modification II.a Qualification Not Established III.b Not Qualified III.b Not Qualified III.b Not Qualified IV Documentation Not Available

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UJIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	M
NRC REQU	JIREMENTS	DESIGNATION: X = DEFICIENCY
Adequate Aging De Qualifie Program Criteria Criteria O P O R O S Criteria Criteria Criteria (If An Criteria Criteria Criteria Test Dur	ed Evidence of Qualification Adequate Similarity Between Equipment and Test Specimen Establic gradation Evaluated Adequately d Life or Replacement Schedule Established (If Required Established to Identify Aging Degradation Regarding Aging Simulation Satisfied (If Required) Regarding Temperature/Pressure Exposure: eak Temperature Adequate eak Pressure Adequate eak Pressure Adequate equired Profile Enveloped Adequately steam Exposure (If Required) Adequate Regarding Spray Satisfied Regarding Radiation Satisfied Regarding Radiation Satisfied Regarding Test Sequence Satisfied Regarding Test Failures or Severe Anomalies eay) Satisfied Regarding Instrument Accuracy Satisfied Regarding Instrument Accuracy Satisfied ation Margin (1 hour + Function Time) Satisfied Regarding Margins Satisfied (NUREG-0588, Cat. I)	<u>_X</u>
NRC QUAL	IFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.b II.a II.b II.c	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Loor Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	ife =
	See equipment item 64 for full evaluation detaile.	



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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).



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFIC DOCUMEN		DEFICIENCY (X OR NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS	!	[4266.]		1
Rate of Temp./Press. Increase	: :			:
Peak: °F/psig/RH/Time	BFunite2/3	test No.1.		!
Decrease To: °F/psig/RH/Time	228 4/0/101	<u>test No.1.</u> 156/0/90/14R <u>Test No.2</u> 212/0/100/14.	!	X-sie
Decrease To: °F/psig/RH/Time	REWALT!	212/0/100/14.		X-see into 8 and 9
	153/0/100/2 dutinaty			item 64
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.6/1.2.5.C, 2.2.6)	dulin site			
Fray 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)				1
In-Leakage Considered (5.2.6, 5.3.2/-/-)	, —			· · · · · · · · · · · · · · · · · · ·
Time to Submergence	, 	_		:
Dust Environment (-/2.2.11/2.2.11)		_	-	:
Gadiation dose (Normal + accident) Rode	5 1104	3 7/0 G	3 X10 6	
(110000001				

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

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

20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

Required Operating Time: 1 year

TER Checksheet No. 109
Licensee Submittal: Page NEB-75-219 [1, 12]

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DESIGNATION FOR DEFICIENCY IDENTIFIED BY THE NRC SER - CIRCLED ITEM(S) ONLY:

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:

, Maintenance and Replacement Schedule Summary

(See Section 3 of this TER for Legend)

Contents	Checksheet Page No.
Equipment Item .	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	Ga, Gb

7a...7b. 70

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO: 109.

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABL
X. 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.
\underline{X} 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.b Not in Scope
b Not Qualified IV Documentation Not Available

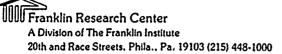
Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM



	,	DESIGNATION: X = DEFICIENCY
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	a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
		DESTGNATION:
Criteria		DESIGNATION: X = CATEGORY
Criteria	a Regarding Margins Satisfied (NUREG-0588, Cat. I)	X = CATEGORY



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QUIPMENT 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 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. L



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 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	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2 .
Licensee Response to NRC SER	3a, 3 b, 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

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. //O

SUMM	ARY	OF	LICE	ISEE	RES	PONS	es T	О ТНЕ	NRO	SER	_	ONI	ŗΧ (CHECK	ED	ITE	MS A	ARE	APPL:	ICABLE	<u>:</u> :
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					_			infor efici		on wh	ni	ch s	shov	vs th	ere	ar	e no	•			
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Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>RM</u>
	DESIGNATION:
•	X = DEFICIENCY
NRC REQUIREMENTS	R - Dat 10121101
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ. 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) 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 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 Schedules and several services and several services are serviced to the services	

has not been analyzed on tested and thoughter lacke qualification documentation.



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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/// </u>

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).

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 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. 4

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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4E
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a,6b

7a, 7b, 7c

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ///

	•
SUMMAR	RY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
Y Th	te Licensee (has/has-not) provided a response to the SER concerns. The Licensee (has/has-not) specifically stated that the equipment is calified and/or will function when exposed to the applicable DBE avironmental service conditions.
Th	te Licensee has presented information which shows there are no testanding qualification deficiencies.
	e Licensee (has/has_not) proposed a corrective action for this equipment em whose qualification has not been fully established.
د	Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item.
<u>×</u>	Corrective action specified by the Licensee:
0	Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation source
neter Mily 1	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)
	e Licensee states that the equipment item does not require qualification d/or should be exempted from environmental qualification.
	ATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW LED ITEM ONLY: (See Section 3 of this TER for Legend)
a Q	ualified II.c Qualified Life Deficiency III.a Exempt ualification Not Established III.b Not in Scope ot Qualified IV Documentation Not Available
	of Sagarance and an analysis a



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ,



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
NRC REQ	•	DESIGNATION: = DEFICIENCY
Document Adequate Aging Do Qualific Program Criteri Test Du	ced Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Established Life or Replacement Schedule Established (If Required) Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies my) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied ration Margin (1 hour + Function Time) Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: X = CATEGORY
I.a II.a II.b II.c III.a III.a III.b	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Lor Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	ife



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UIPMENT 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 EEEOR; 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 EEEOR 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. [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 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) (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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la .
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, 4o, 4€
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

7a, 7b, 7c

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 46914701471

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

SUMMAR	RY OF LICENSEE RESPONSES TO THE 1	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X In	e Licensee (has/ has not) provide	d a response to the SER concerns.
qu	e Licensee (has/has not) specificalified and/or will function who vironmental service conditions.	cally stated that the equipment is- en exposed to the applicable DBE
	e Licensee has presented information deficient	
	e Licensee (has/ has not) propose em whose qualification has not b	d a corrective action for this equipment een fully established.
<u>_X</u>	Justification for interim oper Licensee for this equipment it	ation (has/ has-not) been provided by the em.
	Corrective action specified by	the Licensee:
	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipme Verify qualification by ad Equipment relocation to a Qualification testing of e Other (submergence level nt from radiation source ditional (testing/analysis) mild environment
		r information for this equipment item is for justification for interim
×		vided a schedule for the proposed for accomplishing the corrective)
	e Licensee states that the equip d/or should be exempted from env	ment item does not require qualification ironmental qualification.
		TION EVALUATION CATEGORY BASED ON REVIEW f this TER for Legend)
I.b M	ualified odification	II.c Qualified Life Deficiency III.a Exempt
_	ualification Not Established ot Qualified	III.b Not in Scope IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	<u>KM</u>
		DESIGNATION:
NRC REC	QUIREMENTS	X = DEFICIENCY
Dogumo	nted Evidence of Qualification Adequate	¥
	ted Evidence of Qualification Adequate te Similarity Between Equipment and Test Specimen Establ	i ahad
	Degradation Evaluated Adequately	Talled
	begradation Evaluated Adequatery ied Life or Replacement Schedule Established (If Require	٠,
	n Established to Identify Aging Degradation	u)
	ia Regarding Aging Simulation Satisfied (If Required)	
	ia Regarding Temperature/Pressure Exposure:	
	Peak Temperature Adequate	
	Peak Pressure Adequate	
	Duration Adequate	,
	Required Profile Enveloped Adequately	
		,
	Steam Exposure (If Required) Adequate	
	la Regarding Spray Satisfied	
	ia Regarding Submergence Satisfied	
	ia Regarding Radiation Satisfied	,
	ia Regarding Test Sequence Satisfied	, ,
	ia Regarding Test Failures or Severe Anomalies	*
	Any) Satisfied	
	la Regarding Functional Testing Satisfied	,
	ia Regarding Instrument Accuracy Satisfied	
	uration Margin (1 hour + Function Time) Satisfied	
Criter.	ia Regarding Margins Satisfied (NUREG-0588, Cat. I)	•
		PROTON MYON.
NDC OII	AT TRICAMION CAMPOONS	DESIGNATION:
NRC_QUA	ALIFICATION CATEGORY	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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DUIPMENT 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 EEEOR; 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 EEEOR 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. J

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 40, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	Gay Gb

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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UPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113.

SUMM	RY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
¥	ne Licensee (has/ has_not) provided a response to the SER concerns.
	ne Licensee (has/has-not) specifically stated that the equipment is ualified and/or will function when exposed to the applicable DBE nvironmental service conditions.
	ne Licensee has presented information which shows there are no utstanding qualification deficiencies.
	ne Licensee (has/has not) proposed a corrective action for this equipment tem 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
	<pre> Verify qualification by additional (testing/analysis) Equipment relocation to a mild environment</pre>
Fire Co.	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)
	ne Licensee states that the equipment item does not require qualification ad/or should be exempted from environmental qualification.
	NATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW CLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope
l.b	Not Qualified IV Documentation Not Available

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>U69/478/47</u>/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
·	ESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	ned X
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 Lior 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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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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.

20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. $\underline{\mathcal{X}}$

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW			
Criteria: DOR Guidelines X			. 11
NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
EQUIPMENT DESCRIPTION Equipment Type	SOLENOID VALVE	Solenoid Valve	1
Manufacturer's Name (5.2.2/-/-)	ASCO	Automatic Switch Company	* * *
Model Number (5.2.2/-/-) . Serial Number	MB830081E	VL TOTIONA A	X NOTE 1
Features/Mounting (5.2.6/-/-)		HVA-206-308-3RF NP8320A184E NP831665E HV-202-300-2RF	
Connections/Interfaces (5.2.6/-/-)	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	NP8321A5E NP8323A39E	
Location/Elevation	REACTOR BUILDING		1
Equipment ID No.		· ·	1 1
QUALIFICATION REPORT (8.0/5.0/5.0) Report ID Number	AQS21678/TR (REV. A)	AQS21678/TR (Rep. 2)	! ! !
Report Date	1	March 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	: :
QUALIFICATION TEST PROGRAM 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) Load/Cycles/Voltage/ Current/Freq.	: ! !	Samples energized and deenergized at high and	:
No. State Str.		low pressure	

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

	•		
NRC REQUIREMENTS			DEFICIENCY
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
	•	•	
Acceptance Criteria	!	Operate at -15% & + 10%	
(5.2.5/2.2.1/2.2.1)		(Short Period)	:
		Rate VAC, 90-140 VDC	:
Accuracy (5.2.5/-/-)		Max & Min. D/P.	:
Number of Charimans		IR Coil > 1.0 Megohm at 509) .
Number of Specimens		VDC. C-L<0.5 MA @ 2x	• •1
Test Instruments Calibrated		rated Voltage + 1000 V for 11 min.	1
Test instruments calibrated	•	• 1 111111.	•
Safety Function (Active/	CONT. ISOL.	• !	
Passive) (-/2.1.3/2.1.3)	VALVE ; BACKUP	•	•
200210, (, 20000, 20000, ;	SCRAM PILOT.	1 (:
Test Duration (5.2.1/-/-)	YALVE	: 30 days	1
,	!	•	!
Accident Duration (Envir.	!	! .	!
Above Normal) (5.2.1/-/-)	!	: •	:
	!	!	!
equired Function Time	! THR:		:
	!	Baseline functional tests	:
Test Sequence (General)		Thermal Aging	!
(5.2.3/2.3.1/2.3.1)		Radiation Aging	!
		Operational Aging	•
Test Sequence (NUREG-0588,	-	Seismic/Vibration DBE	•
Cat. I) (-/2.3.1/-)		radiation exposure STM +	•
1	•	CHSP Exposure	•
1. Representative Sample	•		•
 Baseline Data Performance Extremes 		•	•
	,	•	•
4. Thermal Aging5. Radiation Aging	•	•	i
6. Wear Aging	•	•	i
7. Vibration/Seismic	•	1	1
8. DBE Exposure	1	1	Ĭ
9. Post-DBE Exposure	•	:	Ī
10. Inspection	!	!	1
	!	!	:
Aging	!	!	:
(5.2.4, 7.0/4.0/4.0)	:	:268 deg. F/288 hr.	:
Thermal Aging/Basis	1	4.4 yr @ 140 deg. F	:
	!	1	:
Material Aging	!	•	:
Evaluation (7.0/-/-)	!	:	:
	!	! ·	:
aterials Susceptible		Solenoid Coils &	:
(Thermal) (5.2.4, 7.0/-/-)	:	Elastomeric parts	!
	:	:	!
Radiation Aging, Type	1	: GAMMA	1

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. $\underline{\mathbf{U}}$

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	! ! 1x 10 ⁵ rd.	! !50 x 10 ⁶ rd !1.0 Mrd/hr.	•
Radiation Aging, Dose Rate		Test	
Radiation Aging, Method	•	•	•
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 Normal Ambient Radiation Normal Ambient Humidity	NOT STATED		
On-Going Surveillance and Preventive Maintenance (7.0/-/-)			
On-Going Analysis of Failures and Degradation (7.0/-/-)	1		
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	:	:	, !
<pre>(not required) 4. Time (+10%, +1 hour + function time minimum)</pre>	:	•	

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

	•		
NRC REQUIREMENTS		•	DEFICIENCY
WITH SECTION REFERENCE	LICENSEE	OUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
75017 0000 17 0000 127	:	1	HOLD HOLD
ACCIDENT CONDITIONS	:	1	i
		1 2 2	i
LOCA/MSLB/HELB/Uncontrolled	! LOCA	! LOCA	1
(4.1, 4.2, 4.3.1, 4.3.3/	!		į
1.1, 1.2, 1.5/1.1, 1.2, 1.5)		!	1
	:	•	1
Radiation Type	1 .	: GAMMA	:
•	!	!	!
'Radiation Dose (rd)	1	! 150 Mrd	
(4.1.2/1.4/1.4)	12.1×107	!	! .•
•	!	!	. 1
Radiation Dose Rate (rd/hr)	!	!<1 Mrd/hr.	:
Radiation Qual. Method	! .	!	:
(5.3.1/-/-)	:	•	!
		!	! *
Proximity to Concentrated		l , , ,	:
Radiation	1	1	:
4.1.2/1.4.6/1.4.6)	!	•	:
		,	:
Equipment Susceptible to	•	•	!
Beta Radiation (4.1.2/-/-)			
	•		<u>.</u>
Radiation Dose (Normal +	1	200 Mrd	•
Accident) (4.1.2/-/-)	•	, .	•
Plakent Dans dansilansi	•	•	•
Plateout Dose Considered	•	; 	
(-/1.48/1.48)	i * 1	•	•
Gamma + Beta Dose (rd)		• •	•
, , , , , , , , , , , , , , , , , , ,	2,1×107rd.	; w -	•
(4.1.2/1.4.7/1.4.7)	•	•	•

ir.

(-/2.2.11/2.2.11)

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

				•
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		28.8 deg. F/min/9.1 ^{psig/m}	ih !	
	157°F 15.0 psia 100 %, rh	346/110/100/3 HR 320/75/100/3 HR 250/15/100/85 HR 200/10/100/26 days	! ! ! ! .	
Decrease To: °F/psig/RH/Time Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	<u>-</u>			
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, 2.2.8/1.3, 2.2.8)	NA	TEST H ₃ BO ₃ (3000ppm boron) 0.064m Sodium Thiosulfate NaOH ph= 10.0		
Spray Density (gpm/ft ²) Spray Duration	1	0.306 30 days		
Submergence Duration (4.1.3/2.2.5/2.2.5)	· · · · · · · · · · · · · · · · · · ·	k .	• • • •	
In-Leakage Considered (5.2.6, 5.3.2/-/-)				
Time to Submergence	<u> </u>		1	
Dust Environment	•		:	

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UIPMENT 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 priemoso, has not voitablished similarity
. tromqueza astat sono adatorne alte resursal
The licenses should verily that the
installed values are NP perios.
•
,

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _

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, QT) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	Aa, Ab, 4c, 4d, Ao, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f 5a, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a,-6b

7a, 7b, 70

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114,

SUMM	IARY	OF	LIC	ensi	E I	RESP	ons	ES 1	TT O	E NR	C SER		ONL	Y C	HECKI	ED I	TEMS	S AR	E AP	PLIC	ABLE
X_	Tne	Lic	ens	ee	(has	s/ ha	s-n	24)	prov	ided	a res	sp	onse	to	the	SER	cor	ncer	ns.		
	qual	l Ei	ed	and,	4or	wil	l f	unct		when	ally s expos										
			•							rmat ienc	ion whies.	ni	ch s	how	s the	ere	are	no			
X											a cor en ful						or t	his	equ	ipmen	nt
	<u>X</u>									pera 'ite	tion ((h	as/h	as- :	10t)	bee	n pr	ovi(ded	by tl	ήe
	X	Cor	rec	ive	e ac	tio	n s	eci	fied	by	the Li	ic	eņse	e:							
Sar.			Equ Equ Rel Ver Equ Qua	iipn lipn loca ify	nent nent te qu nent	mo re or ali	difi loca shica fica loca	icat atio eld atio atio	ion n ab equi n by n to	ove pmen add	qualif submer t from itiona ild er uipmer	g al al	ence radi (te iron	le ation	vel on so ng/ar	ourc naly			,	1	
		tha		an b	e c						infor s for									tem	
•	¥	cor									ided a									.)	
											ent it ronmer							qua.	lifi	catio	on
										_	ION EV						Y BA	SED	ON	REVII	<u>ew</u>
		lifi Lif	cat:	cior		ot E	stai	blis	hed		II.c III.a III.b	a :	Exem Not	pt in :	ed Li Scope	:			_	e	



A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
NRC REQU	•	ESIGNATION: DEFICIENCY
Adequate Aging De Qualifie Program Criteria Test Du	ed Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Established egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Required) Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Pressure (If Required) Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Test Sequence Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies nny) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied ration Margin (1 hour + Function Time) Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	LIFICATION CATEGORY	DESIGNATION: X = CATEGORY
I.a I.b II.a II.c III.a III.a III.b	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Lift or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in, the Scope of the Qualification Review Documentation Not Made Available	e = ==



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UIPMENT 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 EEEOR; 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 EEEOR 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:
Reforma 806 is a test porformed by
Rockwell infg. co. on MSIV pilot
ralue assemblies. One value set
consisted of 2 Norgren company values
and 2 ASCO polenois valves (moroel HTX8320)
One surrage masta jo Ostaiamo pristas.T
aperational cycling at 340 to 344 °F. Sluggish
aperation of the Norgren values caused
ly the ASCO palenoisos was mates.
This test Over not votablish qualification
for this equipment. The test coes
ai tnemginge alt talt etastanomea
operable at temperatures vrounce 340°F.
De test program Did mat uniclude
any thermal or radiation aging.
and no Daseline and functional test
Oato was presented. Vendor Oato
ailt talt estasioni wolse Ostnesorg.
their Om a man for air to email air
temperature mange of 32 to 77°F.
- Consideration of the Constant of the Constan

These rugged forged brass, steel and stainless steel body valves are especially suited for heavy-duty industrial applications.

Important: No minimum operating pressure is required.

Applications

These valves may be used on:

- air vises
- machine tools
- turbines • compressors

Specifications

Operation: Three types are available:

- (a) Normally Closed
- (b) Normally Open
- (c) Universal

Pipe Sizes: 1/8", 1/4", 1/8" and 1/2" N.P.T. Valve Parts in Contact with Media:

Body - Brass, Steel or 304 s.s., as listed.

Disc — 303 s.s. (metal seated); Nylon (resilient seated).

Core Tube - 305 s.s.

Core and Plugnut — 430F s.s.

Springs — 302 s.s.

Shading Coil - Copper for brass and steel valves; Silver for stainless steel valves.

Seats - Buna "N," or 303 s.s., as listed. *

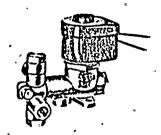
Gaskets - Buna "N" for brass and steel valves: Teflon for stainless steel valves; Ethylene Propylene for steam valves.

Solenoid Enclosures: Two types are available:

- (a) General Purpose (NEMA 1).
- (b) Explosion-Proof and Watertight (NEMA 7C sexcept Steam Service), 7D and 4).

Electrical: Standard Voltages: 24, 120, 240, 480 volts, A-C, 60 Hz (or 50 Hz in 110 volt multiples). 6, 12, 24, 120, 240 volts, D-C.

Other voltages available when required.



Note: 125 volts, D-C, and 250 volts, D-C, are battery voltages applied in power plants. Special valves in both A-C and D-C construction are available for power plant applications, to act as pilots for control valves. Consult ASCO for listing.

Coils: Continuous Duty Class H or Molded Class F, as listed.

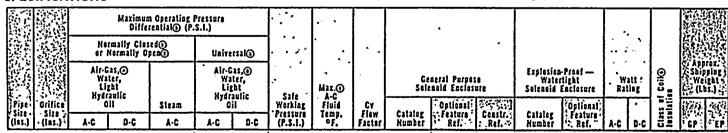
Temperature: Fluid: To 400°F., as listed.

Ambient: Nominal Range, 32°F, to 77° F.

Installation: Valves must be mounted with solenoid vertical and upright.

Approvals: CSA certified. Refer to page 6 for details.

SPECIFICATIONS



UIPMENT

FRC PROPRIETARY 海門ORMATION

A Division of The Franklin Institute
20th and Race Streets, Phila., Pa. 19103 (215) 448-1000

ENVIRONMENTAL QUALIFICATION REVIEW

Q Q

EQUIPMENT ITEM NO.

Franklin Research

Center

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. .

As can be seen from the preceeding pages, the solenoid valves are



NOTES:

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.



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 471

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

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) (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	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>(/64/47/47</u>/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO



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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.
imes 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 III.a Exempt III.a Qualification Not Established III.b Not in Scope
II.b Not Qualified IV Documentation Not Available



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470/471

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>//5</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 Literia Regarding Radiation Satisfied teria Regarding Test Sequence Satisfied riteria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b Documentation Not Made Available IV





NRC Contract No. NRC-03-79-118
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FRC Task No. <u>469/470/47</u>/

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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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).



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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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

NOTES:
Reforences 4673 (G.E. summary report 097-A-01)
Overmente: stating porformed on an
ASCO polenoio value (mordel no. HVA-90-405).
Testing consisted of exposure to 212.°F, 100%.
nh for 6 hours. The value was
also subjected to seismis testing. The
test summary does not contain auditable data,
and information regarding test recents. This
Ores not constitute qualification.
for this equipment
Reference 4674 (G.E. summary report
097-A-02) is a pummary of vendor
oata and over not provide
qualification for this equipment.
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V

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 411

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _//6

SUMMARY OF LICENSEE RESPONSES TO THE NI	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
The Licensee (has/has not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	cally stated that the equipment is a exposed to the applicable DBE
The Licensee has presented informat outstanding qualification deficience	
The Licensee (has/has not) proposed item whose qualification has not be	d a corrective action for this equipment een fully established.
Justification for interim opera Licensee for this equipment ite	ation (has/has not) been provided by the
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification	•
Equipment relocation above Relocate or shield equipmen	-
Verify qualification by add	
Equipment relocation to a m	
Qualification testing of equation Control (uipment in progress
	··································
	information for this equipment item s for justification for interim
mb - vi	J 3- 3 2-2 - C
	rided a schedule for the proposed for accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
DESTGNATION OF DESILEANT NEC CHALTETCAT	TION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3 of	
, , , , , , , , , , , , , , , , , , , ,	/
I.a Qualified	II.c Qualified Life Deficiency
J.b Modification	III.a Exempt
a Qualification Not Established	III.b Not in Scope
2.b Not Qualified	IV Documentation Not Available

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
	GNATION: EFICIENCY
INC REQUIREMENTS	
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)	
	SIGNATION: = 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 revieur of equipment item 114



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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

LICENSEE RESPONSE TO NRC SER

Those noted deficiencies <u>circled</u> in attachment 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 (RO) or February (R1) submittal of the BFN EEDQR to NRC.

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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. L



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) (RT) (P) (H) CS, (C) 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	la
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	.da - 6b -

Maintenance and Replacement Schedule Summary 72, 75, 7c

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FRC Assignment No. 13
FRC Task No. 469/470/47/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117.

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICATION TO THE LICENSEE (has/has-not) provided a response to the SER concerns.
X The Licensee (has/ $hae-not$) provided a response to the SER concerns.
X 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.
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 (hea/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 REVIE - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.a Qualified II.c Qualified Life Deficiency III.a Exempt a Qualification Not Established III.b Not in Scope O.b Not Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARI FOR	<u>uu</u>
		DESIGNATION:
NRC REQU	JIREMENTS .	X = DEFICIENCY
Adequate Aging De Qualifie Program Criteria Criteria O F O F O S Criteria Criteria Criteria Criteria Criteria Criteria Criteria Criteria Test Dur	ed Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establic egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Required Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Pressure (If Required) Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies any) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
VDG 0411		DESIGNATION:
MAC QUAL	LIFICATION CATEGORY	X = CATEGORY
I.a	Equipment Qualified	
	Equipment Qualification Pending Modification	
II.a II.b	Equipment Qualification Not Established Equipment Not Qualified	
II.c	Equipment Satisfies All Requirements Except Qualified I	ife
••	or Replacement Schedule Justified	
III.a	Equipment Exempt From Qualification	* ***********
	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	-



NRC Contract No. NRC-03-79-118
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FRC Task No. 469/470/47/

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QUIPMENT 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 Assignment No. 13
FRC Task No. 41

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

Equipment Item No. 118

Solenoid Valve Located in the Reactor Building

ASCO Model HT8211C94

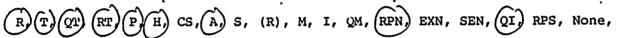
Actuates Drywell or Suppression Chamber Exhaust Valve (FSV-84-19, -20)

Licensee reference not cited Required Operating Time: 1 year

TER Checksheet No. 118

Licensee Submittal: 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)



Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d-
System Consideration Review	4 a, 4b, 4c, 4d, 4c, 4f-
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j,
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b ,

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

SUMM	IARY C	OF LICENSEE RESPONSES TO THE NR	C SER	- ONLY CHECKED ITEMS ARE APPLICABLE:
¥.	The I	Licensee (has/ has not) provided Licensee (has/ has no t) specific ified and/or will function when	ally s	tated that the equipment is-
	The I	ronmental service conditions. Licensee has presented informat tanding qualification deficienc		ich shows there are no
X	The L	_	a cor	rective action for this equipment ly established.
-		Justification for interim opera Licensee for this equipment ite		has/ has not) been provided by the
-	×°	Corrective action specified by	the Li	censee:
O den	-	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of equipment (submer t from itiona ild en	gence level radiation source l (testing/analysis) vironment
-	t	The Licensee has provided other that can be construed as a basi operation.		
-	C	The Licensee (has/has not) prove corrective action. (Schedule for action		
		Licensee states that the equipment or should be exempted from envi		em does not require qualification tal qualification.
		ON OF RESULTANT NRC QUALIFICAT DITEM ONLY: (See Section 3 of		ALUATION CATEGORY BASED ON REVIEW TER for Legend)
)a	Modi Qual	ified fication lification Not Established Qualified	III.a	Qualified Life Deficiency Exempt Not in Scope Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4691470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>M</u>
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Establi	ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required	2)
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)	
	· · · · · · · · · · · · · · · · · · ·
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
MAC QUALITICATION CITAGONA	
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	rite
or Replacement Schedule Justified	•
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review	
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. 46 9/470/47/

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1/8

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).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 47]

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. LI

MENT ENVIRONMENTAL GOALINGATION TIEVIEW OF EGOINMENT TEM NO. D

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]

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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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb ,
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	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b.

Page 1 b

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

SUMA	MARY	OF	LICEN	SEE	RESPO	ONSES	TO T	CHE NR	C SER	=	ONL	Y CH	ECKED	_IT	ems 1	ARE	APPL	ICABL	<u>E</u> :
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								opera it ite	tion (i m.	ha	as/ha	as no	ot) b	een	prov	/ide	d by	the	
		Cor	recti	ve a	ction	spe	cifie	d by	the Lic	ce	eùsee	:							
			Equi Equi						qualifi	ie	ed ec	quipn	ent					,	
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			catio		–		.		III.a		-	•							
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FRC Project No. C5257
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FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARI FOR	<u>Mi</u>
9		DESIGNATION:
		X = DEFICIENCY
NRC REQ	UIREMENTS	<u> </u>
Dogumen	ted Evidence of Qualification Adequate	_X
Adoguati	e Similarity Between Equipment and Test Specimen Establ	
Adequat	egradation Evaluated Adequately	
Aging D	ed Life or Replacement Schedule Established (If Require	d)
Program	Established to Identify Aging Degradation	
Criteri.	a Regarding Aging Simulation Satisfied (If Required)	
Criteri	a Regarding Temperature/Pressure Exposure:	
0	Peak Temperature Adequate	
	Peak Pressure Adequate	·
0	Duration Adequate .	
0	Required Profile Enveloped Adequately	
0	Steam Exposure (If Required) Adequate	***************************************
	a Regarding Spray Satisfied	
Criteri	a Regarding Submergence Satisfied	
Criteri	a Regarding Radiation Satisfied	
Criteri	a Regarding Test Sequence Satisfied	
	a Regarding Test Failures or Severe Anomalies	·
(If A	ny) Satisfied	·
Criteri	a Regarding Functional Testing Satisfied	
Criteri	a Regarding Instrument Accuracy Satisfied	
Test Du	ration Margin (1 hour + Function Time) Satisfied	
Criteri	a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
		DESIGNATION:
NPC OIL	LIFICATION CATEGORY	X = CATEGORY
MAC QUA	mir roution detailed	
I.a	Equipment Qualified	
I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	$\overline{\mathbf{X}}$
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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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

Those noted deficiencies <u>circled</u> in attachment have been addressed in 2. 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 EEEOR, and those deficiencies not marked have been previously addressed adequately in TVA's November (R0) or February (R1) submittal of the BFN EEEOR to NRC.

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1(00) 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.

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)

P, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d.
System Consideration Review	4a, 4b, 4c, 4d, 4e, 41
Equipment Environmental Qualification Review	5a, 5b, 5o, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary .	6a, 6b

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

SUMMA	RY OF	LICENS	EE RES	PONSES	TO THE I	NRC SER	- O	NLY CH	ECKED	ITEMS	ARE	APPLICABL	E
Y T	he Lice	ensee e d and	(has/ h /o r wi	as not) ll func	provide specifi stion whe itions.	ically s	tate	ed tha	t the	equip	nent		
					informa deficier		ich	shows	there	e are r	10		•
i :	tem who	ose qu	alifiç	ation h	as not b	een ful	ly e	establ:	ished.			quipment ;	
	X Just Lice	ifica ensee	tion for the	or inte is equi	rim oper pment it	ation (em.	has/	/ has-n c	be	en pro	vide :	d by the	
	X Corr	ectiv	e acti	on spec	ified by	the Li	cens	see:		n ii			
.		Equipa Equipa Reloca Verify Equipa	ment montered to the content of the	odifica clocati shield lficati clocati	ent with tion on above equipme on by ad on to a ing of e	submerent from ditional	genc rad l (t viro	ce leve liation cesting	el n sour y/anal		î		
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					he equip from env						uali	fication	
					UALIFICA tion 3 o					RY BAS	ED O	N REVIEW	•
I.b A	Qualifi Modific Qualifi Not Qua	ation cation	Not B	Sstabli:	shed	II.c III.a III.b IV	Exe Not	lified mpt in Sc umenta	ope				•

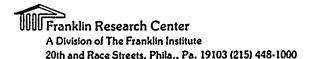
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
•	SIGNATION: DEFICIENCY
,	
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established Aging Degradation Evaluated Adequately	$\frac{X}{=}$
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)	
	DESIGNATION:
-	<pre>CATEGORY</pre>
I.a Equipment Qualified I.b Equipment Qualification Pending Modification	~
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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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

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 EEEOR; 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 EEEOR 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. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. J

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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, 5£, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation	-6a, -6b-

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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On

DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

SUMA	IARY	Y OF LICENSEE RESPONSES TO THE NRO	SER	- ONLY CHECKED ITEMS ARE APPLICABLE
	The	e Licensee (has/harmet) provided e Licensee (has/harmet) specifica halfied and/or will function when vironmental service conditions.	ally s	tated that the equipment is
	The	E Licensee has presented informations:		ich shows there are no
		e Licensee (has/h ans not) proposed em whose qualification has not be		
	X	Justification for interim operat Licensee for this equipment item		nas/ bas not) been provided by the
	X	Corrective action specified by	he Li	censee:
		Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by additionation to a minus Qualification testing of equipment (submere from tiona	gence level radiation source L (testing/analysis) rironment
,		The Licensee has provided other that can be construed as a basis operation.		
	メ	The Licensee (has not) provi corrective action. (Schedule for action		_ _ _
		e Licensee states that the equipments of the control of the contro		
		ATION OF RESULTANT NRC QUALIFICATE LED ITEM ONLY: (See Section 3 of		ALUATION CATEGORY BASED ON REVIEW PER for Legend)
I.b	Mod Qua	nalified odification nalification Not Established ot Qualified	III.a	Qualified Life Deficiency Exempt Not in Scope Documentation Not Available

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470471

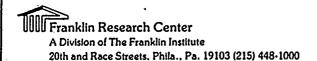
Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
•	DESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 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 Li 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	Life = ==================================

SEE DETAILED REVIEW ON EQUIPMENT ITEM 113



NRC Contract No. NRC-03-79-118
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FRC Task No. 469/970/97/

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IPMENT 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 EEEDR; 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 EEEDR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _

130

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

Cantonto

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d -
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4E
Equipment Environmental Qualification Review	Sa, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a7-6b-

Maintenance and Replacement Schedule Summary 72, 75, 7c



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

SUMI	MARY OF LICENSEE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
_	The Licensee (has/has-not) provided The Licensee (has/has-not) specific qualified and/or will function whe environmental service conditions.	cally stated that the equipment is
	The Licensee has presented information outstanding qualification deficient	
	The Licensee (has/has not) proposed item whose qualification has not be	d a corrective action for this equipment een fully established.
	Justification for interim operations and Licensee for this equipment it	ation (has/has not) been provided by the
	Corrective action specified by	the Licensee:
	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a regular control of education testing of education testing of education control of	submergence level nt from radiation source ditional (testing/analysis) mild environment
		r information for this equipment item is for justification for interim
	——————————————————————————————————————	vided a schedule for the proposed for accomplishing the corrective
	The Licensee states that the equipment and/or should be exempted from environment.	ment item does not require qualification ironmental qualification.
	IGNATION OF RESULTANT NRC QUALIFICATION 3 OF RESULTANT NRC QUALIFI	FION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
-	•	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

A Division of The Franklin Institute
20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ${\cal L}_{\!\!\!4}$

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM



NRC REQUIREMENTS	DESIGNATION: $X = DEFICIENCY$
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Esta Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requipment and Test Specimen Esta 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 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 or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Rev Documentation Not Made Available	
,	

See review of equipment item 114



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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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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 (RO) or February (R1) submittal of the BFN EEDQR to NRC.

20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. 411

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



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

TER Checksheet No. 123

Licensee Submittal: Page NEB-64-49A [1]

Required Operating Time: 1 day

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

Equipment Summary

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
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, 40, 4d, 4c, 4f
Equipment Environmental Qualification Review	5 0, 5b, 50, 5d, 50, 5f, 5g, 5h, 5i, 5j
Installed TMI.Lessons Learned Implementation	6ay-6b

Maintenance and Replacement Schedule Summary 72, 7b, 7c

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FRC Task No. 469/470/47/

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

SUMMARY	OF LICENSEE RESPONSES TO THE NR	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
_X The	Licensee (has/h as not) provided	d a response to the SER concerns.
qua	e Licensee (has/has not) specificalified and/or will function when vironmental service conditions.	cally stated that the equipment is . n exposed to the applicable DBE
	Licensee has presented informat estanding qualification deficienc	
	e Licensee (has/ has not), proposed em whose qualification has not be	d a corrective action for this equipment een fully established.
×	Justification for interim opera Licensee for this equipment ite	ation (has/ has-not) been provided by the em.
\succeq	Corrective action specified by	the Licensee:
Q	Equipment replacement with a Equipment modification Equipment relocation above a Relocate or shield equipment Verify qualification by add	submergence level nt from radiation source ditional (testing/analysis)
	Equipment relocation to a m Qualification testing of equipment (
		r information for this equipment item is for justification for interim
X		vided a schedule for the proposed for accomplishing the corrective
	e Licensee states that the equipm d/or should be exempted from envi	ment item does not require qualification ironmental qualification.
	ATION OF RESULTANT NRC QUALIFICAT LED ITEM ONLY: (See Section 3 of	TION EVALUATION CATEGORY BASED ON REVIEW f this TER for Legend)
a Qu	palified odification palification Not Established ot Qualified	<pre>II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available</pre>
- 10 MO	in Anathrian	Ti Doduigited fait not tranfit



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.. [4]



EQUIPMENT ENVIRONMENTAL QUALIFICATION BURNARY TO	
	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	X - DEFICIBILITY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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 Radiation Satisfied Criteria Regarding Test Sequence 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)	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	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 Revie	w
IV Documentation Not Made Available	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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JIPMENT 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 EEEOR; 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 EEEOR contained in attachment 3. The schedule for replacement of these devices will be in accordance with NRC requirements (when possible).

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. _



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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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, 31, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

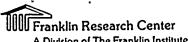
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12.4

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICA	LE:
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.	ı
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 III.a Exempt III.b Not in Scope IV Documentation Not Available	



A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
•	DESIGNATION: = DEFICIENCY	
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 Radiation Satisfied Criteria Regarding Test Sequence 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)	hed	
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 Li 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	afe =	



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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UIPMENT 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).

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.

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 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e , 5f, .5 g, 5h, 5i, 5i
Installed TMI Lessons Learned Implementation	-6a, -6b

Equipment Summary

Maintenance and Replacement Schedule Summary 7a, 7b, 7c

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4/69/470/41/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

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SUMMARY OF LICENSEE RESPONSES TO THE NR	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provided	a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informat outstanding qualification deficienc	
The Licensee (has/has not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
	tion (has/ has-not) been provided by the m.
Corrective action specified by	the Licensee:
Equipment replacement with a Equipment modification Equipment relocation above Relocate or shield equipmen	submergence level
Verify qualification by add Equipment relocation to a m Qualification testing of eq Other (itional (testing/ analysis) ild environment
The Licensee has provided other that can be construed as a basi operation.	information for this equipment item s for justification for interim
The Licensee (has/has-not) province corrective action. (Schedule faction	
The Licensee states that the equipment and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	
I.a Qualified Y.b Modification a Qualification Not Established b Not Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available .

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
NRC REQUIREMENTS DESIGNATION: X = DEFICIENCE			
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 Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)			
NRC QUALIFICATION CATEGORY MRC QUALIFICATION CATEGORY 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			



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/476/471</u>

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JIPMENT 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 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 EEEQR (R1).

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46947047/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. L



"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 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.

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

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PMENT 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)

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
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	5 a, 5b, 5c, 5d, 5 e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	6a, 6b.

Equipment Summary

Maintenance and Replacement Schedule Summary

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124



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 III.a Qualification Not Established III.b Not Qualified IV Documentation Not Available

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46914701471

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126:

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
DESIGNATION: NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied fiteria Regarding Test Failures or Severe Anomalies	
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 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	

SEE EVALUATION ON PAGE 5 F



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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FRC Task No. Y69/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

•
EVALUATION:
1. The Licensee has not provided
documentation from the manufact
urer which states That the cited
l .
: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.
O THOMPSON OF THE PARTY OF THE
Conclusion:
This equipment item is assigned to
NRC Qualification Category II.a
NRC' Qualification Category II.a because traceability has not been
established.
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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.12

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, (\overline{T}) , (\overline{QT}) , RT, P, H, CS, (\overline{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	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5e, 5d, 5e, 5f, 5g, 5h, 5i, 5j

Installed TMI Lessons Learned Implementation 6a. 6b

Equipment Summary

Maintenance and Replacement Schedule Summary 7a, 7b,

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

SUMMARY OF L	LICENSEE RESPONSES TO THE NRO	SER -	ONLY CHECKED ITEMS	ARE APPLICABLE:
∴ The Lice	ensee (has /has-not) provided ensee (has /has-not) specifica ed-and/or will function when mental service conditions.	Lly sta	: ted that the equip	ment is_
	ensee has presented informati ling qualification deficienci		h shows there are	no .
	ensee (has/h as not) proposed ose qualification has not bee			his equipment
	cification for interim operatensee for this equipment item		s/ has not) been pr	ovided by the
∠ Corr	ective action specified by t	he Lice	nsee:	
	Equipment replacement with quipment modification Equipment relocation above some selection above some selection equipment verify qualification by additional equipment relocation to a minute qualification testing of equipment (ubmerge : from r .tional .ld envi	nce level adiation source (testing/ analysis) ronment)
· that	Licensee has provided other can be construed as a basis ation.			
corr	Licensee (has/has-net) provi rective action. (Schedule for tion	r accom		
	ensee states that the equipment should be exempted from envir			qualification
	OF RESULTANT NRC QUALIFICATION ONLY: (See Section 3 of			SED ON REVIEW
I.a Qualifi b Modific a Qualifi b Not Qua	cation cation Not Established	III.a E	ualified Life Defi xempt ot in Scope ocumentation Not A	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUARTITION DURANTE	/141
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
MC REGULATION .	
Documented Evidence of Qualification Adequate	ished X
Adequate Similarity Between Equipment and Test Specimen Establ	ished <u>X</u>
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	ed)
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)	+>
	
	DESIGNATION:
NRC_QUALIFICATION_CATEGORY	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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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>127</u>

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 EEFOR 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 EEFOR (R1).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



"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 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.



Page la

IPMENT 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" 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:

Contents	Checksheet Page No.
Equipment Item	la
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	5 a, 5b, 5c, 5d, 5e , 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary.	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1



SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has not) provided a response to the SER concerns. Y 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/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE
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.
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 Yerify 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 net) 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 III.a Exempt III.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Established 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	
iteria Regarding Test Sequence Satisfied	
teria 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)	
	£5
	DESIGNATION:
NRC QUALIFICATION CATEGORY	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	
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 Oualification Program Plan submitted to NRC in February

Laboratories Qualification Program Plan submitted to NRC in February 1981 with the revised BFN EEEQR (RL).



IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

"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 MOTOR-IZED 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. 17

3

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 40, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

7a. 7b. 7c

Page lb

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129.

SUMM	IARY	Y OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEM	IS ARE	APPLICABLE
	Tne	e Licensee (has/ has-not) provided a response to the SER co	ncerns	5 .
	qual	e Licensee (has/has-not) specifically stated that the equi alified and/or will function when exposed to the applicabl vironmental service conditions.	pment e DBE	ie,
		e Licensee has presented information which shows there are tstanding qualification deficiencies.	no	
		e Licensee (has/has-not) proposed a corrective action for em whose qualification has not been fully established.	this e	equipment
,	X	Justification for interim operation (has/ has not) been p Licensee for this equipment item.	rovide	ed by the
,	X	Corrective action specified by the Licensee:		
0		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)	
44		<pre>Equipment relocation to a mild environment Qualification testing of equipment in progress</pre>		
il.		Other .()
		The Licensee has provided other information for this equentiate that can be construed as a basis for justification for i operation.		
,	×	The Licensee (bas/has not) provided a schedule for the p corrective action. (Schedule for accomplishing the correction		
		e Licensee states that the equipment item does not require d/or should be exempted from environmental qualification.	quali	fication
		ATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY B LED ITEM ONLY: (See Section 3 of this TER for Legend)	ASED C	ON REVIEW
I.a	Qua	ualified . II.c Qualified Life Def	icienc	:v
		odification III.a Exempt		· 4
·a	Qua	ualification Not Established III.b Not in Scope		
() .b	Not	ot Qualified IV Documentation Not	<u>A</u> vaila	ble



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
,	GNATION: 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 Radiation Satisfied Criteria Regarding Test Sequence 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)	
- -	ESIGNATION: = 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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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>129</u>:

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEPOR 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.

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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 MOTOR-IZED 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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VIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>13</u>0

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]

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	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b , 3a, 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

70, 70, 70

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. L

SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provide	led a response to the SER concerns.
The Licensee (has/has-not) specific qualified and/or will function when the environmental service conditions.	nen exposed to the applicable DBE
The Licensee has presented inform outstanding qualification deficie	
The Licensee (has/has-not) propositem whose qualification has not	sed a corrective action for this equipment been fully established.
Justification for interim open Licensee for this equipment i	eration (has/ has not) been provided by the tem.
Corrective action specified b	y the Licensee:
Equipment replacement wit	,
Equipment relocation abov Relocate or shield equipm	re submergence level dent from radiation source
<pre>Verify qualification by a Equipment relocation to a</pre>	dditional (testing/ analysis),
Qualification testing of Other (
	er information for this equipment item sis for justification for interim
	ovided a schedule for the proposed for accomplishing the corrective
The Licensee states that the equi and/or should be exempted from en	pment item does not require qualification vironmental qualification.
	ATION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section 3	of this TER for Legend)
I.a Qualified I.b Modification	<pre>II.c Qualified Life Deficiency III.a Exempt</pre>
II.a Qualification Not Established	III.b Not in Scope .
II.b Not Qualified	IV Documentation Not Available



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

• -	ESIGNATION: - DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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	ed X
o Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Submergence Satisfied Criteria Regarding Radiation Satisfied iteria Regarding Test Sequence Satisfied iteria 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)	DESIGNATION:
NRC QUALIFICATION CATEGORY	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 Lift 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	e



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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 EEDOR 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 EEDOR (R1).

IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

"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 MOTOR-· IZED 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 MOTOR-IZED 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. L

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]

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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	1a, 1b, 1c, 1d, 1e, 4f
Equipment Environmental Qualification Review	- 5a, 5b, 5c, 5d, 5e , 5f, - 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

-7a - 7b - 7c -

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

SUMA	IARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
	The q ual	Licensee (has/has-not) provided a response to the SER concerns. Licensee (has/has-not) specifically stated that the equipment is- ified and/or will function when exposed to the applicable DBE conmental service conditions.
1,		Licensee has presented information which shows there are no canding qualification deficiencies.
X	The	icensee (has/has-not) proposed a corrective action for this equipment whose qualification has not been fully established.
	<u> </u>	Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item.
	<u>×</u>	Corrective action specified by the Licensee:
er d	•	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.
•	X.	the Licensee (hub/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective sction
		icensee states that the equipment item does not require qualification r should be exempted from environmental qualification.
		ON OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Mod Qua	ified II.c Qualified Life Deficiency III.a Exempt ification Not Established III.b Not in Scope Qualified IV Documentation Not Available

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
	DESIGNATION: = DEFICIENCY
Similarity Between Equipment and Test Specimen Established Life or Replacement Schedule Established (If Required) Established to Identify Aging Degradation Regarding Aging Simulation Satisfied (If Required) Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate Regarding Spray Satisfied Regarding Radiation Satisfied Regarding Radiation Satisfied Regarding Test Sequence Satisfied Regarding Test Failures or Severe Anomalies Regarding Functional Testing Satisfied Regarding Instrument Accuracy Satisfied Regarding Instrument Accuracy Satisfied Regarding Instrument Accuracy Satisfied	_X_
LIFICATION CATEGORY	DESIGNATION: X = CATEGORY
Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Li or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	ife =
	ded Evidence of Qualification Adequate Similarity Between Equipment and Test Specimen Established action Evaluated Adequately de Life or Replacement Schedule Established (If Required) Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Submergence Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies may) Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Instrument Accuracy Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I) LIFICATION CATEGORY Equipment Qualification Pending Modification Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Equipment Exempt From Qualification



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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>[31</u>

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).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🗵

"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 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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IPMENT 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)

censee References 1620, 1064

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, (T) 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	la
Summary of Licensee Responses to the NRC SER	
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	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b-
. Maintenance and Replacement Schedule Summary	7 a, 7b, 7c

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	• • •	•
SUMMARY OF	LICENSEE RESPONSES TO THE NR	RC SER - ONLY CHECKED ITEMS ARE APPLICABL
$\underline{\times}$ The Lic	ensee (has/ has not) provided	d a response to the SER concerns.
qualifi		cally stated that the equipment is nexposed to the applicable DBE
	ensee has presented informat ding qualification deficienc	tion which shows there are no cies.
	ensee (has/ has-not) proposed ose qualification has not be	d a corrective action for this equipment een fully established.
	tification for interim opera ensee for this equipment ite	ation (has/ has-not) been provided by the em.
∠ Cor	rective action specified by	the Licensee:
	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of equipment (submergence level nt from radiation source ditional (testing/ analysis) mild environment
tha		r information for this equipment item is for justification for interim
cor		vided a schedule for the proposed for accomplishing the corrective
	ensee states that the equipm should be exempted from envi	ment item does not require qualification ironmental qualification.
	OF RESULTANT NRC QUALIFICAT TEM ONLY: (See Section 3 of	TION EVALUATION CATEGORY BASED ON REVIEW f this TER for Legend)
I.a Qualif II.b Modifi II.a Qualif II.b Not Qu	cation ication Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/32</u>-

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied Oiteria 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) DESIGNATION: NRC QUALIFICATION CATEGORY X = CATEGORY I.a Equipment Qualified Equipment Qualification Pending Modification I.b II.a Equipment Qualification Not Established II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c 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 <u>circled</u> have been addressed in Revision 2 of the EEDOR 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.

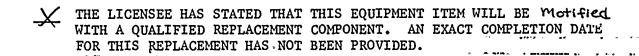
Page 5f

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d .
System Consideration Review	Aa, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5a, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 133

SUMMARY	OF LICENSEE RESPONSES TO THE NE	RC SER	- ONLY CHECKED ITEMS ARE APPLICABLE
The	Licensee (has/has-not) provided Licensee (has/has-not) specific	cally s	; tated that the equipment is
	lified and/or will function wher ironmental service conditions.	ı expos	ed to the applicable DBE
	Licensee has presented informat standing qualification deficienc		ich shows there are no .
	Licensee (has/ has-not) proposed m whose qualification has not be		rective action for this equipment ly established.
	Justification for interim opera Licensee for this equipment ite		has/ has not) been provided by the
	Corrective action specified by	the Li	censee:
	Equipment replacement with Equipment modification Equipment relocation above	-	•
	Relocate or shield equipment Yerify qualification by add	nt from	radiation source
C'tea * :s	Equipment relocation to a m Qualification testing of equipment (*	nild en	vironment
	The Licensee has provided other that can be construed as a basi operation.		
×	The Licensee (has/has-not) provious (Schedule faction)	er acc	
	Licensee states that the equipm or should be exempted from envi		em does not require qualification tal qualification.
	TION OF RESULTANT NRC QUALIFICATED ITEM ONLY: (See Section 3 of		ALUATION CATEGORY BASED ON REVIEW TER for Legend)
	alified	II.c	-
	dification alification Not Established		Exempt Not in Scope
	t Qualified	IV	Documentation Not Available .



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	•
•	ESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 Duration Adequate o Duration Adequate o Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	ned ×
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 Listor 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	fe
	



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UIPMENT 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 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).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"X" DENOTES APPROPRIATE EVALUATION

×	THE LICENSEE	HAS NO	r PROVIDEI	DOCU	MENTAȚIO	N FROM	THE MAI	NUFACT	URER
	WHICH STATES	THAT T	HE CITED 7	CEST R	EPORT IS	APPLI	CABLE TO	THIS	
	EQUIPMENT IT	EM		, g e 1 - m	14 P M1 146-	10 mm # 1 m #	- a	•	

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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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

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]



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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la .
Summary of Licensee Responses to the NRC SER	lb .
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, 6h.

Maintenance and Replacement Schedule Summary

7a, 10, 10

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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.
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-net) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action See Seetler 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.b Modification III.a Qualified Life Deficiency III.a Exempt III.b Not in Scope III.b Not Qualified IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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VIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 134

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 teria Regarding Test Sequence Satisfied Theria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY I.a Equipment Qualified Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b Documentation Not Made Available IV



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).

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>46 9/4 つか</u>/グフ/

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>13</u>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.

THE LICENSEE HAS STATED THAT THIS EQUIPMENT ITEM WILL BE TENDED.

FOR THIS TOTAL 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. 1

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b ,
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3o, 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

7a, 7b, 10

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/41/</u>

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>135</u>

SUMMARY OF	LICENSEE RESPONSES TO	THE NRC SER	- ONLY CHECKED	ITEMS ARE	APPLICABLE:
_X The Lic	censee (has/ has-not) p	rovided a res	ponse to the SE	ER concerns	5 .
qualifi	censee (has/ has not) sr .ed-and/or will function mental service conditi	on when expos	-		18
	censee has presented in ading qualification def		ich shows there	e are no	
	ensee (has/ has-not) pr ose qualification has	_			equipment
	stification for interimental interimental interimental interior in the security of the securit	-	has/ has-not) be	en provide	ed by the
∠ Cor	rective action specifi	ied by the Li	censee:	•	
	Equipment replacement Equipment modification Equipment relocation Relocate or shield equipment Verify qualification Equipment relocation Qualification testing Other (on above submerquipment from by additiona to a mild en	gence level radiation sour l (testing/ anal vironment)
tha	Licensee has provided at can be construed as eration.				
cor	Licensee (has/h as not rective action. (School of the section)				
	ensee states that the should be exempted fro				.fication
	OF RESULTANT NRC QUAINTEM ONLY: (See Section				N REVIEW
I.a Qualifi b Modifi a Qualifi b Not Qu	cation ication Not Establishe	III.a	Qualified Life Exempt Not in Scope Documentation		
		~ ₹			,



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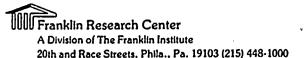
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
NRC REQ	UIREMENTS .	DESIGNATION: X = DEFICIENCY	
Adequat Aging D Qualifi Program Criteri Criteri O O O Criteri Criteri Criteri Criteri Criteri Criteri Criteri Criteri Criteri Test Du	ted Evidence of Qualification Adequate e Similarity Between Equipment and Test Specimen Establ egradation Evaluated Adequately ed Life or Replacement Schedule Established (If Require Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required) a Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate a Regarding Spray Satisfied a Regarding Radiation Satisfied a Regarding Test Sequence Satisfied a Regarding Test Failures or Severe Anomalies ny) Satisfied a Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied ration Margin (1 hour + Function Time) Satisfied a Regarding Margins Satisfied (NUREG-0588, Cat. I)		
NRC QUA	LIFICATION CATEGORY	DESIGNATION: X = CATEGORY	
I.a I.b II.a II.b II.c III.a III.b	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	•.	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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DUIPMENT 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 EEEOR 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 EEEOR (R1).

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/47/</u>

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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.
- 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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IPMENT 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 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) (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	la
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	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	- 6a, 6b-
Maintenance and Replacement Schedule Summary	7 2, 75, 7c

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



	0.00	t .
SUMMA	ARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE
		•
_ <u>X</u> T	The Licensee (has/ has-not) provided	a response to the SER concerns.
q	The Licensee (has/ has-not) specifica qualified and/or will function when environmental service conditions.	lly stated that the equipment is exposed to the applicable DBE
	The Licensee has presented informatioutstanding qualification deficienci	
	The Licensee (has/ has-not) proposed tem whose qualification has not bee	a corrective action for this equipment n fully established.
	✓ Justification for interim operat Licensee for this equipment item	ion (has/ has-not) been provided by the
ز	\angle Corrective action specified by t	he Licensee:
	Equipment replacement with q Equipment modification Equipment relocation above s Relocate or shield equipment Verify qualification by addi Equipment relocation to a mi Qualification testing of equipment (ubmergence level from radiation source tional (testing/ analysis) ld environment
	The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
<u>\</u>	The Licensee (has/hos not) provi corrective action. (Schedule fo action	
	The Licensee states that the equipme and/or should be exempted from envir	nt item does not require qualification onmental qualification.
	ENATION OF RESULTANT NRC QUALIFICATI RCLED ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
II.a	Modification Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 136

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
	SIGNATION: DEFICIENCY		
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establishe 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 Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Instrument Accuracy 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			



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. 2



LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/ふ</u>6

"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 Molfall 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.

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. L

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)

 $(\mathbf{r}, (\mathbf{r}), (\mathbf{r}))$ 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 .	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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.

7a, 7b, 7c

Maintenance and Replacement Schedule Summary

NRC Contract No. NRC-03-79-118 FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/411

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

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.
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 III.a Exempt III.b Not in Scope III.b Not Qualified IV Documentation Not Available

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
NRC REQU	JIREMENTS .	DESIGNATION: X = DEFICIENCY	
Adequate Aging De Qualifie Program Criteria Test Du	ed Evidence of Qualification Adequate E Similarity Between Equipment and Test Specimen Estable Egradation Evaluated Adequately Ed Life or Replacement Schedule Established (If Required Established to Identify Aging Degradation E Regarding Aging Simulation Satisfied (If Required) E Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Pressure (If Required) Adequately Esteam Exposure (If Required) Adequate E Regarding Spray Satisfied E Regarding Submergence Satisfied E Regarding Test Sequence Satisfied E Regarding Test Sequence Satisfied E Regarding Test Failures or Severe Anomalies Encylone Instrument Accuracy Satisfied E Regarding Instrument Accuracy Satisfied E Regarding Margins Satisfied (NUREG-0588, Cat. I)		
NRC QUA	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$	
I.a I.b II.a II.c III.a III.a III.a	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available		



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>V69/47047</u>/

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🖄

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEFOR 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>464/470/4</u>7/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 MORFILE 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.

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

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>138</u>

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) Micensee 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)

RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, $(Q\widehat{I})$ RPS, None,

Not stated, Not applicable

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LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4E
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	7 a, 7b, 7c

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NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No.,13
FRC Task No. 469/470/47/

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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.
X The Licensee (has/h as 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 III.b Not Qualified III.b Not Qualified IV Documentation Not Available

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

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establishing Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied iteria Regarding Test Sequence Satisfied iteria Regarding Test Failures or Severe Anomalies	
aiteria Regarding Test Sequence 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> </u>
II.a Equipment Qualification Not Established II.b Equipment Not Qualified	<u>×</u>
II.c Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified	Life
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Revie IV Documentation Not Made Available	w

SEE PAGE 5f for EVALUATION



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/470/47</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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.

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 138

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EVALUATION:
1. The Licensee has not provided document
ation from the manufacturer which
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states That The cited test reports) are
applicable to this equipment item.
2. The Licensee has not identified the
motor manufacturer or the class of
insulation for these MVA's
INSULATION FOI THESE ITVITS
Conclusion:
This equipment item is assigned to NRC
Qualification Category II. a because
traceability has not been established.
Traceability has not been established.
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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. 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]

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 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 ,

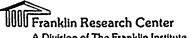
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>4/69/470/41</u>/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>139</u>

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE: X The Licensee (has/has-not) provided a response to the SER concerns. X 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. X The Licensee (has/has-not) proposed a corrective action for this equipment item whose qualification has not been fully established. X 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 X Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation source . Verify qualification by additional (testing/analysis) 12 Equipment relocation to a mild environment Qualification testing of equipment in progress 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) II.c Qualified Life Deficiency I.a Qualified III.a Exempt Lb Modification a Qualification Not Established III.b Not in Scope b Not Qualified IV Documentation Not Available



A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470/471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>rw</u>
NRC RE	QUIREMENTS .	DESIGNATION: X = DEFICIENCY
Adequated Aging In Qualify Program Criters On One On One Criters Criters Criters Criters Criters Criters Criters Criters Test Do	ted Evidence of Qualification Adequate te Similarity Between Equipment and Test Specimen Establic Degradation Evaluated Adequately ied Life or Replacement Schedule Established (If Required m Established to Identify Aging Degradation ia Regarding Aging Simulation Satisfied (If Required) ia Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate ia Regarding Spray Satisfied ia Regarding Submergence Satisfied ia Regarding Radiation Satisfied ia Regarding Test Sequence Satisfied ia Regarding Test Failures or Severe Anomalies Any) Satisfied ia Regarding Functional Testing Satisfied ia Regarding Instrument Accuracy Satisfied ia Regarding Instrument Accuracy Satisfied ia Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUA	ALIFICATION CATEGORY Equipment Qualified	DESIGNATION: X = CATEGORY
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 I	ille
	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	-



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/478/47

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 139

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 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.



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. __ 471

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INIPMENT 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) (21) RT, P, H, CS, (A) S, (R), M, I, QM, RPN, EXN, SEN, (Q1) RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	3 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
istalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b.
•	

7a, 7b, 7c

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/49/470/41/

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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 respo	;
The Licensee (has/has-not) specifically sta qualified-and/or will function when exposed environmental service conditions.	
The Licensee has presented information whic outstanding qualification deficiencies.	th shows there are no
The Licensee (has/has-not) proposed a correitem whose qualification has not been fully	
	s/ has not) been provided by the
Corrective action specified by the Lice	nsee:
Equipment replacement with qualified Equipment modification Equipment relocation above submerge Relocate or shield equipment from recommendation by additional Equipment relocation to a mild envious Qualification testing of equipment Other (nce level adiation source (testing/analysis) ronment
The Licensee has provided other informa that can be construed as a basis for ju operation.	
The Licensee (has/has net) provided a scorrective action. (Schedule for accomaction See Section 5	
The Licensee states that the equipment item and/or should be exempted from environmenta	
DESIGNATION OF RESULTANT NRC QUALIFICATION EVAL - CIRCLED ITEM ONLY: (See Section 3 of this TE	- ,, ·
II.a Qualification Not Established III.b N	qualified Life Deficiency exempt Not in Scope Nocumentation Not Available



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 4691470/471

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 140

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

•	DESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 iteria Regarding Test Sequence Satisfied Citeria 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 Lift or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review	ie —
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.



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 EEDOR 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 EEEOR (R1).

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 💯

"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 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.

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. 1

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:

Contents	Checksheet Page No.
Equipment Item	la
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, 51, 5j
Installed TMI Lessons Learned Implementation	6a, 6b

Equipment Summary

7a, 7b, 7c

Maintenance and Replacement Schedule Summary

FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/ A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 141

NRC Contract No. NRC-03-79-118

	•
SUMM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
_X	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.
<u>X</u>	The Licensee (has/has-not) proposed a corrective action for this equipment item whose qualification has not been fully established.
	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.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
1.6	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available



A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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FRC Assignment No. 13
FRC Task No. 46 9/470/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
	DESIGNATION:	
	X = DEFICIENCY	
NRC REQUIREMENTS	A DDI TOTALIO	
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Esta Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requi 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	blished ×	
Criteria Regarding Functional Testing Satisfied	,	
Criteria Regarding Instrument Accuracy Satisfied	u p f	
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 Qualifie	ed Fire	
or Replacement Schedule Justified		
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Revi		
IV Documentation Not Made Available		



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>141</u>、

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 EEEOR; 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 EEEOR 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. 2



"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 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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IPMENT 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)

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, 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:

Maintenance and Replacement Schedule Summary

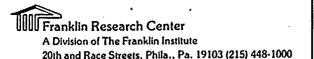
Contents	Checksheet Page No.
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Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 9b, 30, 3d,
System Consideration Review	4 a, 4b, 4c, 4d, 4c, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, -5g, 5h, 5i, 5j-
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b -

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



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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>ゾゲス</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCY NRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied iteria Regarding Test Failures or Severe Anomalies T(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) DESIGNATION: X = CATÉGORYNRC OUALIFICATION CATEGORY I.a Equipment Qualified Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a II.b Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b

Documentation Not Made Available



IV



NRC Contract No. NRC-03-79-118
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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 EEEOR 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 EEEOR (R1).

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/火</u>ス

"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 AN EXACT COMPLETION DATE
FOR THIS . Texture, 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. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
'Equipment Item	la
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, 40, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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VIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 143

SUMM	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u>	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.
	\times Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item.
-	Corrective action specified by the Licensee:
2 6	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.
4	The Licensee (har/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.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.b	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
·	ESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	ned X
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 Listor 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	fe



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UIPMENT 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 EEEOR; 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 EEEOR 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. .



"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 MOTOR-IZED 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 MOTOFIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.



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IPMENT 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:

	Contents	Checksheet Page No.
	Equipment Item	la
	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, 4c, 41
1	Equipment Environmental Qualification Review	5 2, 5b, 50, 5d, 5e, 5f, 5g, 5h, 5i, 5j
\	Installed TMI Lessons Learned Implementation Equipment Summary,	6a, fib
	Maintenance and Replacement Schedule Summary	7a. 7b. 7o

Maintenance and Replacement Schedule Summary

A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 1469/478/47/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



SUM	MARY OF LICENSEE RESPONSES TO THE NRO	SER -	ONLY CHECKED ITEMS ARE APPLICABLE:
*	The Licensee (has/has-not) provided	a resp	onse to the SER concerns.
Z	The Licensee (has/has not) specificated qualified and/or will function when environmental service conditions.		
*	The Licensee has presented informate outstanding qualification deficience		ch shows there are no
	The Licensee (has/has not) proposed item whose qualification has not been		
	Justification for interim operation Licensee for this equipment item		as/has not) been provided by the
	Corrective action specified by	the Lic	eņsee:
	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by additionable Equipment relocation to a management with one provided relocation above so the provided reloca	submerg : from itional ild env	ence level radiation source (testing/analysis) ironment
	The Licensee has provided other that can be construed as a basis operation.		
	The Licensee (has/has not) provi corrective action. (Schedule for action		
	The Licensee states that the equipme and/or should be exempted from envir		
	SIGNATION OF RESULTANT NRC QUALIFICATE CIRCLED ITEM ONLY: (See Section 3 of		
I.b	Qualified Modification a Qualification Not Established	III.a III.b	Qualified Life Deficiency Exempt Not in Scope
II.	b Not Qualified	IV	Documentation Not Available

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

EQUIPMENT ENVIRONMENTAL QUALIFICATION SOME	KI FORT
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen E Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Re Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Require 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 Radiation Satisfied iteria Regarding Test Sequence Satisfied iteria Regarding Test Sequence Satisfied iteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied	equired) X
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 Qualification Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification IV Documentation Not Made Available	

SEE EVALUATION ON PAGE 59



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 144

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EVALUATION:
1. The Licensee has not provided documenta-
tion 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
incorporatés 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. 12

4

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, (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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.	
Equipment Item	la	
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.	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/41</u>

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

SUMMARY (OF LICENSEE RESPONSES TO THE NR	C SER	- ONLY CHECKED ITEMS ARE APPLICABLE
_X The I	Licensee (has/ has not) provided	a res	ponse to the SER concerns.
qual	Licensee (has/has-not) specific ified-and/or will function when ronmental service conditions.		
	Licensee has presented informat tanding qualification deficienc		ich shows there are no
	Licensee (has/ has-not) proposed whose qualification has not be		rective action for this equipment ly established.
	Justification for interim opera Licensee for this equipment ite		has/ has-not) been provided by the
区	Corrective action specified by	the Li	censee:
- -	Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m	submere t from itiona ild en	gence level radiation source l (testing/ analysis) vironment
	Qualification testing of eq Other (uipmen	t in progress
— t	The Licensee has provided other that can be construed as a basi operation.		
	The Licensee (has/has-net) prov corrective action. (Schedule f action <u>See Section</u>	or acc	
	Licensee states that the equipm or should be exempted from envi		em does not require qualification tal qualification.
	ION OF RESULTANT NRC QUALIFICAT D ITEM ONLY: (See Section 3 of		ALUATION CATEGORY BASED ON REVIEW TER for Legend)
	lified ification	II.c	Qualified Life Deficiency Exempt
	lification Not Established		Not in Scope
_	Qualified	IV	Documentation Not Available .

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>RM</u>
NRC REQUIREMENTS	DESIGNATION: <u>X = DEFICIENCY</u>
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ 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 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)	N
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 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	•
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 Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) NRC QUALIFICATION CATEGORY I.a Equipment Qualification Pending Modification II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review	X = CATEGORY Life



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 145

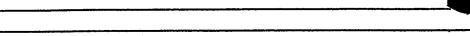
LICENSEE RESPONSE TO NRC SER

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 EEEOR 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 EEEOR (R1).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2



"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 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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IPMENT 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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4a, 4f
Equipment Environmental Qualification Review	5a, 5b, 5o, 5d, 5e , 5f, 5 g, 5h, 51, 5j.
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6 b
Maintenance and Replacement Schedule Summary	7 a, 7b, 7c

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



* v
SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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 Qualified Life Deficiency . III.a Exempt . III.b Not in Scope . III.b Not Qualified . IV Documentation Not Available .



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FRC Task No. 469470471

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

,	
	ODESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Es	stablished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Rec	quired)
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	3
Criteria Regarding Submergence Satisfied	
citeria Regarding Test Sequence Satisfied	
iteria 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)	
,	
	DESIGNATION:
and a supplied of the control of the	X = CATEGORY
NRC QUALIFICATION CATEGORY	<u> </u>
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 Quali	fied Life
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification R	eview
IV Documentation Not Made Available	



SEE EVALUATION ON PAGE 54.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 146

EVALUATION:
1. The Licensee has not provided document-
ation 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 insul-
ation, 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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· · · · · · · · · · · · · · · · · · ·
<u> </u>

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 41

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 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]

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	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d_
System Consideration Review	Aa, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a7-6b

Maintenance and Replacement Schedule Summary 12, 75, 7

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

SUMM	IARY	OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
•		Licensee (has/has_not) provided a response to the SER concerns. Licensee (has/has_not) specifically stated that the equipment is ified and/or will function when exposed to the applicable DBE
	qua: envi	ified and or will function when exposed to the applicable DBE ronmental service conditions.
		Licensee has presented information which shows there are no tanding qualification deficiencies.
		Licensee (has/has not) proposed a corrective action for this equipment 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)
		Licensee states that the equipment item does not require qualification or should be exempted from environmental qualification.
		ION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW D ITEM ONLY: (See Section 3 of this TER for Legend)
		lified . II.c Qualified Life Deficiency
_		ification III.a Exempt III.b Not in Scope
		Qualified IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14



	EQUIPMENT ENVIRONMENTAL Q	UALIFICATION SUMMARY FO	<u>DRM</u>
NRC REQUIREMEN	 ,		DESIGNATION: X = DEFICIENCY
Adequate Simil Aging Degradat Qualified Life Program Establ Criteria Regar Criteria Regar o Peak Property of Duration Of Require o Steam I Criteria Regar Cr	dence of Qualification Ad arity Between Equipment at ion Evaluated Adequately or Replacement Schedule ished to Identify Aging Diding Aging Simulation Satisfied Temperature/Pressure Essure Adequate Ading Submergence Satisfied Ading Test Sequence Satisfied Ading Test Failures or Severisfied Ading Functional Testing Statisfied Ading Instrument Accuracy Margin (1 hour + Function Ading Margins Satisfied (1)	Established (If Require egradation isfied (If Required) Exposure: ately equate ere Anomalies Satisfied Satisfied Time) Satisfied	
NRC QUALIFICA	PION CATEGORY		DESIGNATION: $X = CATEGORY$
I.b Equipment of Reguing II.a Equipment of Reguing III.a Equipment III.b Equipment III.b Equipment III.b Equipment III.b	ment Qualified ment Qualification Pending ment Qualification Not Est ment Not Qualified ment Satisfies All Require placement Schedule Justifi ment Exempt From Qualifica ment Not in the Scope of tentation Not Made Available	cablished ements Except Qualified led ation the Qualification Revie	

SEE EVALUATION ON PAGE 54



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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 147

LICENSEE RESPONSE TO NRC SER

Those noted deficiencies <u>circled</u> in attachment 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.

NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 14-

•
EVALUATION:
1. The Licensee has not provided docu-
nentation 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 insul-
ation, or whether this MVA incorporate
a motor brake.
CONCLUSION:
This equipment item is assigned to NRC.
Qualification Category II.a because
traceability has not been established.
Travea or right soon consistence
enter 4.00



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

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

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]



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

(R, T) (D), RD, P, B, CS, A, S, (R), M, I, QM, RPN, EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
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, 41
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6 a, 6b.
,	

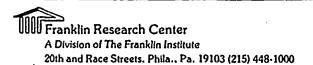
7a, 7b, 7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 4/69/470/41/

Page 1b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

SUMMARY OF LICENSEE RESPONSES TO THE NE	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
The Licensee (has/has not) provided	a response to the SER concerns.
The Licensee (has/has-not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informate outstanding qualification deficience	
The Licensee (has/has-not) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
Justification for interim opera Licensee for this equipment ite	tion (has/ has-not) been provided by the m.
Corrective action specified by	the Licensee:
Equipment replacement with Equipment modification Equipment relocation above Relocate or shield equipment Verify qualification by add Equipment relocation to a m Qualification testing of equipment (submergence level at from radiation source attional (testing/ analysis) aild environment
	information for this equipment item s for justification for interim
The Licensee (has/has-net) provocative action. (Schedule faction See Section 5	ided a schedule for the proposed or accomplishing the corrective
The Licensee states that the equipment and/or should be exempted from envi	ent item does not require qualification ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICAT - CIRCLED ITEM ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Qualified II.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



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 469470471

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 148

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Estab Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requir Program Established to Identify Aging Degradation Criteria Regarding Aging Simulation Satisfied (If Required)	ed)
Criteria Regarding Temperature/Pressure Exposure: o Peak Temperature Adequate o Peak Pressure Adequate	engamentenennen R. engamentenennen
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 Diteria Regarding Test Sequence Satisfied	
iteria 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)	
	DESIGNATION:
NRC QUALIFICATION CATEGORY I.a Equipment Qualified	X = CATEGORY
I.b Equipment Qualification Pending Modification II.a Equipment Qualification Not Established	<u>X</u>
<pre>II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified or Replacement Schedule Justified</pre>	Life
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Revie IV Documentation Not Made Available	w <u>-</u>



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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. 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).



IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 💯

"X" DENOTES APPROPRIATE EVALUATION

V	THE LICENSEE	HAS NOT	PROVIDED :	DOCUMENTAT	CION FROM	THE MANUFACTU CABLE TO THIS	JRER
₹	WHICH STATES	THAT THE	CITED TE	ST REPORT	IS APPLI	CABLE TO THIS	
	EQUIPMENT IT	EM.					ji 🖷
	* ***			19 PK P		4 10 \$7	

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 MOTOR-IZED 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.

1

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]

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	la
Summary of Licensee Responses to the NRC SER	1b .
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3 b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4E
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

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PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 149

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. Youtsification 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 Relocate or shield equipment from radiation source Verify qualification by additional (testing/analysis) Paulyment relocation above submergence level Relocate or shield equipment from radiation source Verify qualification by additional (testing/analysis) 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 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 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 Qualification Not Established III.a Exempt III.a		
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. X The Licensee (has/has-not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: Equipment replacement with qualified equipment Equipment action 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. X 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 III.a Exempt TILL Desire Licensee III.b Not in Scope	SUMMARY OF LICENSEE RESPONSES TO THE NRC SER	- ONLY CHECKED ITEMS ARE APPLICABLE:
environmental service conditions. The Licensee has presented information which shows there are no outstanding qualification deficiencies. X The Licensee (has/hae-not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/hae-not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: Equipment replacement with qualified equipment X 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. X 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 III.a Exempt III.b Not in Scope	X The Licensee (has/has-not) provided a re	sponse to the SER concerns.
outstanding qualification deficiencies. X The Licensee (has/has-not) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item. X Corrective action specified by the Licensee: Equipment replacement with qualified equipment X Equipment modification Equipment from radiation source Relocate or shield equipment from radiation source Yerify 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. X 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 III.e Qualified Life Deficiency III.a Exempt III.b Modification Not Established III.b Not in Scope	qualified and/or will function when expo	
item whose qualification has not been fully established. **\times Justification for interim operation (has/has not) been provided by the Licensee for this equipment item. **\times 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 (nich shows there are no
Equipment replacement with qualified equipment Equipment replacement with qualified equipment Equipment modification Bequipment 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 (
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 ((has/ has-not) been provided by the
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 III.a Exempt Addification Not Established III.b Not in Scope	Corrective action specified by the L	icensee:
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	Equipment modification Equipment relocation above submer Relocate or shield equipment from Verify qualification by addition Equipment relocation to a mild expended to the strong of equipment to the strong of the strong o	gence level n radiation source al (testing/ analysis) nvironment
corrective action. (Schedule for accomplishing the corrective action	that can be construed as a basis for	
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 III.a Exempt Qualification Not Established III.b Not in Scope	corrective action. (Schedule for ac	
- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend) I.a Qualified II.c Qualified Life Deficiency III.a Exempt 1 Qualification Not Established III.b Not in Scope		
Modification III.a Exempt Qualification Not Established III.b Not in Scope		
TA POCUMENTACEOUS NOT WAITIBLE .	I b Modification III.	a Exempt



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
DESIGNATIO NRC REQUIREMENTS X = DEFICIE	
NRC REQUIREMENTS X = DEFICIE	
•	
DESIGNAT NRC QUALIFICATION CATEGORY X = CATE	
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	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>Y69/Y70/47</u>/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>149</u>

LICENSEE RESPONSE TO NRC SER

- 2. Those noted deficiencies <u>circled</u> in attachment 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.
- 7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🗸



"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 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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(I)

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

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]

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

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FRC Assignment No. 13
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15



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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
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★ 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.
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
X 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-net) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action 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 II.b Modification III.a Exempt
II.a Qualification Not Established III.b Not in Scope
FIL.b Not Qualified IV Documentation Not Available
,

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470/471

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IIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 150

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM DESIGNATION: X = DEFICIENCYNRC REQUIREMENTS 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 iteria Regarding Test Sequence Satisfied Otteria 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) DESIGNATION: X = CATEGORYNRC QUALIFICATION CATEGORY Equipment Qualified I.a Equipment Qualification Pending Modification I.b Equipment Qualification Not Established II.a Equipment Not Qualified II.b Equipment Satisfies All Requirements Except Qualified Life II.c or Replacement Schedule Justified Equipment Exempt From Qualification III.a Equipment Not in the Scope of the Qualification Review III.b

Documentation Not Made Available



IV



A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 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 EEEOR 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 EEEOR (R1).

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>ムシ</u>ご

"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 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.

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 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. 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 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:

Contents	Checksheet Page No.
Equipment Item	la
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 72, 76, 7



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>L/L9/470/411</u>

Page 1b



IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>151</u>

011/1/101/ 05 17051/G55 55050/G55 50	MATERIAL AND
SUMMARY OF LICENSEE RESPONSES TO	THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
Y The Licensee (has the most) or	covided a response to the SER concerns.
The Dicensee (Mas/Has Not) pr	'college to the bak concerns.
Y The Licensee (has/hag-not) sr	pecifically stated that the equipment is
	on when exposed to the applicable DBE
environmental service conditi	
environmental service conditi	ions.
The Licensee has presented in	; nformation which shows there are no
outstanding qualification def	,
outstanding qualification der	.torencies.
V mbo liganges (bag/bag not) pr	consol , sourceting retion for this contract
	coposed a corrective action for this equipment
item whose qualification has	not been rully established.
No Tumbisimakina San inkania	
	n operation (has/ has-not) been provided by the
Licensee for this equipme	ent item.
•	
Corrective action specifies	ed by the Licensee:
	with qualified equipment
Equipment modification	
Equipment relocation	above submergence level
	quipment from radiation source
Verify qualification	by additional (testing/analysis)
Equipment relocation	to a mild environment
Qualification testing	of equipment in progress
Other (, ,)
,	1
The Licensee has provided	dother information for this equipment item
	a basis for justification for interim
operation.	,
The Licensee (has/ has not) provided a schedule for the proposed
	edule for accomplishing the corrective
action	. \
4001011	
The Ticenese states that the	equipment item does not require qualification
	om environmental qualification.
gud/or superg be exempted tro	un environmentar daarification.
DESTANDATION OF DESIGNAME MOS OUR	LIFICATION EVALUATION CATEGORY BASED ON REVIEW
- CIRCLED ITEM ONLY: (See Section	on 3 of this TER for Legend)
w	TT - Au-1101-1 TT - Bidleter
I.a Qualified	II.c Qualified Life Deficiency
Lb Modification	III.a Exempt
Qualification Not Established	
b Not Qualified	IV Documentation Not Available



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469470/471

Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. .



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
•	DESIGNATION: = DEFICIENCY		
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 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	aed		
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 Lift 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	••		

Franklin Research Center			
A Division of The Franklin Institute			
20th and Race Streets Phila Pa 19103 (215) 448-1000			

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

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NIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>151</u>

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEEOR 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 46 9/470/47/

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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.
- 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.



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. ____ 4-71

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 152

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]



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	la
Summary of Licensee Responses to the NRC SER	lb .
Equipment Environmental Qualification Summary Form	ms 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	7 a, 7b, 7c-

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>U/69/470/411</u>

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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) specifica qualified and/or will function when environmental service conditions.	
The Licensee has presented informati outstanding qualification deficienci	
The Licensee (has/has-not) proposed item whose qualification has not bee	
Justification for interim operat Licensee for this equipment item	ion (has/ has-not) been provided by the
Corrective action specified by t	he Licensee:
Equipment replacement with q Equipment modification Equipment relocation above s Relocate or shield equipment Verify qualification by addi Equipment relocation to a mi Qualification testing of equ Other (ubmergence level from radiation source tional (testing/ analysis) ld environment
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
The Licensee (has/hasnot) provice corrective action. (Schedule fo action	
The Licensee states that the equipme and/or should be exempted from envir	nt item does not require qualification onmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATI - CIRCLED ITEM ONLY: (See Section 3 of	
II.a Qualification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

Tinno	Franklin Research Center	
UUUU	Franklin Research Center	
	A Division of The Franklin Institut	e
**	20th and Race Streets. Phila., Pa	19103 (215) 448-1000

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/47/

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IPMENT 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 Estab	lished X
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	ed)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
Teak 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	
teria Regarding Radiation Satisfied	
teria Regarding Test Sequence Satisfied	
Filteria 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)	
	·····
	DESIGNATION:
une outstandou compconu	X = CATEGORY
NRC QUALIFICATION CATEGORY	A - GIIIIGGIII
I.a Equipment Qualified	Ì
I.b Equipment Qualification Pending Modification	1
-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	1,
III.b Equipment Not in the Scope of the Qualification Review	w
IV Documentation Not Made Available	-





NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>469/478/47/</u>

Page 3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the EEDOR 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>46 9/470/47</u>/

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IPMENT 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.

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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 41

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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:

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb .
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

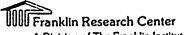
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NRC Contract No. NRC-03-79-118 FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 469/470/41

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 153

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICA	BLE:
★ 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/has not) provided a response to the SER concerns. ★ The Licensee (has/has not) provided a response to the SER concerns. ★ 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/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/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/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/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/has not) specifically stated that the equipment is qualified and/or will service the specifically stated that the equipment is qualified and specifically specified and speci	I ₄
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.	=
	;
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.	1
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	<u>1</u>
I.a Qualified II.c Qualified Life Deficiency III.a Exempt Qualification Not Established III.b Not in Scope IV Documentation Not Available	



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
,	GIGNATION: 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)	
•	DESIGNATION:
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	



NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/47</u>/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>163</u>.

LICENSEE RESPONSE TO NRC SER

7. Those deficiencies <u>circled</u> have been addressed in Revision 2 of the FEFOR contained in Attackment 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.

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>U69/478/47</u>

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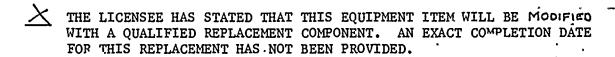
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z



"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 MOTOR-
IZED 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 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

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. _____1

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration, Review	4 a, 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-
•	

Page 1b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25



SUMMARY C	OF LICENSEE RESPONSES TO THE NRO	SER - ONLY CHECKED ITEMS ARE APPLICABLE
The I	Licensee (has/ bas no t) provided	a response to the SER concerns.
quali	licensee (has/ has not) specification when conmental service conditions.	ally stated that the equipment is exposed to the applicable DBE
	Licensee has presented information anding qualification deficience	
	Licensee (has/ has-no t) proposed whose qualification has not bee	a corrective action for this equipment in fully established.
	Justification for interim operat Licensee for this equipment item	ion (has/h as no t) been provided by the
X c	Corrective action specified by	the Licensee:
- - - -	Equipment replacement with of Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by additionable Equipment relocation to a mingualification testing of equipment (submergence level c from radiation source tional (testing/analysis) ald environment
t	The Licensee has provided other that can be construed as a basis operation.	information for this equipment item s for justification for interim
· ` o	The Licensee (has/has not) provi corrective action. (Schedule for action Su Suchon 5	ded a schedule for the proposed or accomplishing the corrective
	Licensee states that the equipment or should be exempted from envir	ent item does not require qualification conmental qualification.
	ON OF RESULTANT NRC QUALIFICATED ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
II.a Qual	Lified fication Lification Not Established Qualified	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



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FRC Assignment No. 13
FRC Task No. 469/470/47/

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC_REQUIREMENTS	DESIGNATION: X = DEFICIENCY
MRC REQUIREMENTS	X - DEFICIENCE
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Esta Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Requi 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 Radiation Satisfied Fiteria Regarding Test Sequence Satisfied Fiteria 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)	$\overline{\mathbf{X}}$
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	
<pre>II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified</pre>	a rife
or Replacement Schedule Justified	d nrrc
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Review	ew
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).



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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 154

TE	S:
	The licensee EEQ evaluation sheets for the cables identified on page la
	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. 🗸

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, 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:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
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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	6 a, 6b

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. ے

SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICA	BLE
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.	t
Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.	e
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.	n
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	Ā
I.a Qualified II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available	

A Division of The Franklin Institute 20th and Race Streets. Phila.. Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. <u>469/470/4</u>7/

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

12	
4	

DESIGNATION:
NRC REQUIREMENTS X = DEFICIENCY
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 Required Profile Enveloped Adequately o Steam Exposure (If Required) Adequate Criteria Regarding Spray Satisfied Criteria Regarding Submergence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Instrument Accuracy Satisfied Criteria Regarding Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)
NRC QUALIFICATION CATEGORY MRC QUALIFICATION CATEGORY 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

* inside drywell only.



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FRC Task No. 46 9/470/47/

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🕰

LICENSEE RESPONSE TO NRC SER

2. Those noted deficiencies <u>circled</u> in attachment 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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



						
	·					
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW						
Criteria: DOR Guidelines X; NUREG-0588, Cat. I; NUREG-0588, Cat. II						
NRC REQUIREMENTS		•	DEFICIENCY			
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR			
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)			
		-	•			
EQUIPMENT DESCRIPTION	en Tours	ROTA ICINA	!			
Equipment Type	Calle	6 lieures Cavel	•			
Manufacturer's Name		Electrical Cable	•			
(5.2.2/-/-)	anscorde	i ancertain	•			
(3.2.2/ / /	1	_	•			
Model Number (5.2.2/-/-) .	WA.	on on the fi	· NHEI			
		see juiges.	1,000			
Serial Number	: N/A.	see page 5 f.	:			
l	! '		<u>:</u>			
Features/Mounting	NA	NA	:			
(5.2.6/-/-)						
Connections/Interfaces	Notstated	,				
(5.2.6/-/-)	!	•				
(3.2.0)						
Location/Elevation	: Containment	t MA	!			
,	WLO, CPJJ	MA NA	1			
Equipment ID No.	: WLO CPTT	! NA "	!			
•	!""		1			
QUALIFICATION REPORT		,	•			
(8.0/5.0/5.0)	:		•			
Report ID Number	179117	79117	i 1			
Report Date	! 1/20	/	•			
nopozo baco	4/79	4/79	i			
Issued by	•		1			
	:answords	ancondo	1			
Prepared for	! /		!			
	Ferry.	TVA.	:			
Referenced Reports			!			
Qualification Method	•	test	•			
(5.1, 5.3/2.1, 2.4/2.1, 2.4)	Na.	Ter	•			
(3.1, 3.3/2.1, 2.4/2.1, 2.4)		• !	•			
QUALIFICATION TEST PROGRAM			1			
Functional Test Description	NA	Besilation				
(5.2.5/2.2.9/2.2.9)	: "	Residence Hi Pot	:			
	:	Hi Pot				
Operating Conditions	:	current Lordey.	•			
(-/2.2.10/2.2.10)	1 11.5	•	:			
Load/Cycles/Voltage/	Not	see page 5t.	NAVE			
Current/Freq.	: Stored.	. v d				

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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)	NA	Nat adoted	!
Accuracy (5.2.5/-/-)	NA	MA	
Number of Specimens	NA	21 se pys 5 f	(NIXI)
Test Instruments Calibrated	NA	yes '	!
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	active	NA	•
Test Duration (5.2.1/-/-)	NA	16 days	!
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	>24 hrs	NA	:
equired Function Time	iyea	NA	:
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	NA	ægenj	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	NA	Modestion LOCA Semulation	•
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 2Fday @ 210°C anhener	
Material Aging valuation (7.0/-/-) Materials Susceptible	NA NA NA	yes-	
(Thermal) (5.2.4, 7.0/-/-) Radiation Aging, Type	WA	. Yama	•

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NRC REQUIREMENTS	•		DEFICIENC
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.
	!	•	1
Radiation Aging, Dose (rd)	: Nat Stated:	see acadent	:
Radiation Aging, Dose Rate	NASKAKL	see acadent	: !
adiation aging, bost nate	:		1
Radiation Aging, Method	NA		:
Materials Súsceptible	Lac. day Jude S.	V	:
(Radiation) (5.2.4, 7.0/-/-)	Not stated posstates		!
Operational Aging	1 11/15/11	and stated	
(-/4.2/-)	propried	Not stated	•
	$! \nu / A :$	N. Ladatel	:
Other Age Conditioning (-/4.2/-)		Who process	:
(-/4.2/-)			i
Qualified Life Claimed/	40 years	> 40 years	<u>:</u>
Established (5.2.4/4.10/-)	; d ;		
Normal Ambient Temperature	We had yet	1/10	!
Normal Ambient Radiation	Wat States	NA	:
Normal Ambient Humidity	$\dot{\mathfrak{h}}$		•
On-Going Surveillance and	Burns	NA	•
Preventive Maintenance	FRANK	7-77	
(7.0/-/-)	Program	,	•
On-Going Analysis of	i 1 4 i	NA	:
Failures and Degradation	: 1/2 :	, ,,,	•
(7.0/-/-)	: V :	,	•
Margin (General)	: NA :	NA	:
(6.0/3.0/3.0)	: 777		:
Margin (NUREG-0588,			i
Cat. I) (-/3.2/-)	: :		:
1. Temperature (+15°F)	; ;		1
<pre>2. Pressure (+10%, \ 10 psig max)</pre>			•
3. Radiation			!
(not required)	:) :		:
4. Time (+10%, +1 hour + function time minimum)	; V ;	V	:
. Land Clon Cline manament	•		•

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>155</u>

NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO:)
(DOR/0588-I/0588-II) ACCIDENT CONDITIONS	!	DOCUMENTATION	! !
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/HSLB	LOCA	
Radiation Type	Damma Speta	Gamma	1
Radiation Dose (rd) (4.1.2/1.4/1.4)	1×108 * 2×106 **	1.2×10 8	
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	NA	0.56Ard/h	:
Proximity to Concentrated diation (1.2/1.4.6/1.4.6)	NA	NA	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	Not shield	af States	
Radiation Dose (Normal + Accident) (4.1.2/-/-)	· 1/5		:
Plateout Dose Considered (-/1.48/1.48)	yla	\bigvee	:
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	2×1097	Not Stated	Nexte 2
•		٠	
* in conta	enment,	. 1	at 4 ×
* in Congs	oilmens -) - steams volve,	vices,

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14		Κ
7		
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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	150/per	1	:
Peak: °F/psig/RH/Time	325/60/10/10M	-280/35/100/3hs	XNote 3
Decrease To: °F/psig/RH/Time	1300 /30/100 /50M	240/11/100/3/100	
Decrease To: °F/psig/RH/Time Decrease To: °F/psig/RH/Time	230/20/10/4h	203/0/100/3.52.	1
Decrease To: °F/psig/RH/Time Decrease To: °F/psig/RH/Time Equipment Surface Tempera-	230-150 22-1/2)	180/0/100/ 12 2.	1 1
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)	NA	tlat	
Spray Composition (4.1.4/1.3, 2.2.8/. 1.3, 2.2.8)	Demin. Water	2000 ppm Burn (H3 BO3) pH-8.2	:
Spray Density (gpm/ft ²)	Natstaked	0.15	•
Spray Duration	NA	16 days	1
Submergence Duration (4.1.3/2.2.5/2.2.5)	NA	NA	1
In-Leakage Considered (5.2.6, 5.3.2/-/-)	Not	NA	· · · · · · · · · · · · · · · · · · ·
Time to Submergence	Als	NA	•
Dust Environment (-/2.2.11/2.2.11)	NA	NA	!

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 155

		-
NOTES:	,	ر
	Nove-1,	
	B. SPECIMEN DESCRIPTION	-
-	Description of the cable specimens and their required	-
-ener	gizing potentials and currents are present in Table I:	-

TABLE I CABLE SPECIMEN DESCRIPTION & ELECTRICAL LOADING

CABLE SPECIMEN NUMBER	•		OUTSIDE	ELECTRICAL LOADING VAC/AMPS	
49.4.1-49.4.3 49.5.1-49.5.3 49.6.1-49.6.3.	Low voltage power and control cable, NSG 1/C 12 AWG (7/0305), tinned copper conductor, 45 mil wall of CC-2193, Nuclesil silicone rubber insulation, 6 mil wall of glass braid covering.	.198	.200	480/25	•

Note 2. Have rodication lesting
envelops the Samma sie for
applications is will and outside puminy
and summent. Hence Seta effects
inside containment insuldeficed
the tested value, therefore qualification

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NOTES:
Note 2 (cont'd)
for judialion has not been established.
of the cable is installed in Conduct on
covered able tray the Best effects
could be eliminated.
· ·
Note 3. The test due not invelig the
incontainment grafile particularly
the peak temperature and pressure.
The first the fi
The beginse stated.
- Veries peries
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, S5112, 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 1.2x10 ⁸ R. The worst HELB valves outside the containment are even exceeded by this thermal aging and further the FIRL 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.
since tracestilety between installed
catle and the calle tested in F-C2935,
it is not considered inderes ofqualification
(see etter 154)
The sock to the Chineses
The peaktemperature in the Sken routh



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NOTES:
Nate 3 (cont'd)
_ identified by the liverage as 308°F.
This temperature is not enclayed by
the anaenda test. The rese of
l
aging data (accellerated air over testing)
annat he used for establishing
steam expresure qualification. He
· over aging test would establish
a qualified lift often which
The design bases accident must
- he superimposed,
Do es therefore Concluded that
perk temperature verent
seak temperature incerent
enveloped by the animals
tes conducted for TVA.
- Constituted fact, AN 1
·

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FRC Assignment No. 13
FRC Task No. 471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4



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:

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System Consideration Review	4a, 4b, 4c, 4d, 40, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5 j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, 6b -

. Maintenance and Replacement Schedule Summary 7a, 7b, 7

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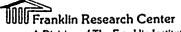
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FRC Task No. 4/69/470/411

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PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>/ ろ</u>ら

				. *	_		
SUMI	MARY	OF LICENSEE	RESPONSES TO T	HE NRC SER	- ONLY CHECKED	ITEMS ARE	APPLICABLE:
_×	Tne	Licensee (has	s /has-not) pro	vided a res	oonse to the S	SER concerns	•
丛	qua :	Lified and/or	s/ has not) spec will function vice condition	when expose			is
			presented info ification defic		ich shows ther `	e are no	
X			s/ has not) pro Eication has no				quipment
	٧_		for interim of this equipment	_	nas/ has not) b	een provide	d by the
	赵	Corrective ac	ction specified	d by the Lie	censee:	•	
		Equipment Equipment Relocate Verify qu Equipment	replacement of modification or relocation by alification by relocation to ation testing of	pove submergipment from additional a mild en	gence level radiation sou L (testing/ ana vironment		·)
		The Licensee that can be operation.	has provided construed as a	other informulation to the state of the stat	nation for thi justification	s equipment for interim	item
	×	corrective ac	(has/h as not) etion. (Sched ne Section 5				
			tes that the e				fication
			PANT NRC QUALI (See Section				N REVIEW
Ö	Mod a Qu	alified dification alification No t Qualified	ot Established	III.a	Qualified Life Exempt Not in Scope Documentation	•	



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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 SUMMARY FOR	<u>m</u>
1100 DD	· · · · · · · · · · · · · · · · · · ·	DESIGNATION: X = DEFICIENCY
NRC REC	QUIREMENTS	A - DHI TOTHIOT
Adequat Aging I Qualifi Program	ated Evidence of Qualification Adequate ce Similarity Between Equipment and Test Specimen Establi Degradation Evaluated Adequately led Life or Replacement Schedule Established (If Required a Established to Identify Aging Degradation La Regarding Aging Simulation Satisfied (If Required)	<u>_X_</u>
Criteri	a Repaiding Aging Dimutation Determined (12 10442204)	
	a Regarding Temperature/Pressure Exposure:	v
	Peak Temperature Adequate	- X
	Peak Pressure Adequate	12
	Duration Adequate . Required Profile Enveloped Adequately	<u> </u>
	Steam Exposure (If Required) Adequate ,	
	a Regarding Spray Satisfied	× × × ×
	la Regarding Submergence Satisfied	
	a Regarding Radiation Satisfied	×
	a Regarding Test Sequence Satisfied	
Criteri	a Regarding Test Failures or Severe Anomalies	,
	Any) Satisfied	
	a Regarding Functional Testing Satisfied	
	la Regarding Instrument Accuracy Satisfied	
Test Du	ration Margin (1 hour + Function Time) Satisfied	
Criteri	ia Regarding Margins Satisfied (NUREG-0588, Cat. I)	**
		DESIGNATION:
NRC QUA	ALIFICATION CATEGORY	X = CATEGORY
_	m	
I.a	Equipment Qualified Equipment Qualification Pending Modification	$\overline{}$
I.b		
II.a II.b	Equipment Qualification Not Established Equipment Not Qualified	
II.c	Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified I	i fe
11.0	or Replacement Schedule Justified	
III.a	Equipment Exempt From Qualification	••
III.a	Equipment Not in the Scope of the Qualification Review	
IV	Documentation Not Made Available	
		



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DIPMENT 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 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).

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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	EFICIENCY (X OR NOTE NO.)
EQUIPMENT DESCRIPTION Equipment Type	Bressine Switch	Bussell Switch	· ! !
Manufacturer's Name (5.2.2/-/-)	Stile a Ring	_	X
Model Number (5.2.2/-/-) .	6N-AA21	12N/AAY	Wółc3
Serial Number	NA	NA	· • •
Features/Mounting (5.2.6/-/-)	Notstatel	perigortal.	
Connections/Interfaces (5.2.6/-/-)	Verstated	Not Stated.	
Location/Elevation	Reads	NA	• • •
Equipment ID No.	Varies	NA	; ; • •
QUALIFICATION REPORT (8.0/5.0/5.0) Report ID Number	: : : 3,203-2	30203-2	1 • • •
Report Date	NA	20/Navember 1973	; • •
Issued by	NA	Viking For	• • •
Prepared for	NA	Belilore Co.	1
Referenced Reports Qualification Method	N/K	N/D.	1
(5.1, 5.3/2.1, 2.4/2.1, 2.4)	MA.	flat	7 •
QUALIFICATION TEST PROGRAM Functional Test Description (5.2.5/2.2.9/2.2.9)	NA	Set punt	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.	Not stated	NA	
Currency rred.	1'-	!	<u>.</u>

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N b			
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)	NA	Not Stated	: !
Accuracy (5.2.5/-/-)	NA	Not stated	•
Number of Specimens	NA	2	!
Test Instruments Calibrated	NA	yes-	1
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	action	NA	
Test Duration (5.2.1/-/-)	N/A.	6 hours	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	Nat stated	NIA	
quired Function Time	71 20 sec. 30days	MA.	•
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	MA	Steam	(
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	NA	Steam	
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	Notates	Nat stated	*
Material Aging (7.0/-/-)	Notstates		1
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	Nooptated		
Radiation Aging, Type	Notstates Nostates Notstates		•

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NRC REQUIREMENTS		•	DEFICIENCY
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
			•
Radiation Aging, Dose (rd)	Not stated	none	:
,			:
Radiation Aging, Dose Rate	!		:
n-abelia amine Wakhad	: 1.		; ;
Radiation Aging, Method	<i>y</i>		• !
: Materials Susceptible	Notpotates	•	! '
(Radiation) (5.2.4, 7.0/-/-)	10 27		!
	: 1		
Operational Aging (-/4.2/-)			•
(-/4.2/-)			•
Other Age Conditioning			!
(-/4.2/-)	i J	. ال	!
outlies a rice Claimed/	:		•
Qualified Life Claimed/ Established (5.2.4/4.10/-)	Not stated	not stoll	X 🗖
Established (3.2.4/4.10/-)	1	not states	
Normal Ambient Temperature	in		!
Normal Ambient Radiation	(Not stated	NA	!
Normal Ambient Humidity	<u>ا</u> : ا	•	
On-Going Surveillance and		NA	•
Preventive Maintenance	Beners	NA	•
(7.0/-/-)	Ferry Program	1	1
On Grinn Analysis of	: Program		1
On-Going Analysis of Failures and Degradation			•
(7.0/-/-)	, V	1	•
			i
Margin (General)	! NA	!	1
(6.0/3.0/3.0)	1 / //		
Margin (NUREG-0588,	MA		:
Cat. I) (-/3.2/-)	NA		•
1. Temperature (+15°F)	!		i
2. Pressure (+10%, .	:		:
10 psig max) 3. Radiation	:		:
(not required)		: \	:
4. Time (+10%, +1 hour	:	. Y	
+ function time minimum)	• •	• !	
	•	•	·

JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. *15G*

NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	DEFICIENCY (X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	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	none	:
Radiation Type	Games		; ! ! <u>¥</u>
Radiation Dose (rd) (4.1.2/1.4/1.4)	3x10> _		Xxxx 2
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	Nat states		! ! !
Proximity to Concentrated diation .1.2/1.4.6/1.4.6)	Not		
Equipment Susceptible to Beta Radiation (4.1.2/-/-)			1
Radiation Dose (Normal + Accident) (4.1.2/-/-)			1
Plateout Dose Considered (-/1.48/1.48) Gamma + Beta Dose (rd)			! . ! !
(4.1.2/1.4.7/1.4.7)	: V :	\checkmark	• •

I the beine stated that a material enolution hed been conducted. but did not preside any data.



NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION OCUMENTATION	DEFICIENCY (X OR NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS	:	-	
Rate of Temp./Press. Increase	ND	sert stales ex 212/0.25/10/it ambient	
Peak: °F/psig/RH/Time	300/1.3/100%/3	ec 212/0.25/10/tt	his Nate 1
Decrease To: °F/psig/RH/Time	228/0/100/24.	ambient.	X
Decrease To: °F/psig/RH/Time	donation not		1
Decrease To: °F/psig/RH/Time	eteled	•	1
Equipment Surface Tempera- ture (MSLB) (-/1.2.5.C,	MA	NA	
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)			1
Spray Composition			1
(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/-/-)	1	1	1 1 1
Time to Submergence		· · · · · · · · · · · · · · · · · · ·	1
Dust Environment (-/2.2.11/2.2.11)	:	:	1
. ,	!	!	:



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the state of the s
NOTES:
1. The test profile does not envelope the environmental
service conditions specified by the licensee.
•
& the buensel EEQWS stoles.
The radiation dose of 1 X 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 fugnished in bulletin 79-01B, are acceptable up to a dose of 1 X —
10° rad. ~
Every not priviled, the SCRW sheet
I were not priviled. The SERW sheet
incinces a required dipe of 3 ×1078
which is not welged
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 Task No. _____471

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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:

. Maintenance and Replacement Schedule Summary ...

Contents	Checksheet Page No.
Equipment Item	la
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

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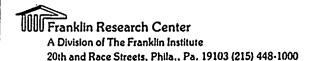


a	
SUMM	IARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u>	Tne Licensee (has/ has-not) provided a response to the SER concerns.
文	The Licensee (has/has not) specifically stated that the equipment is- qualified and/or will function when exposed to the applicable DBE environmental service conditions.
	The Licensee has presented information which shows there are no outstanding qualification deficiencies.
K	The Licensee (has/ has-not) proposed a corrective action for this equipment item whose qualification has not been fully established.
,	Y Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item.
	Corrective action specified by the Licensee:
0	Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation source
i.	<pre></pre>
•	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 that not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action <u>See Section 5</u> .)
	The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.
	GNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW RCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I b	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
4	DESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalies	ned X
(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	fe =
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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IPMENT 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 EEEDR 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 EEEDR (R1).

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



"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 MOTOR-IZED 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 MOTOR-IZED 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 MOTOFIZED VALVE ACTUATOR INCORPORATES A MOTOR BRAKE.

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>ば</u>8

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]

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb '
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d -
System Consideration Review .	4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, -6b -

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X 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.
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 III.a Exempt II.a Qualification Not Established III.b Not in Scope III.b Not Qualified IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
NRC REQUIREMENTS DESIGNATION: X = DEFICIENCY	<u>.</u>	
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 teria Regarding Radiation Satisfied teria 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)		
DESIGNATION NRC QUALIFICATION CATEGORY 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. 150



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 EEEOR 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 EEEOR (R1).

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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>158</u>

"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 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. 🗹



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]

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d-
System Consideration Review	4a, 4b, 4c, 4d, 40, 4f.
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, 6b-



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 47/

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>159</u>

CWANNEL OF LICENSER PROPOSED TO MAKE	A NEW CODE ONLY OURSESS THOUS ARE ARRESTOADED
SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
	Ifically stated that the equipment is
qualified and/or will function we environmental service conditions	when exposed to the applicable DBE
The Licensee has presented information outstanding qualification deficit	rmation which shows there are no Lencies.
The Licensee (has/has_not)- propositem whose qualification has not	osed a corrective action for this equipment been fully established.
	peration (has/h as not) been provided by the item.
X Corrective action specified	by the Licensee:
Equipment replacement wi	
Equipment relocation abo	ove submergence level . Oment from radiation source
Verify qualification by	additional (testing/analysis)
Equipment relocation to Qualification testing of	
Other .())
	ther information for this equipment item basis for justification for interim
	provided a schedule for the proposed le for accomplishing the corrective
The Licensee states that the equand/or should be exempted from e	sipment item does not require qualification environmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATION OF CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON REVIEW 3 of this TER for Legend)
I.a Qualified	II.c Qualified Life Deficiency
1.b Modification a Qualification Not Established	III.a Exempt III.b Not in Scope
b Not Qualified	IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM



NRC RE	·	DESIGNATION: C = DEFICIENCY
Adequa Aging Qualif Progra Criter Criter O O Criter Criter Criter Criter Criter Criter Criter Criter Criter Test	nted Evidence of Qualification Adequate te Similarity Between Equipment and Test Specimen Establis Degradation Evaluated Adequately ied Life or Replacement Schedule Established (If Required) m Established to Identify Aging Degradation ia Regarding Aging Simulation Satisfied (If Required) ia Regarding Temperature/Pressure Exposure: Peak Temperature Adequate Peak Pressure Adequate Duration Adequate Required Profile Enveloped Adequately Steam Exposure (If Required) Adequate ia Regarding Spray Satisfied ia Regarding Radiation Satisfied ia Regarding Test Sequence Satisfied ia Regarding Test Failures or Severe Anomalies Any) Satisfied ia Regarding Functional Testing Satisfied ia Regarding Instrument Accuracy Satisfied varation Margin (1 hour + Function Time) Satisfied	
NRC QU	VALIFICATION CATEGORY	DESIGNATION: X = CATEGORY
I.a I.b II.a II.b	Equipment Qualified Equipment Qualification Pending Modification Equipment Qualification Not Established Equipment Not Qualified Equipment Satisfies All Requirements Except Qualified L or Replacement Schedule Justified	ife
III.a III.b	Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review Documentation Not Made Available	



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PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>15</u>9

LICENSEE RESPONSE TO NRC SER

Inis device has a present status of Category IV (to be replaced); an acceptable justification for continued operation has been given in the REEDR; 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 EEEDR 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. 1/2



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>	Checksheet Page No.
Equipment Item	la
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, 3f, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

Maintenance and Replacement Schedule Summary 7

7a, 7b, 7c



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SUMMARY OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE
/ mma Tiannana (haa (haa-nah) musuidad	- response to the CED conserve
The Licensee (has/has not) provided	•
The Licensee (has/has not) specifica qualified and/or will function when environmental service conditions.	
The Licensee has presented informati outstanding qualification deficienci	
The Licensee (has/has-not) proposed item whose qualification has not bee	a corrective action for this equipment n fully established.
Justification for interim operat Licensee for this equipment item	ion (has/h as-not) been provided by the
Corrective action specified by t	he Licensee:
Equipment replacement with question Equipment relocation above so	•
Relocate or shield equipment	from radiation source
Verify qualification by addi Equipment relocation to a mi	
Qualification testing of equ Other '(
The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
The Licensee (has/has not) provide corrective action. (Schedule for action	
The Licensee states that the equipme and/or should be exempted from environments.	nt item does not require qualification onmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATI - CIRCLED ITEM ONLY: (See Section 3 of	
	II.c Qualified Life Deficiency III.a Exempt
a Qualification Not Established	III.b Not in Scope
b Not Qualified	IV Documentation Not Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION	SUMMARY FORM
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
MAC ASSOCIATION .	
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Spec	imen 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 R	equired)
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 Sequence Satisfied Criteria Regarding Test Failures or Severe Anomalie	
(If Any) Satisfied	
Criteria Regarding Functional Testing Satisfied	
Criteria Regarding Instrument Accuracy Satisfied	
Test Duration Margin (1 hour + Function Time) Satis	fied
Criteria Regarding Margins Satisfied (NUREG-0588, C	at. I)
,	
•	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
	•
I.a Equipment Qualified	on X
I.b Equipment Qualification Pending Modification	n
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified	Ourlified Tife
II.c Equipment Satisfies All Requirements Except or Replacement Schedule Justified	. Andirited nite
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification	tion Review
IV Documentation Not Made Available	
TA POCHINGUES CANTENAGE VANTER	



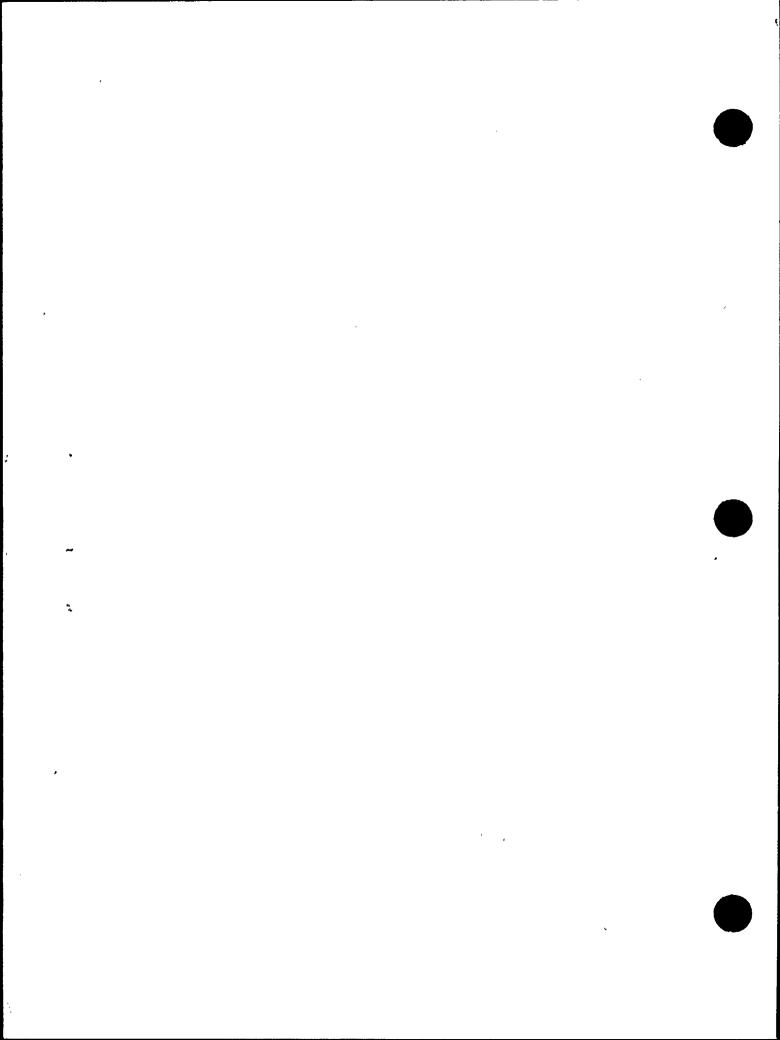
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 160

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 EEFOR; 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 EEFOR 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 consee 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 EEEOR to Appendixes B and C.

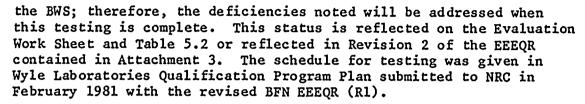
The method of identifying that all the deficiencies noted for each device listed in Appendix B and C are resolved is shown by the code marked in the column to the right of the deficiencies on Attachment 2. The code legend is as follows:

- 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 <u>circled</u> 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



A.

...



- 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."



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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 determined the same generic reference number in all Technical Evaluation rets 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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- 2. G. Lainas
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- 5. N. C. Moseley
 Letter to B. H. Grier et al., NRC. Subject: Supplement
 No. 2 to Bulletin 79-01B, Environmental Qualification of
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- N. C. Moseley Letter to B. H. Grier et al., NRC. Subject: Supplement No. 3 to Bulletin 79-01B, Environmental Qualification of Class 1E Equipment USNRC, 24-Oct-80
- 7. D. G. Eisenhut
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 Subject: Environmental Qualification of Safety-Related
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- 8. A. J. Szukiewicz
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- 9. Clarification of TMI Action Plan Requirements USNRC, 00-Nov-80 NUREG-0737
- 10. IPCEA/NEMA Standards Publication: Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy National Electrical Manufacturers' Assoc., 17-Jul-73 NEMA WC 5-1973
- 11. Technical Evaluation Report: Equipment Environmental Qualification; Tennesee Valley Authority, Browns Ferry Nuclear Power Station Unit 3 FRC, 08-Jun-81 TER-C5417-6
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- 13. Office of Nuclear Reactor Regulation
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 Evaluation Report for the Environmental Qualification of
 Safety-Related Electrical Equipment at Browns Ferry Plant
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- 15. L. M. Mills
 Letter to D. B. Vassalo, NRC. Subject: Requested Reports
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 Tennessee Valley Authority, 06-Apr-82
- 17. J. Helwig and D. O. Bostrum Anaconda-Continental Report No. 79117 Prepared for Tennessee Valley Authority on L.O.C.A.-5 IPEC, Marion, Indiana Anaconda Wire & Cable, 00-Apr-79 79117





- 18. Test Procedure Aging, Seismic and Accident Simulation Tests of a 1" Solenoid Operated Globe Valve, 75G-002 & 003 Target Rock Corp., 15-Feb-77 1674, Rev. C
- 19. Production Test Procedure Solenoid Operated Valves 75G-002 003, 004
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- 20. W. H. Bradley
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- 21. L. H. Smith and J. B. Baumgardner
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- 22. R. Arnold
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- 26. TVA Engineering Report: General Electric Canister-Type Electrical Penetration Assemblies for Class 1E Low Voltage Power and Control Service Tennessee Valley Authority EEB-1927



- **Q**₇
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 - 28. TVA Engineering Report: Coax, Triax, and Signal Cable Tenessee Valley Authority 1942
 - 29. TVA Engineering Report: Cable Types PJ, PN, PNJ, PJJ, PSJ Tennessee Valley Authority 1943
 - 30. TVA Engineering Report: Cable Types CP, CPJ, CPJJ, PXJ
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- 2. TVA Engineering Report: Cable Types CP, CPJ, CPJJ, PXJ
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- 33. TVA Engineering Report: Coax Triax, and Signal Cables of Cross-Linked Polyethylene Construction Tennessee Valley Authority 1947
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 - 36. S. J. Chilk
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- 38. 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; Revision 1 FRC, 07-Apr-82
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- 827. W. W. Holbrook and D. F. Hatmaker
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- 1063. T. Hess, W. J. Denkowski, and C. D. Formica
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- 1064. W. J. Denkowski and C. D. Formica
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- 1069. R. F. Soltis and F. W. Bach
 Report of Test on Yarway Corporation Remote Level
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- 1417. S. P. Carfagno and R. J. Gibson
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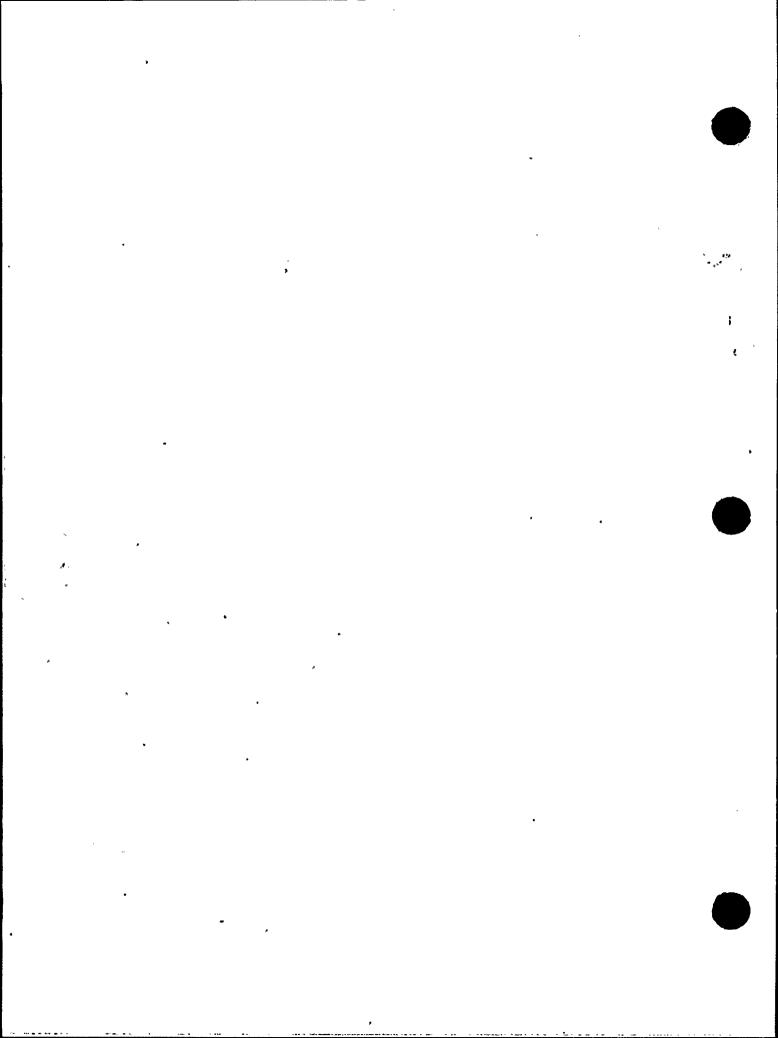
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APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

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.O (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).



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 Licenseenumbered 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 steamline 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 EEEOR."

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 (RECU) 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 RWCU 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 RWCU 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. 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

Room No.	Room Name	Plant Location* (Sheet 1-6)
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 l
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 Wault 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)

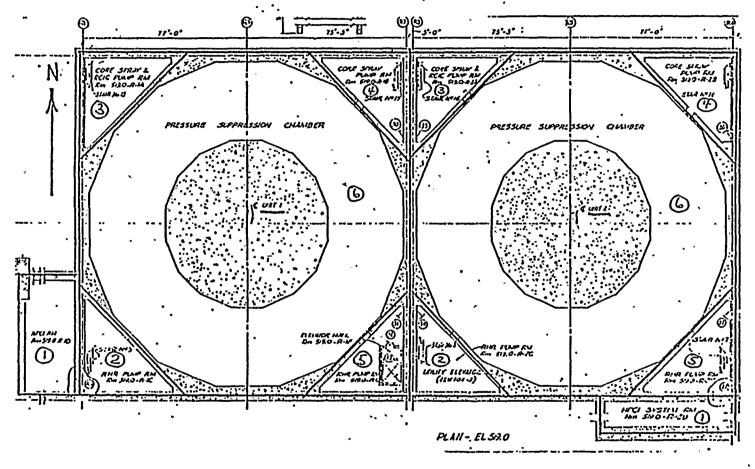
Room No:	Room Name	Plant Location*(Sheet 1-6)		
14	North Open Area; elevation 639.0'	Sheet 5		
15	Units 1-3 Refueling Floor; elevation 664.0'	Sheet 6		
16	Unit 1-3; elevation 593; RWCU BW receiving tank rm	Sheet 3		
17A	Unit 1-3; elevation 639; RWCU Demineralizer A	Sheet 5		
17B	Unit 1-3; elevation 639; 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.

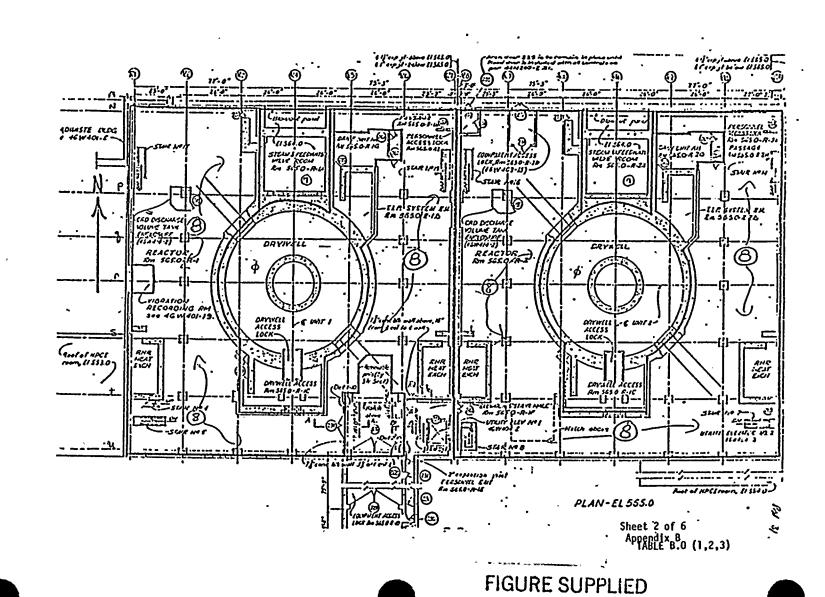
Table A-1 (Cont.). Licensee Table B.O - Sheet 1 of 6





Sheet 1 of 6
Appendix B
TABLE B.0(1.2.3)

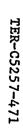
FIGURE SUPPLIED BY THE LICENSEE



BY THE LICENSEE

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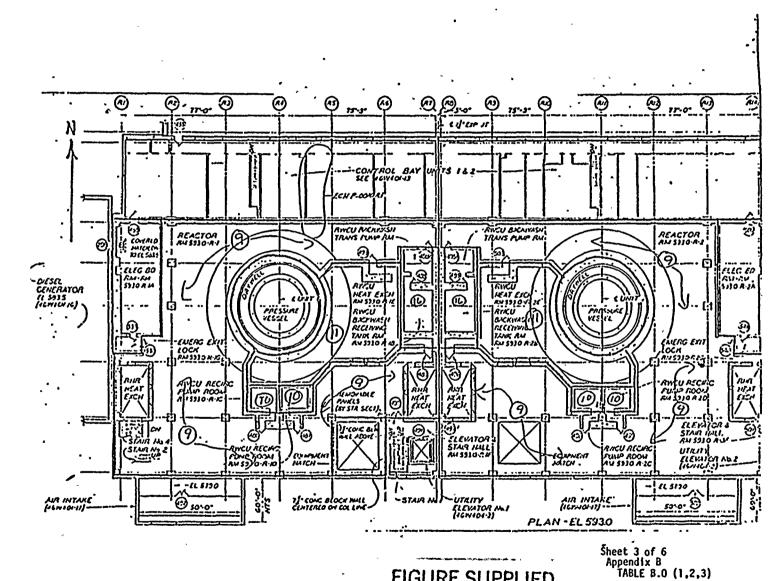
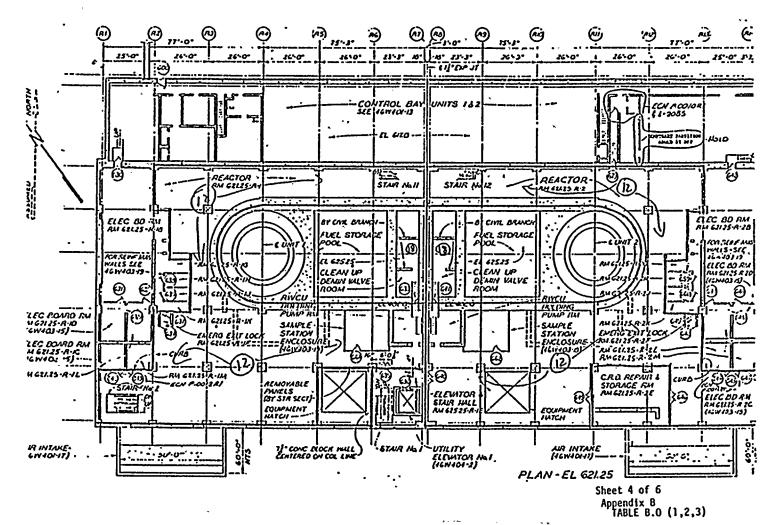
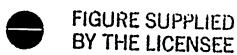


FIGURE SUPPLIED BY THE LICENSEE

Table A-1 (Cont.). Licensee Table B.O - Sheet 4 of 6







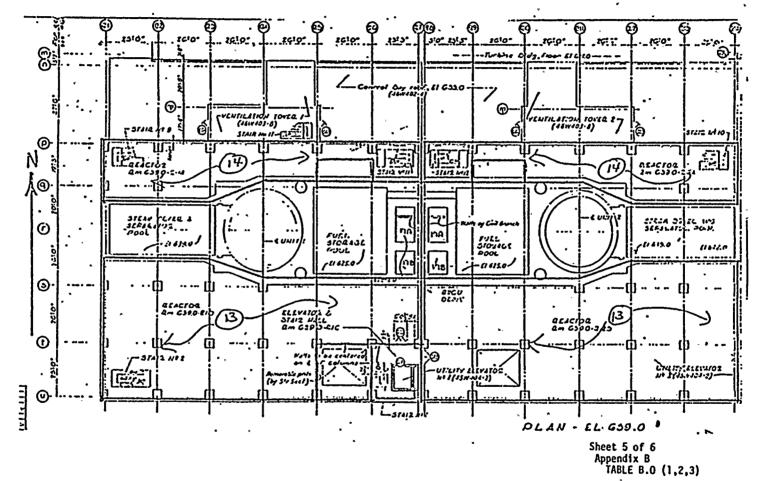


FIGURE SUPPLIED BY THE LICENSEE

IIII Franklin Research Center A Division of The Franklin Institute

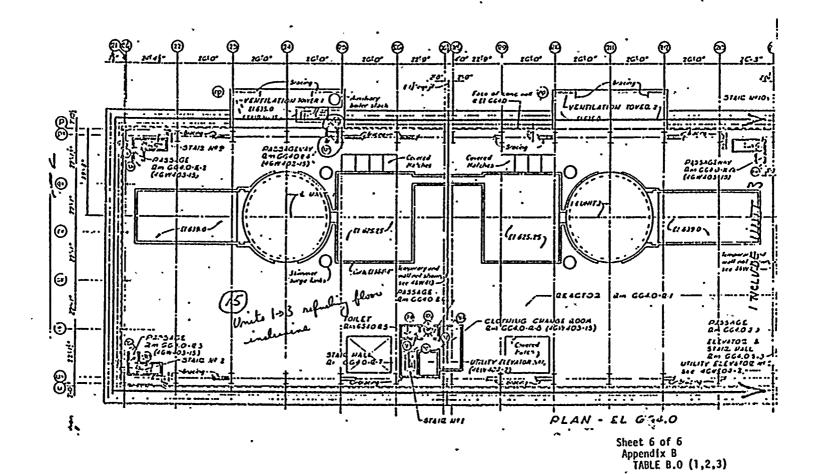
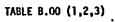


FIGURE SUPPLIED BY THE LICENSEE





ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS*

Room No. Designation	. Unit	1	Units 2 and 3			
bestque ton	.Temperature	Pressure	Temperature	Pressure		
0	Figure B.O (1,2,3)	Figure B.O (1,2,3)	Figure B.O (1,2,3)	Figure B.O (1,2,3)		
00 (Wetwell)	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)	İ		
11	B.11 (1)	,	8.11 (2,3)	,		
12	8.12 (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)**	1	B.16 (2,3)**	. 1		

^{**}Same as room 9 for units 1, 2, and 3

FIGURE SUPPLIED BY THE LICENSEE

Table A-2. Licensee Table B.00 (Cont.)

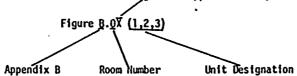
TABLE B.00 (1,2,3)

Room No. Designation Units 2 and 3 17A Table B.1 (1,2,3) Table B.1 (1,2,3) 17B 18 Table B.1 (1,2,3) Table B.1 (1,2,3) Table B.1 (1,2,3) Table B.1 (1,2,3)

ENVIRONMENTAL TEMPERATURE/PRESSURE CURVES - ROOM NUMBER DESIGNATIONS* (Continued)

*Figure Designation:

Designation applicable only for room 00, pressure curve only



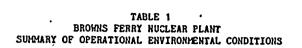
*Table Designation:

Table number 1 (not unit designation)

Table B.T (1,2,3)
Appendix B, Unit designation

FIGURE SUPPLIED BY THE LICENSEE

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				-				
Plant Location Outside	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA) ATH	Peak Temperature (°F	Peak) Humidity (\$) 100	Total 40-Yr Integrated Dose (Rads) 5 x 10 ²	Integrated Accident Dose (Rads)
			2 5	11.4	NA .	NA	NA 10	NA NA
Reactor Building	- 541.5	Drywell	1	15.6	140 '	100	1 x 10 ⁸ 1 x 10 ⁸	NA
Burrarug			2 3	15.6 69.4	150 325	100 100	1 x 10° Na	NA Center _o
-		-	-			2	· •	Center 8 1 x 109 2 x 109 Edge 7 4 x 109 4 x 109
			4	NA NA	NA	NA	NA	NA IO
			5	15.6	NA NA	. NA	, NÃ	NA NA
	519.0	Wetwell	1	ATH	95	100	NA	NA
			2 3 4	HTA	105	100	NA	174 .
	•		3	43.2	158	100	NA	2 x 10 ⁸
				na	NA	NA	NA	NS
		•	5	HTA	NA	NA	NA	NA
	519.0	HPCI Room	1	#HTA	95	98	2 x 10 t	NA
		2 3 4	ATH*	105	98	2 x 10'	NA h	
			3	ATH?	150	100	NA	3 x 10 ⁴
				15.7	300	100	HA	NS
			5	11.4	HA	NA	NA	NA
	519.0	SW Pump	1	ATH*	95***	98	2 x 10 h	NA
		Room	2 3	*HTA	105***	98	2 x 10°	HA 7
			3	#HŢĄ	160	100	NA	3 x 10 ⁷
			4	15.0	292(U1) 158(U2&3)	100	NA	иs
		•	5	11.4	NA	NA	NA	NA

FIGURE SUPPLIED BY THE LICENSEE

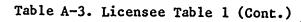


TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (^O F)	Peak Humidity (\$)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor Building	519.0	NW Pump	1	ATH*	95	98	2 x 10 4 2 x 10	NA
Bullding		Room	2	ATH#	105 160	98	2 X 10	NA 3 x 10 ⁷
			. 3 . 4	ATH*		100	NA	3 X 10
		•		15.0	297	100	NA NA	NS
		•	5	11.4	HA .	NA	NA	NA
	519.0	NE Pump	1	ATH*	95	98	2 x 10 t	NA
		Room	2	ATH*	105	98	2 x 10 ⁴	114
			3	ATH*	160	100	NA	3 × 10 ⁷
			- Ŭ	15.0	171(U1) 160(U2&3)	100	NA	NS
			5,	11.4	NA	NA	NA	NA
	519.0	SE Pump	1	ATH*	95	98	2 x 10 4	NA
		Room	2 -	*MTA	105	98	2 x 10 ⁴	NA 7
			2 ° 3 4	ATH	160	100	NA	3 x 10 ⁷
	,		Ħ	15.0	139(U1) 294(U2&3)	100	NA	ns
	4		5	11.4	NA	NA	HA	HA
	519.0	Pressure	1	#HTA	95###	98	1.5 x 10 ⁵ 1.5 x 10 ⁵	HA
		Suppression	2	ATH*	105###	98	1.5 x 10 ⁵	NA 7
		Chamber .	2 3 4	HTA	170	100	NA	3 × 10 ⁷
>			Ħ	15.0	217(U1) 220(U2&3)	100	NA	NS .
			5	11.4	NA	NA	NA	NA
	565	Hain Steam	1	ATH*	140	98	2×10^{6}	HA
		Valve Vault	2	ATH#	160	98	2 x 10 ⁰	NA n
			. 2 3 4	HTA	140	100	NA	3 x 10 ⁴
				21.5	308 "	100	NA _	NS
			5	111.4	NA *	NA	NA	HA



TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF OPERATIONAL ENVIRONMENTAL CONDITIONS

Plant Location	Elevation	Building Location	Operational Condition	Pressure Extreme (PSIA)	Peak Temperature (^O F)	Peak Humidity (1)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor	565	General Floor	1	ATM*	90	98	1 x 105	NA
Building		Area	2	ATH*	100	98	1 x 10 ⁵	NA _
			2 3	HTA	140	100	NA	2.1 x 10 ⁷ **
			4	15.0	147(U1)	100	NA	NS
к		•	5	11.4	NA .	NA	NA	на
	593	General Floor	s 1	ATH*	90	- 98	2 x 10 h	NA
	•	Area	2	*HTA	100	98	2 x 10 ⁴	NA
			3	HTA	135	100	NA	2.1 x 10 ⁷ **
			4	15.0	214(U1) 211(U2&3)	100	NA _	NS
			5	11.4	NA	NA	NA	NA
	593	.Reactor Water	1	*HTA	120 •	98	1.4 x 107	NA
		Cleanup Pump	2	*HTA	130	98	1.4 x 10	MA
		Rooms	3	HTA	135	100	NA ,	3 x 10 ⁴
			4	15.9	220	100	NA	NS
			5	11.4	.NA	NA	NA	NA
	593	Heat Exchanger	1	#HTA	125	98	1.4×10^{7}	NA
		Room	2 3 4	ATH*	135	98	1.4×10^{7}	NA .
•			. 3	MTA	135	100	NA	3 x 10 ⁷ .
			-	18.2	227(U1) 221(U2&3)	100-	HA	NS
			5	11.4	NA	NA	NA .	NA
	621	General Floor	1	PHTA	90	98	1×10^{3}	NA
		Area	2	ATH*	100	98	1 x 10 ³	NA L
			2 3 4	HTA	185	100	NA	3 x 10 ⁴
			Ħ	15.0	174(U1) 199(U2&3)	100	NA .	NS
			5	11.4	HA	NA	HA	NA

FIGURE SUPPLIED BY THE LICENSEE

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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 (1)	Total 40-Yr 'Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor	639	General Floor	1	ATH#	90	98	1 x 103	RA
Building		Area (South)		ATM"	100	98	1 x 10 ³	***
			2 3 4	ATH	130	100	NA	3 x 10 ⁴
			ų	15.0	135(U1) 178(U2&3)	100	XX	NS
			5	11.4	NA	HA	na	NA
	639	General Floor	1	ATM*	90	98	1 x 103	NA
		Area (North)		ATH*	100	98	1 x 10 ³	MA
			2 3 4	ATH	130	100	NA	3 x 10 ⁴
•			4	15.0	153(U1) 174(U2&3)	100	HA	ns
			5	11.4	NA	NA	na	NA
	664	Refueling Floor	1	ATHE	, 90	98	1 x 103	NA
		•	2	ATH*	100	98	1 x 10 ³	NA 21
			2 3 4	15.0	120	100	AK	3 x 10 ⁴
			4	NA	na	NA	NA '	ns
•			5	11.4	. NA	HA	AK	NA
	593.0	RWCU BW	1	ATH*	95	98	5.3 x 10 ⁷ 5.3 x 10 ⁷	NΛ
		Receiving Tank	2	ATH*	105 , ;	98	5.3 x 10'	NA h
		Room	2 3 4	ATH	135	100	HA	3 x 10 ⁴
			4	15.0	214(U1) 211(U1&2)	100	na	NS
			5	11.4	NA	АИ	na	NA
	639.0	RNCU	1	ATH* .	90	_" 90	2.1 x 108	NA
	•	Demineralizer	2	*HTA	100	໌ 90	2.1 x 10°	NA h
		A	2 3 4	ĄТĄ	100	90	NA	3 x 10 ⁴
				ATH	105	90	MA	ns
			5	11.4	HA	HA	Au	NA

FIGURE SUPPLIED BY THE LICENSEE





TABLE 1
BROWNS FERRY NUCLEAR PLANT
SUMMARY OF CPERATIONAL ENVIRONMENTAL CONDITIONS

			•					
Plant Location	Elevation	Building Location	Operational Condition	Pressure . Extreme (PSIA)	Peak (OF)	Peak Humidity (\$)	Total 40-Yr Integrated Dose (Rads)	Integrated Accident Dose (Rads)
Reactor	639.0	RWCU	1	ATH	90	90	2.1 x 108	NA
Building		Demineralizer	2	ATH*	100	90	2.1 x 10 ⁸	NA .
•		В	3	ATH	100	90	NA 10	3 x 10 ⁴
			4	ATH	105	90	NA.	NS .
			5	11.4	- NA	NA	HA	NA
	621.5	Cleanup	1	ATH*	95	90	1.7 x 10 ⁵	NA
,	,	Demineralizer	2	ATH*	105	90	1.7 x 10 ⁵	NA L
		Valve Room	3	ATH	105	90	NA	3 x 10 ⁴
			4	ATH	110	90	NA.	NS
			5	11 h	VA	114	114	114

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. ATH* 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). Haximum dose rates for these elevations are indicated by ***. Actual valves 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

Table A-4. Licensee Table B.1 (1,2,3)

TABLE 8.1 (1,2,3)

TEMPERATURE - PRESSURE (Selected Areas)

	Unit 1	Unit 2 & 3			
Time .	Compartment (1)	Time	Compartment (1),(10),&(11)		
2 360 5 " 11 " 30 " 50 "	1.3 psig 1.1 " .8 " .1 "	Same	as for unit 1		
Time	Compartment (10)	Time	All Remaining Area		
.02 sec .6	2.4 psig .8 # 1.3 # 1.3 #	1 sec 30 * 45 * 50 * 120 *	.1 psig .5 # .5 # .1 # 0. #		
<u>Time</u>	Compartment (11)		•		
1 sec 10 * 45 *	2.4 psig 3.4 # 3.8 #	<u> </u>	Units Compartment 7		
47 # 55 # 120 #	.h #	Time .1 sec	Steam Valve Vault		
Time	All Remaining Areas	3 4 * 5 * 6 *	7.1 * 4.5 * 2.7 * 2.0 *		
1 W 30 W 45 W	.1 psig .5 H .6 H	10 H 150 H	1.8 n 1.8 *		
50 P	.2 *	_			

Temperature-Pressure (Compartment 15, 17A, 17B, 18) - All Units

Room No.	Temperature (F)	Pressure (PSIA)
15	120	15.0
17A	105	Atm.
17B	105	Atm.
18	110	Atm.



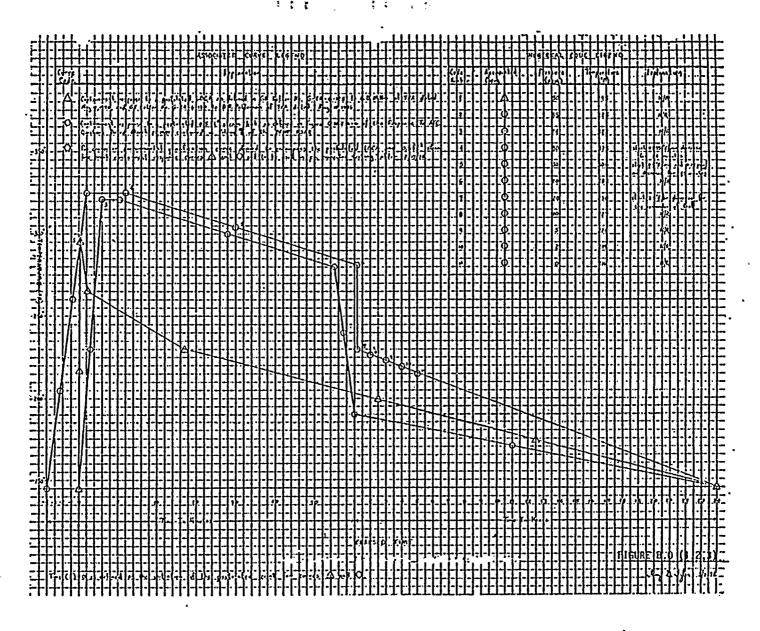


Figure A-1. DBA/IBA Dryw emperature Response
Environmental Test Curve (after 1/1/78). (Licensee Figure C.1-3)

FIGURE SUPPLIED

DV THE LICENSEE

Figure A-2. DBA Wetwell Temperature Response (Licensee Figure C.1-1)

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> FIGURE SUPPLIED BY THE LICENSEE

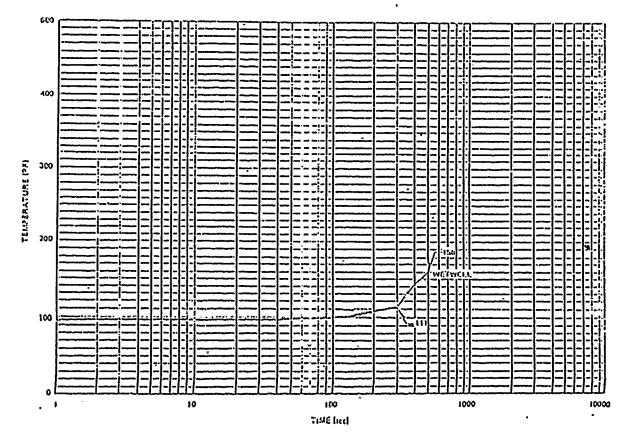


Figure A-3. IBA Wetwell Temperature Response (Licensee Figure C.1-2)

FIGURE SUPPLIED BY THE LICENSEE



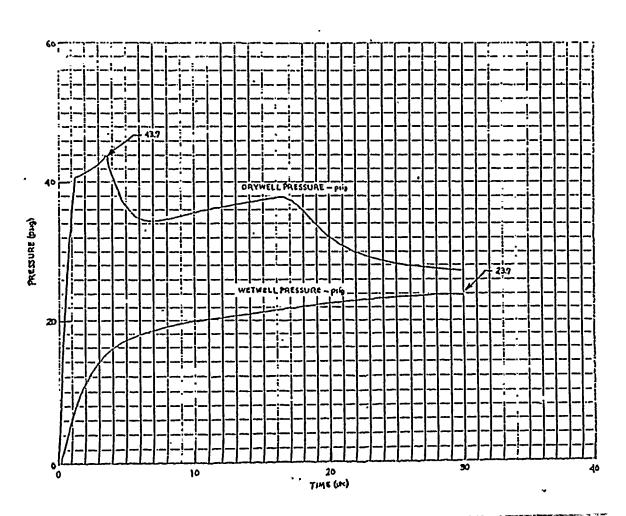


Figure A-4. DBA Containment Pressure Response (Licensee Figure C.1-4)

FIGURE SUPPLIED BY THE LICENSEE

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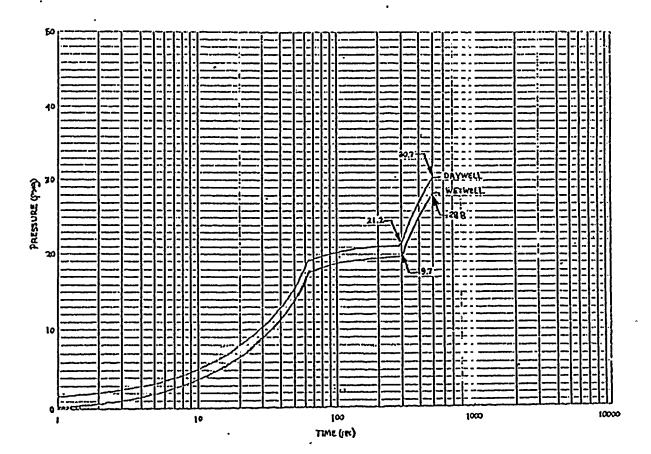
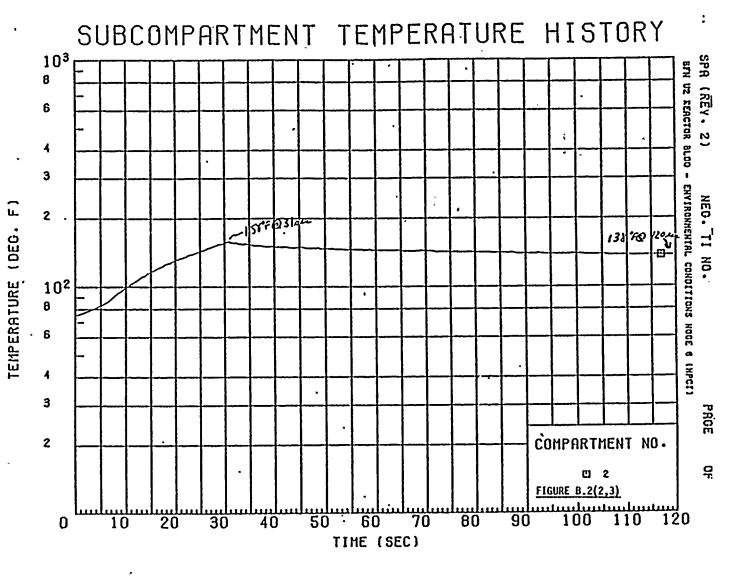


Figure A-5. IBA Containment Pressure Response (Licensee Figure C.1-5)

FIGURE SUPPLIED BY THE LICENSEE

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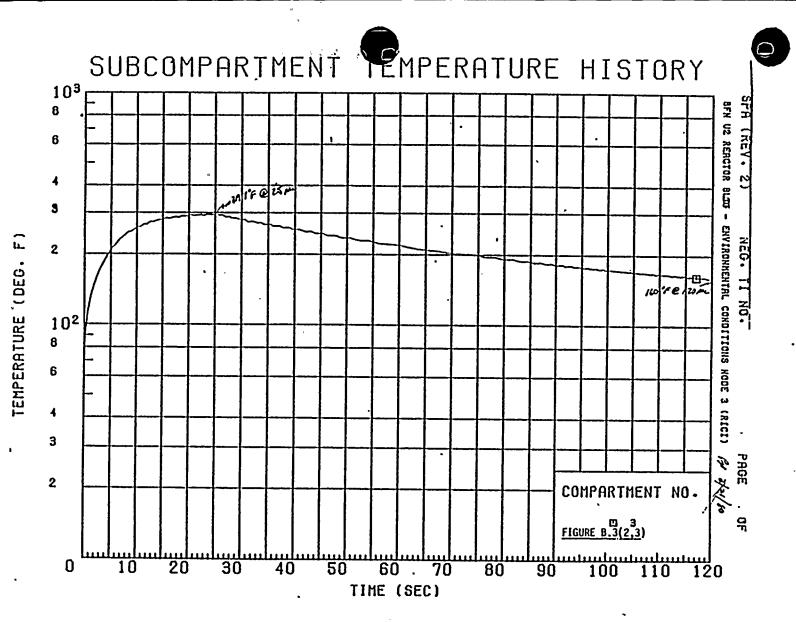
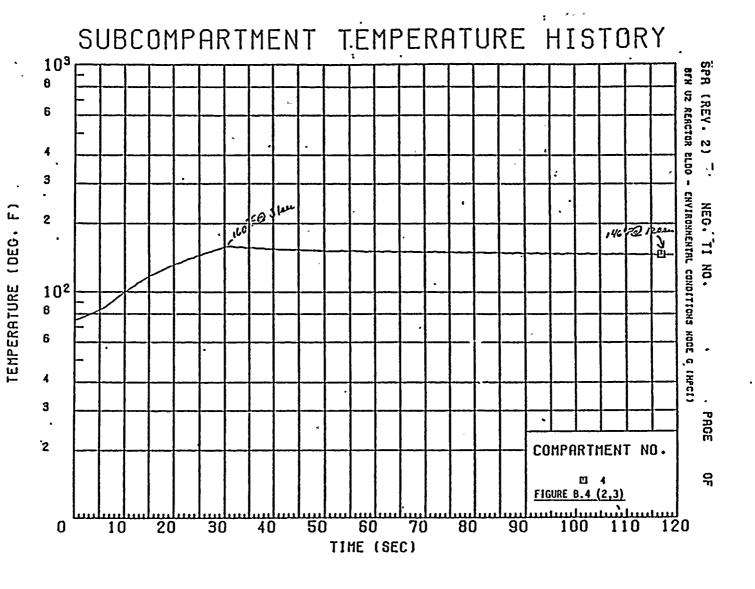


Figure A-8. Licensee Figure B.3 (2,3)

FIGURE SUPPLIED BY THE LICENSEE





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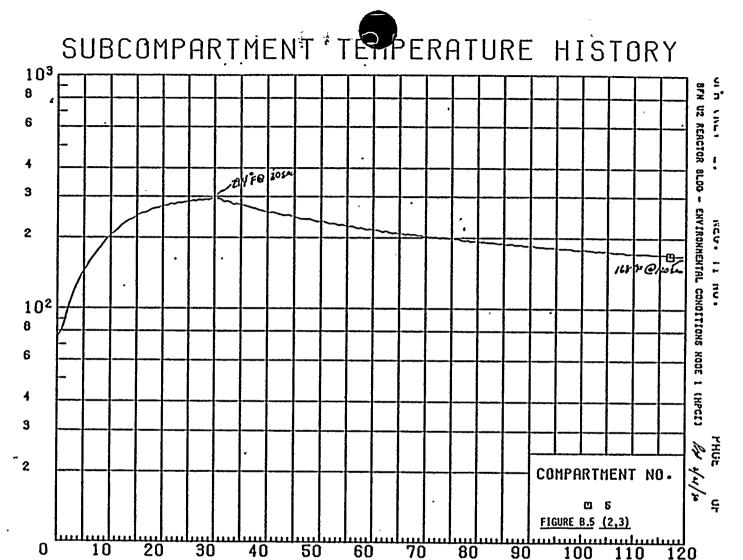


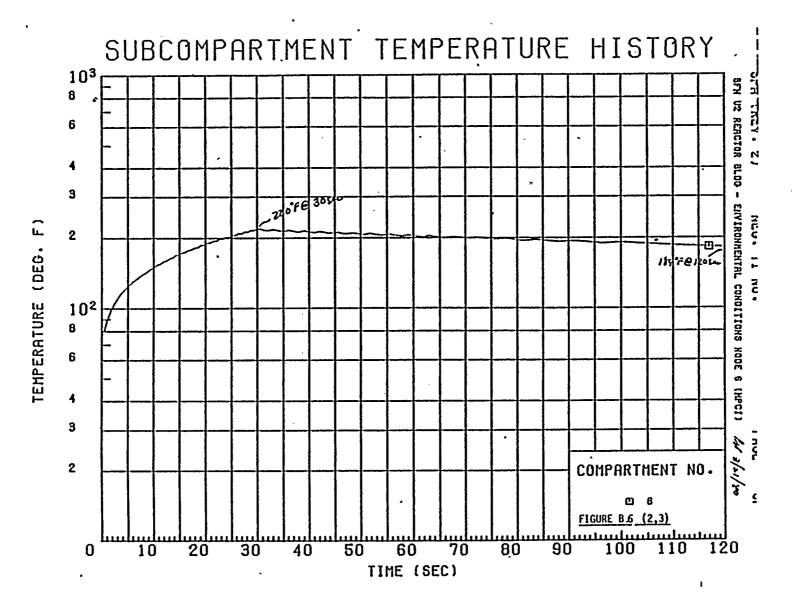
Figure A-10. Licensee Figure B.5 (2,3)

TIME (SEC)

FIGURE SUPPLIED BY THE LICENSEE

TEMPERATURE (DEG. F)

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TER-C5257-471

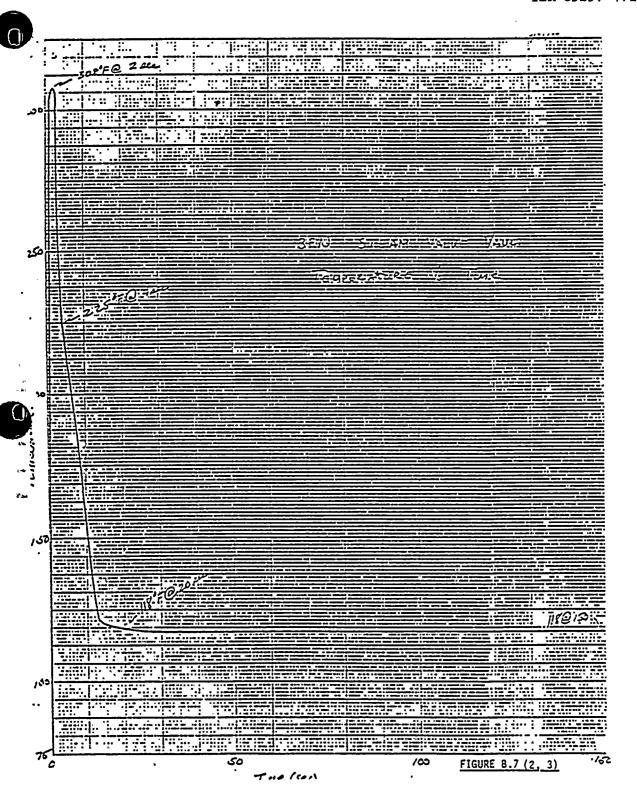
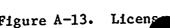


Figure A-12. Licensee Figure B.7 (2,3)



10²

TEMPERATURE (DEG.





TIME (SEC)



SUBCOMPARTMENT TEMPERATURE HISTORY

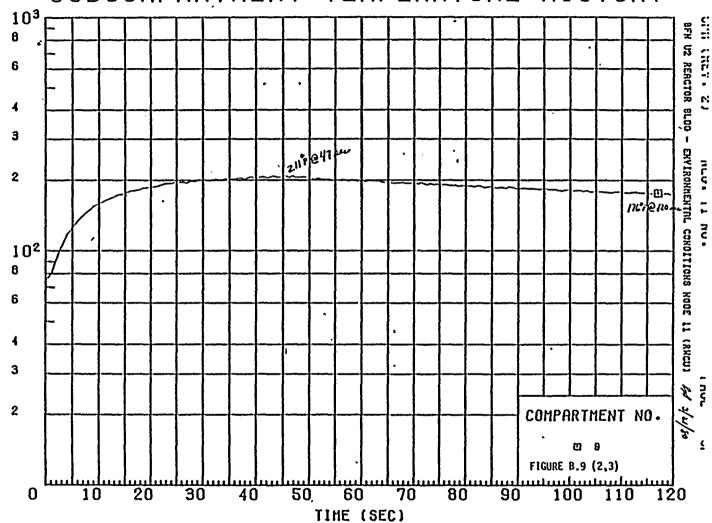


Figure A-14. Licensee Figure B.9 (2,3)

FIGURE SUPPLIED BY THE LICENSEE

TEMPERATURE (DEG.

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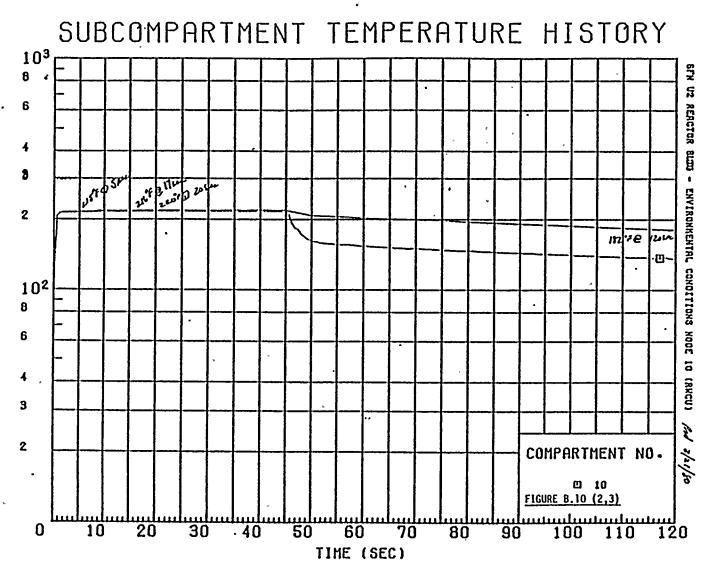


Figure A-15. Licensee Figure B.10 (2,3)



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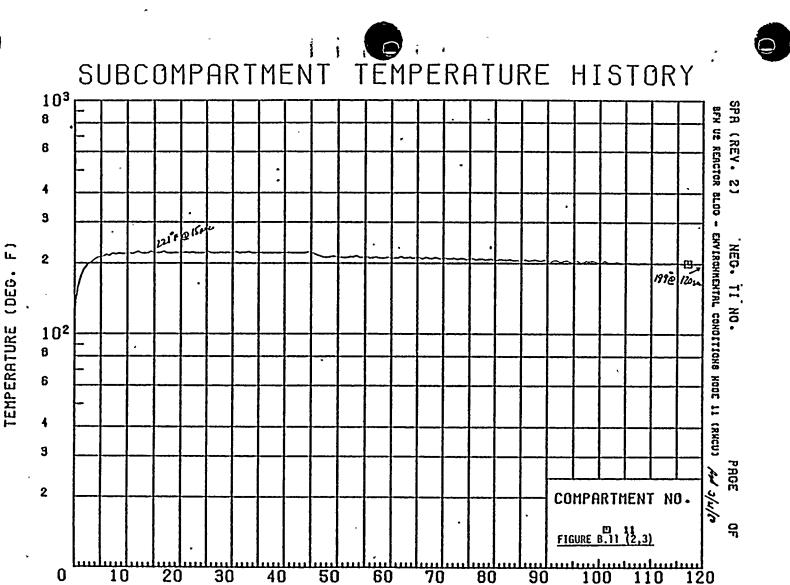


Figure A-16. Licensee Figure B.11 (2,3)

TIME (SEC)

FIGURE SUPPLIED BY THE LICENSEE

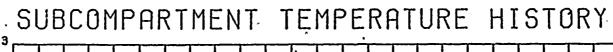


TEMPERATURE (DEG.

TER-C5257-471







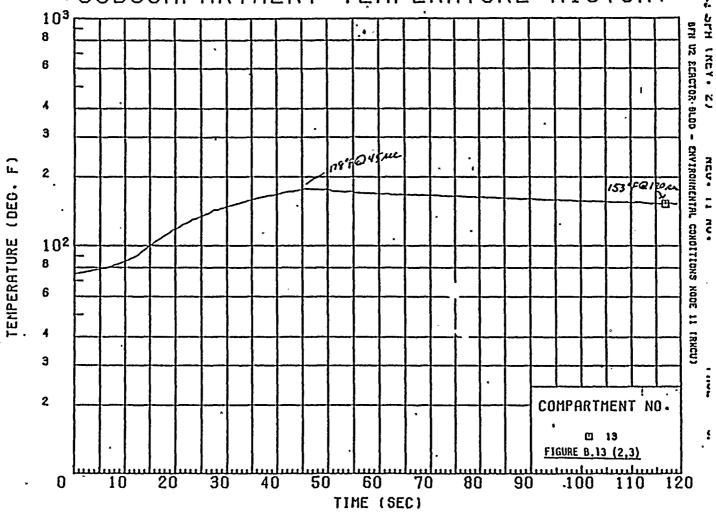
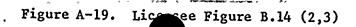


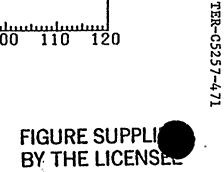
Figure A-18. Licensee Figure B.13 (2,3)

FIGURE SUPPLIED BY THE LICENSEE

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TIME (SEC)



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 manufacturer and model, which is representative of all identical equipment 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 SO2 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]

Apment 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 uired Operating Time: 1 year 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

Licensee Submittal: Pages EEB-84-1007 and -1008 [1]

TER Checksheet No. 10

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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)
Licensec 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
N<sub>2</sub> 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]
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ipment 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 uired Operating Time: 1 year Checksheet No. 18 bicensee 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]

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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]
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pment 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) Insee Reference 4265 United 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 HPGI 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]



pment 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)

ensee reference not cited

ired Operating Time: 1 year

FR 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: 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: 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]

ipment 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

wired Operating Time: 1 hour to 30 days

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]



ipment 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 CMC/HPCI, Turbine Exhaust Pressure Monitors (PS-71-13A, B; PS-73-22A, B) nsee 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-Ríng 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]



ipment 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

Checksheet No. 68
Leensee 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]



ipment 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 Tred 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 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]



Apment 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 vired Operating Time: 1 day Checksheet No. 88 Licensee Submittal: Pages EEB-1-1003, -1006, -1008, and -1010 [1]Equipment Item No. 89 Switches Located in the Drywell

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]



ipment 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

vired Operating Time: 1 year.

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 H_2 and O_2 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]



ipment 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

vired Operating Time: 1 year

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: 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]



ipment 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 uired Operating Time: 1 year Checksheet No. 118 Dicensee 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
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]



ipment 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: 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: 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) nsee 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]



Ipment 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) ensee References 659, 662 Paired 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]



pment 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

Ouired Operating Time: 30 days Checksheet No. 148

broensee 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: l year

TER Checksheet No. 153

Licensee Submittal: Page NEB-74-205 [1, 12, 14]

Equipment Item No. 154

Cable

Times Wire & Cable, Brand Rex 936,

"(COAX, TRIAX, signal XLPE)

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]



pment 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

wired Operating Time: 30 days

Checksheet No. 157

Censee 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

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]





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.





Function

Emergency Reactor Shutdown

Containment Isolation

Reactor Core Cooling

Containment Heat Removal

Core Residual Heat Removal

System¹

Engineered Safeguards Actuation

Reactor Protection Standby Liquid Control Control Rod Drive

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

High Pressure Coolant Injection

Low Pressure Coolant Injection

(RHR)
Core Spray

Automatic Depressurization

Reactor Core Isolation Cooling

Residual Heat Removal

Emergency Equipment Cooling Water

Main Steam

Residual Heat Removal

Reactor Core Isolation Cooling Residual Heat Removal Cooling

Water

The 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

Core Residual Heat Removal

Prevention of Significant Release of Radioactive Material to Environment

Supporting Systems

System¹

Reactor Building Closed Cooling Water Raw Cooling Water

Standby Gas Treatement
Containment Air Dilution
Radwaste
Reactor Water Cleanup
Radiation Monitoring
Neutron Monitoring
Containment Inerting
Sampling

Auxiliary Power Air Conditioning Ventilating Fuel 011



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

Monitored Parameter	Instrument	E.W.S Number
Reactor Water Level	LITS-3-46A LITS-3-46B LITS-3-52 LITS-3-62	NEB-3-016 NEB-3-016 NEB-3-24 NEB-3-24
Reactor Pressure	PT-3-22A PT-3-22B PT-3-22C PT-3-22D PT-3-54 PT-3-64	NEB-3-015 NEB-3-015 NEB-3-015 NEB-3-015



		TER-C5257-471
Orywell 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

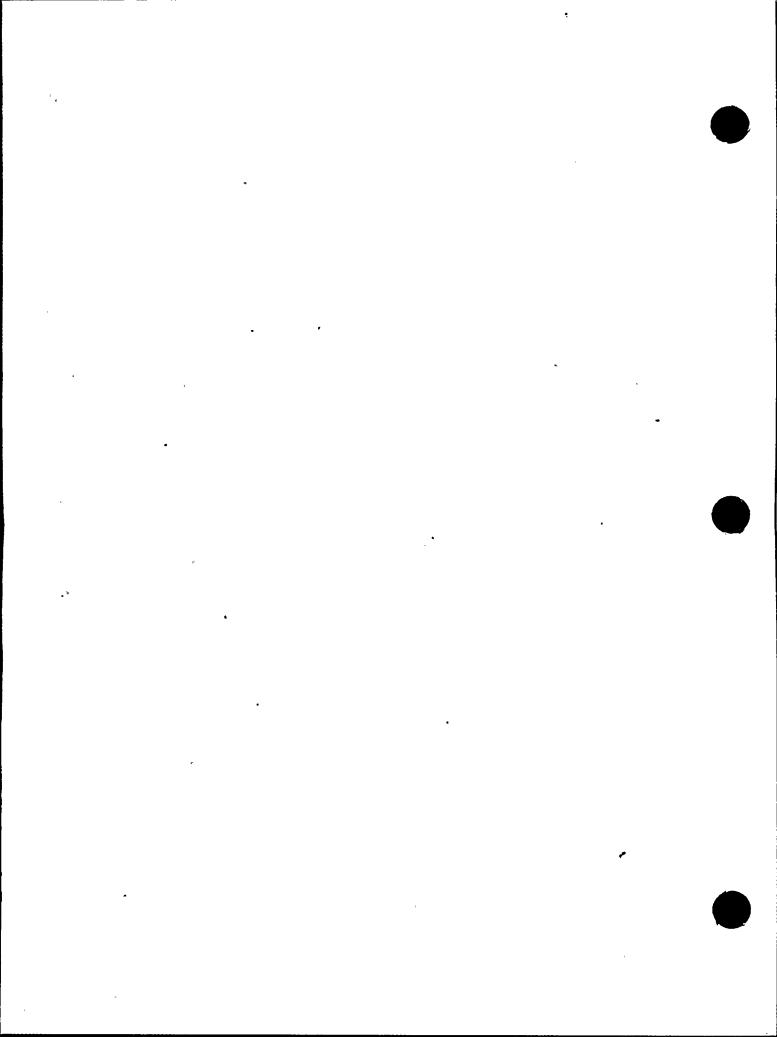
Quation

. .

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 ensing 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

Cabling 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 luations were performed, the licensees determined that, although full diffication 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:

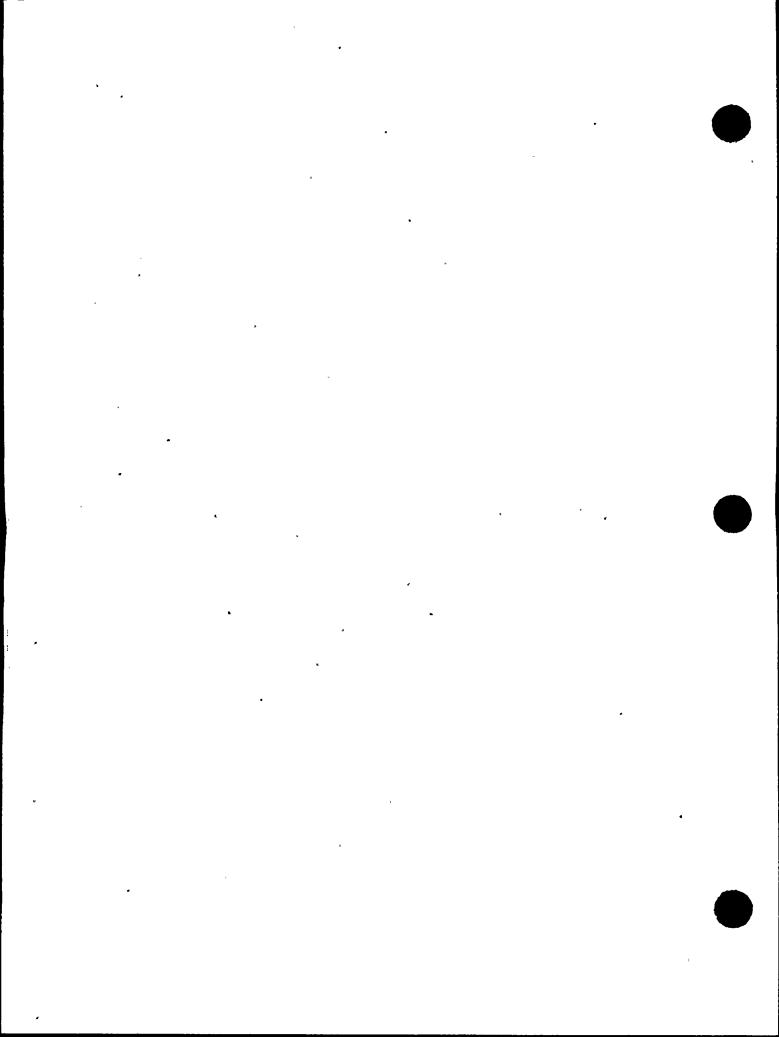
Equipment	Equipment Description/	SCEW Sheet		Basis for
<u> Item</u>	Function	No.	Status Code	Deficiency

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 on 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 LICENSES' 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.

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.

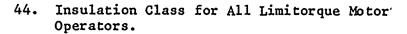


	•	
	•	DATE RECEIVED BY FRC*
1.	TVA Engineering Report 1943.	4/13/82-[7](2)
2.	Wyle Lab Report 43854-1.	4/13/82 · [7] (2)
3.	TVA Engineering Report 1946.	4/13/82·[7](2)
4.	TVA Engineering Report 1944.	4/13/82·[7](2)
5.	Parkinson and Sisman, October 1970.	4/13/82·[7](2)
6.	Anaconda-Continental Test Report No. 79117.	4/13/82·[7](2)
7.	TVA Engineering Report 1942.	4/13/82·[7](2)
8.	TVA Engineering Report 1928.	4/13/82·[7](2)
9.	TVA Engineering Report 1923.	$4/13/82 \cdot [7]^{(2)}$
10.	TVA Engineering Report 1945.	$4/13/82 \cdot [7]^{(2)}$
11.	TVA Engineering Report 1947.	4/13/82·[7](2)
12.	TVA Engineering Report 1950A.	$4/13/82 \cdot [7]$ (2)
13.	TVA Engineering Report 1950B.	4/13/82 · [7](2)
14.	Deleted (same as 2)(1)	
15.	TVA Engineering Report 1926.	4/13/82 [7](2)
16.	TVA Engineering Report 1921.	4/13/82 · [7](2)
17.	GE Letter, February 3, 1978 to H. J. Green.	4/13/82 · [7](2)
18.	BWR Owners Group Report 081-A-01, September 23, 1980.	4/13/82·[7](2)
19.	Target Rock Report 1827A, November 4, 1976.	4/13/82 [7](2)
20.	NMC Test Report NMC-PT-7630 Rev. O.	4/13/82 [7](2)
21.	NMC Drawing 0082445 Rev. D, February 9, 1978.	4/13/82 [7](2)

	•	DATE RECEIVED BY FRC***
22.	Target Rock Test Report 2199A.	$4/13/82 \cdot [7]$ (2)
23.	Fenwal Engineering Report 6350.	4/13/82 · [7] (2)
24.	Wyle Lab Report QSR-018-A012.	4/13/82·[7](2)
25.	Barksdale Qualification Procedure 9993.	$4/13/82 \cdot [7]^{(2)}$
26.	Barton Engineering Report R3288A-1.	$4/13/82 \cdot [7]^{(2)}$
27.	Wyle Summary Report QSR-027-A-02.	4/13/82·[7](2)
28.	Conax Test Report TR-39.	Deleted [7](2)
29.	Wyle Summary Report QSR-146-A-01.	Deleted [7](2)
30.	Deleted (same as 26) (1)	
31.	Wyle Summary Report QSR-029-A-01.	Deleted [7](2)
32.	Wyle Summary Report E12-3.	Deleted [7](2)
33.	Wyle Summary Report E12-N010.	Deleted [7](2)
34.	Rosemount Test Report 37327B.	$4/13/82 \cdot [7]^{(2)}$
35.	Rosemount Test Report 127227.	4/13/82 · [7] (2)
36.	Wyle Report QSR-048-A-01.	4/13/82 · [7] (2)
37.	Louis Allis Document S40EJ4-099-630, October 10,1979.	4/13/82 [7](2)
38.	TVA Engineering Report 1927.	4/13/82 [7](2)
39.	Wyle Lab Report QSR-002-A-02.	4/13/82 [7](2)
40.	Rotork Report, "A" Range Nuclear Qualification.	4/13/82 [7](2)
41.	Wyle Lab Report QSR-040-A-01.	4/13/82 [7](2)
42.	Deleted (same as 2)(1)	
43.	Deleted (same as 27)(1)	

DATE RECEIVED BY FRC*

DATE RECEIVED BT FRC***



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

1. Reference 1 does not provide adequate detail with respect to identification of TMI Action Plan equipment installed as of 1/1/81.

- 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

- 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
- Telephone Memorandum
 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
- 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)