TECHNICAL EVALUATION REPORT

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

VIRGINIA ELECTRIC AND POWER COMPANY SURRY POWER STATION UNIT 1

VOL, 2 OF 2

NRC DOCKET NO. 50-280

NRC TAC NO. 42468

NRC CONTRACT NO. NRC-03-79-118

FRC PROJECT C5257

FRC ASSIGNMENT 13

FRC TASK 482

Prepared by

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

FRC Group Leader: G. J. Toman

Prepared for

Nuclear Regulatory Commission Washington, D.C. 20555

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Group/Leader

Lead NRC Engineer:

P. Shemanski

December 21, 1982

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Reviewed by:

Approved by:

Project Manager

Department Diregtor

Franklin Research Center

A Division of The Franklin Institute The Benjamin Franklin Parkway, Phila., Pa. 19103 (215) 448-1000 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. 482

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>58</u>

EQUIPMENT ITEM NO. 58

ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

GENERAL ELECTRIC, MODEL NOT STATED REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 58

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CHARGING PUMP COOLING (1-CC-P-2A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-61, -62

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









Maintenance and Replacement Schedule Summary



(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, 5£ , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b



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.
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.
\underline{X} Justification for interim operation (has/has-not) been provided by the Licensee for this equipment item.
X Corrective 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/analysis) Equipment relocation to a mild environment Qualification testing of equipment in progress</pre>
Other ()
X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action <u>fobegin' last quanture of 82</u> .)
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.a Qualification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>58</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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 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 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. 482/483

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	LICENSEE RESPONSE TO NRC SER			
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:			
·	(1) COMPONENTS DELETED FROM THE MASTER LIST			
X	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION			
	(3) COMPONENTS DETERMINED TO BE QUALIFIED			
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING			

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>58</u>

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.7 General Electric Corporation (Charging Pump Component Cooling Water Pumps)

PLANT ID NO.

WORKSHEET PAGE NO.

1-CC-P-2À

6-61

1-CC-P-2B

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

6-62

7.2.7.1 Modification/Replacement Status

We will replace the charging pump component cooling water pump motors with qualified replacement units.

7.2.7.2 Modification/Replacement Schedule

Based on current projections for purchase order placement, material delivery and our present outage schedule, replacement is scheduled to start during the last quarter of 1982.

7.2.7.3 Justification For Continued Operation

The charging pump component cooling water pumps provide seal and cooling water for the mechanical seals of the charging pumps during their operation. In the event of a cooling water pump failure, the manufcturer has determined that the water reservoir surrounding the charging pump mechanical seals should provide a sufficient buffer to extend the operation of the pumps for approximately one (1) hour. Further, since during the use of the charging pumps in its safety injection mode, it is handling cold water from the refueling water storage tank, which will minimize the heat load for the charging cooling system.

On the basis of the above, it is concluded that the component cooling water pumps will perform their intended safety function, and will have no impact on plant safety

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

59

EQUIPMENT ITEM NO. 59

ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING

MANUFACTURER AND MODEL NOT STATED REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 59

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP MOTOR (1-CV-P-1B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-79, -78

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

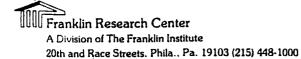
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SUMM	IARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>×</u>	The Licensee (has/has not) provided a response to the SER concerns.
	The Licensee (has/has not) specifically stated that the equipment is qualified and/or will 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.
	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 Not Established III.b Not in Scope Not Qualified IV Documentation Not Available

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·		
EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	<u>1</u>	
	DESIGNATION:	
NRC REQUIREMENTS	X = DEFICIENCY	
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establis 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:	
NRC QUALIFICATION CATEGORY	X = CATEGORY	
I.a Equipment Qualified		
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 Li	ife	
or Replacement Schedule Justified	calcolit dis Carda	
III.a Equipment Exempt From Qualification		
III.b Equipment Not in the Scope of the Qualification Review TV Documentation Not Made Available		



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FRC Task No. 482

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LICENSEE RESPONSE TO NRC SER				
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:			
<u> </u>	(1) COMPONENTS DELETED FROM THE MASTER LIST			
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION			
	(3) COMPONENTS DETERMINED TO BE QUALIFIED			
-	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING			
	·			

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. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 51

LICENSEE RESPONSE TO NRC SER (Continued)



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7.3.7 Containment Vacuum Pump Motors

1-CV-P-1A 1-CV-P-1B

These pumps are not required to function after a containment isolation signal is received. By design the containment pressure will return to sub-atmospheric conditions within an hour after an LOCA and remain sub-atmospheric for 30 days without mechanical removal of air during that time.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 59

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

- Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)
- Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)
 - Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

Reason for Non-Concurrence

- Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.
- Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.
- Backup (equipment/system) is subject to a potentially disabling single active failure.
- Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.
- Failure of the primary equipment can result in erroneous indication which could mislead an operator.
- Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 49

EQUIPMENT ITEM NO. 60

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

LIMITORQUE MODEL SMBO WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 60

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): BORIC ACID INJECTION TANK OUTLET VALVE (MOV-1842)

LICENSEE SUBMITTAL: SCEW(S): 6-200

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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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 C	OF LICENSEE RESPONSES TO THE NR	C SER -	- ONLY CHECKED	ITEMS	ARE APPLICABLE:
					· · · · · · · · · · · · · · · · · · ·
X The L	Licensee (has/k as_not) provided	a res	onse to the SI	ER cond	cerns.
quali	Licensee (has/has not) specific lified and/or will function when conmental service conditions.	_			
	Licensee has presented informat tanding qualification deficienc		ich shows there	e are :	no
	Licensee (has/has not) proposed whose qualification has not be				his equipment
	Justification for interim opera Licensee for this equipment ite		nas/has not) be	en pro	ovided by the
0	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 Qualification testing of eq	submerq t from itional	gence level radiation soun L (testing/ana) vironment	cce .ysis)	•
t	Other (Other (s for	justification i	or in	terim
	The Licensee (has/has not) prov corrective action. (Schedule faction			_	_
	Licensee states that the equipm or should be exempted from envi			_	qualification
	O ITEM ONLY: (See Section 3 of				SED ON REVIEW
II.a Qual	lified ification lification Not Established Qualified	III.a	Qualified Life Exempt Not in Scope Documentation		-



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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>m</u>
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
WIC MIZOTALINID	
Documented Evidence of Qualification Adequate	•
Adequate Similarity Between Equipment and Test Specimen Establi	shed
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	
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 I	-1te
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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LICENSEE RESPONSE TO NRC SER								
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:							
	(1) COMPONENTS DELETED FROM THE MASTER LIST							
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION							
<u>_X</u> _	(3) COMPONENTS DETERMINED TO BE QUALIFIED							
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING							

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. 482 FRC Task No. ____

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		ALIFICATION REVIEW	
Criteria: DOR Guidelines X	; NUREG-0588,	Cat. I; NUREG-0588, Cat.	II
NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	EFICIENCY (X OR NOTE NO.)
EQUIPMENT DESCRIPTION Equipment Type	MVA	Motorized Valve Actuator	
Manufacturer's Name (5.2.2/-/-)	LimiTORQUE	Limitorque	
Model Number (5.2.2/-/-)	SMB; Various! Sizes	SMB-O	
Serial Number .	NOTE 1:	195004 Reliance AC Motor	NOTE 1
Features/Mounting (5.2.6/-/-)	see Pg. Ia and NOTE 2	Class B Insulation also Electric Apparatus Motor with Class B	NOTE 2,7
Connections/Interfaces (5.2.6/-/-)	NOTE3	Insulation Not Stated	NOTE 3
Location/Elevation	See Pg. 1a See Pg. 1a	Not Applicable	
Equipment ID No.	Seefg. Ia	Not Applicable	
QUALIFICATION REPORT (8.0/5.0/5.0)	1 !		
Report ID Number	!!	воооз	
Report Date	! !	June 1976	
Issued by	! !	Limitorque Corporation	
Prepared for	! !	Limitorque	
Referenced Reports	! !	Not Stated	 - -
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)		Sequential Test	- 1 1 6
QUALIFICATION TEST PROGRAM Functional Test Description (5.2.5/2.2.9/2.2.9)		Cycling/Insulation Resistance	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/	NOTE 4	Not Applicable	NOTE 4

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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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	!	Not Stated	!
Accuracy (5.2.5/-/-)		Not Applicable	:
Number of Specimens		1 Actuator + 2 Motors	!
Test Instruments Calibrated		Yes	1
Safety Function (Active/Passive) (-/2.1.3/2.1.3)	ACTIVE	Not Applicable	
Test Duration (5.2.1/-/-)	!	16 Days	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	Ihour	Not Applicable	NOTE 5
Required Function Time	See Fg. 1a	Not Applicable	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)		Thermal Aging Mechanical Cycling	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)		Radiation Exposure Seismic Aging LOCA Simulation	:
1. Representative Sample 2. Baseline Data 3. Performance Extremes 4. Thermal Aging 5. Radiation Aging		Not Applicable	t
6. Wear Aging7. Vibration/Seismic8. DBE Exposure9. Post-DBE Exposure10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	120'F for 40 years (besign)	(80058 provides date on epoxy life)	:/
Material Aging Evaluation (7.0/-/-)	NOTE 6	Not Applicable	
Materials Susceptible		! !	1
(Thermal) (5.2.4, 7.0/-/-)	:	Not Stated	:
Radiation Aging, Type	:GAMMA	Gamma	:

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
(201)	!		•
Radiation Aging, Dose (rd)	12.5 E 06 rd (MAX.) SEE SCEW	See Accident Dose	:
Radiation Aging, Dose Rate	for exact value	See Accident Dose	:
Radiation Aging, Method		Test	1
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	_	Not Stated	:
Operational Aging (-/4.2/-)		2000 cycles at rated Load	1
Other Age Conditioning (-/4.2/-)		Seismic	:
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 years	40 Years outside containment	NOTE 6
Normal Ambient Temperature Normal Ambient Radiation** Normal Ambient Humidity *	110'F. 7.1 rd (hr.) 20-90'/.	Not Applicable Not Applicable Not Applicable	1
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	yes	Not Applicable	:
On-Going Analysis of Failures and Degradation (7.0/-/-)	yes	Not Applicable	•
Margin (General) (6.0/3.0/3.0)	!!	Not Stated	• • •
Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%, 10 psig max)		Not Applicable	
3. Radiation (not required)4. Time (+10%, +1 hour + function time minimum)			:

* ASSumed by FRC ** $(2.5 \pm 06 \text{ Rd} / (40 \text{ y})) = 7.1 \text{ R/h}^2$ 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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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
ACCIDENT CONDITIONS LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/ 1.1, 1.2, 1.5/1.1, 1.2, 1.5)	MSLB	LOCA/HELB outside Containment	! ! ! !
Radiation Type	GAMMA	Gamma	•
Radiation Dose (rd) (4.1.2/1.4/1.4)	8.0ECG rd: (max.) See SCEW for exact value	2x10 ⁷ (Gomplete Actuator 2.04x10 ⁸ (2 Motors)	; ;
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	exact value	1 Mrd/hr test	! !
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)		Not Applicable	: ! !
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	NO	No	!
Radiation Dose (Normal + Accident) (4.1.2/-/-)	1.08 EO 7 rd (max.) see scew frexact, value	Not Applicable	!
Plateout Dose Considered (-/1.48/1.48)	-	Not Applicable	!
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	: :	Not Applicable	1

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 60

Г					-
١	·	·			
I	NRC REQUIREMENTS			DEFICIENCY	
1	WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR	
J	(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE No.)	
	ENVIRONMENTAL PROFILE *, *			i	
1	OF ACCIDENT CONDITIONS	i		!	
ı		:1.8'F/sec :		!	
ļ	Rate of Temp./Press.	0.5 psig min	13°F, 2.5psi/sec	!	
Į	Increase	io.24.21	•	•!	
1		! ! ! !		!	
l	_Peak: °F/psig/RH/Time	205/5.2/100	250/25/100/24 hrs	•	
1		! 1000 sec !	000/50/500/55	•	
١	TO: °F/psig/RH/Time		200/10/100/15 days	• 1	
ł	Decrease To: °F/psig/RH/Time	14min		• •	
١	peoreage 10. 1/5913/19/11/	120/14.9/100			
Ì	Decrease To: °F/psig/RH/Time	! I hour!		!	
I		!		. !	
	Equipment Surface Tempera-	! !		!	
l	ture (MSLB) (-/1.2.5.C,				
1	2.2.6/1.2.5.C, 2.2.6)		Not Applicable	1	
ł	Corres Ovelification Wether	: N/A		•	(
	Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3,		Not Applicable	1	•
,	2.2.8)		Outside Containment		
	,	! !	application	9	
	Spray Composition	! ! !	••		
1	(4.1.4/1.3, 2.2.8/	! !	Not Applicable	•	
1	1.3, 2.2.8)	! !	•		
l	g D	: 1 :	w		
l	Spray Density (gpm/ft ²)	: 1 :	Not Applicable	•	
1	Spray Duration	: V :	Not Applicable	1	
l			Hot Hebiteshie	1	
1	Submergence Duration	! NOT :	Not Applicable	:	
١	(4.1.3/2.2.5/2.2.5)	! REQUIRED !		9	
1	,	: 1		1	
l	In-Leakage Considered		Not Stated but none	:	
١	(5.2.6, 5.3.2/-/-)	: 1	apparent in photograph	s:	
	Time to Submergence		Not Applicable	1	
1		i V	Hos whittente	1	
	Dust Environment	!!	Not Applicable	- 1 •	
-	(-/2.2.11/2.2.11)	:	• •	!	
ł					

* enveloping profile for comparison * maximum outside containment values

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NOTES:
1. Serial numbers are provided in
PSR # 27 on The "walk-down" shuts
2. For most motorized value actuators
(MVAs) The motor manufacturer, class
of insulation and whether or not the
MVA has a motor-brake assembly
has been identified : PSP #77 and are
has been identified in PSR #37 and on The SCEWG)
3 The second to the second to the
3. The component interfaces (i.e. motor leads,
splices) are not considered part of The
MVA by The lecinsel but well be
_ addressed separately.
4. The nameplate operating conditions for
The MVA (and brakes where applicable)
are previded in PSR# 27 on The "walk-
down" sheets.
5. For the equipment located outside
containment, a required ascrating time
of 120 days is specified. The fast lasted
only 16 days. PSR # 27 has attempted
to extrasolate The analified duration
to extrapolate The qualified duration by using The Arrhenius Gehnique and
The elevated saturated steam conditions
reported in PGR # 662 (80003). The fallowing
July 101 10 10 10 10 10 10 10 10 10 10 10 10

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NOTES:
of the arrhenius Sechnique.
The thermal aging analyses presented for this facility have attempted to extrapolate test data obtained from saturated steam tests using the Arrhenius technique to extend qualified duration or calculate qualified life estimates. The assumption used in justifying this procedure is that the thermal degradation during the environmental test is greater than that accumulated during the postulated accident conditions. What the analyses have failed to recognize is the fact that the Arrhenius methodology is a theoretical relationship which attempts to predict how reaction rates vary with respect to increases in temperature. This technique is based on the premise that all organic materials degrade to some extent—primarily by oxidation—when exposed to elevated temperatures in the presence of air. The saturated steam tests, as a matter of procedure, purge the air from the test chamber prior to the onset of the environmental test. Therefore, the use of saturated steam, or superheated steam for that matter, in conjunction with the Arrhenius technique is not technically justified as an aging procedure. In addition, the Arrhenius technique does not take into account variations in the reaction rates due to changes in pressure (as would be experienced in a LOCA/MSLB/HELB test), nor does it account for possible anomalies due to the presence of moisture in the chamber atmosphere. The application of the Arrhenius methodology is limited to data obtained from air—oven thermal aging tests (minimum of three tests at different times and temperatures) where the only parameter affecting the reaction rate is temperature. Any application of this technique to thermodynamically different systems must be technically justified with valid analytical procedures.
Though The licensee has not provided This
technical basis, it is noted That The
MVA fasted showld no indication That expressed to continued post-accident
conditions would something a lailung of
conditions would result in a failure of

NOTES:
The device. as such, This MVA is considered
The device. as such, This MVA is considered qualified for The specified aperating fine
6. Thermal aging has been addressed in The
BO\$58 report for The motor insulation
and is acceptable. The licensel has
also addressed sials, gaskets (Not required
for absolute scaling) & Subricants. The limit
and forgue swetches are generally made
of a shenolic material and would
generally not experience significant
Thermal degradation. The licensee has
also stated That The interfaces will be
address as separate etens. The licensee
should be aware that teflow is used
in many motor leads as insulation
and is susceptible to Thermal and
radiation digradation. The licensee has
also addressed Jerneial strips (Blocks) and connectors in Their review. All
information reviewed is acceptable.
7. The difference in motor manufacturers
has been adequately addressed.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

EQUIPMENT ITEM NO. 61

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

LIMITORQUE MODEL SMB WITH CLASS B INSULATION; SIZES 00, 000 WITH MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 61

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM REFUELING WATER STORAGE TANK

(MOV-1115D)

LICENSEE SUBMITTAL: SCEW(S): 6-15

FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM VOLUME CONTROL TANK

(MOV-1115B)

LICENSEE SUBMITTAL: SCEW(S): 6-13

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:

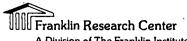
Maintenance and Replacement Schedule Summary

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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BOILER	24(1	O.E	птст	1000	MOE	7110110	10	<u> </u>	C OHK		<u> </u>	<u> </u>	1111111	AIG	WE E HT.	CAUDE
X	lne	Lic	ensee	(ha	s/h a :	s-not)	pr	ovided	a res	pons	e to	the S	ER con	cerns	5 .	
— ç	<u>rual</u>	ifi	ed ar	d/or	will		ctio	n when	ally s expos							
					_			format icienc	ion wh ies.	ich	shows	ther	e are	no		
									a cor en ful					his e	equipme	ent
-	X	Jus Lic	tific ensec	atio for	n for	inte equi	erim ipme	opera nt ite	tion (has/	has n	eŧ) be	een pr	ovide	ed by	the
-	<u>X</u>	Cor	recti	.ve a	ction	spec	ifi	ed by	the Li	cens	ee:					
ro			Equi Equi Relo Veri Equi Qual	pmen pmen cate fy q pmen	t mode t rel or s ualis t rel ation	dificationalistications of the second	tion lon lon lon lon lon ling	n above uipmen by add to a m of eq	qualifications it is to the second se	gence rad l (to viro t in	e leveniation estiment programment	el n sou g/ana ress				_)
		tha		be					inform s for					_		
•	X	cor			ction	1. (8	Sche	dule f	ided a or according to the second terms of the	ompl	ishin	g the	_	_		•
									ent it				-	quali	ficat:	ion
									ION EV					SED	N REV	<u>IEW</u>
II.a	Mod	lifi	catio	on N	ot Es	stabli	ishe	đ	II.c III.a III.b IV	Exe Not	mpt in S	cope	e Defic			



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMANI FOR	uu
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
MC MQ01MM1D	1 22110121101
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Establi	shed
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required	1)
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	en e
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	, <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	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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LICENSEE RESPONSE TO NRC SER			
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
	(1) COMPONENTS DELETED FROM THE MASTER LIST		
X_	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION		
·	(3) COMPONENTS DETERMINED TO BE QUALIFIED		
-	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING		

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET PAGE NO.

MOV-1890A	6 - 215
MOV-1890B	6 – 216
MOV-1890C	6-217
MOV-1115B	6-13
MOV-1115D	6-15
MOV-1863A	6-205
MOV-1863B	6-206
MOV-1864A	6-228
MOV-1864B	6-229

7.2.8.2.1 Modification/Replacement Status

1 30

The valves listed above are addressed by Franklin Institute Research Laboratories Report F-C3271, which does not include radiation data. If the brakes are removed, the vendor has informed us that the valves will be qualified by their Qualification Report B0003. Therefore, the brakes will be removed from the motor operated valves.

7.2.8.2.2 Modification Replacement Schedule

VEPCO is currently reviewing two methods of qualification. One requires modification to the existing valve and the other requires complete actuator replacement. Our current projections indicate that if complete replacement is required, material availability will allow replacement to start during the last quarter of 1982.

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 🔙

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2.3 Justification For Continued Operation

Review of the available qualification documents, some dating back to the time at which Surry was built, indicates that valve actuators with parts similar to those slated for replacement were demonstrated by test and analysis, to be capable of functioning in the harsh environments more severe than that expected in Surry following DBA/HELB. Also no failures of any significance were experienced during these tests to indicate a potential for common mode failures. In these tests, the valve actuators included motor brakes that are similar in con- struction to those used in the Surry design. These tests included multicycle open/close operation prior to, during, and after entire DBA test sequence. The motor brakes satisfactorily in each of the eleven operational cycles thorughout the program's six days of test duration. These tests, however, did not include irradiation. Since these atuators are located outside the containment, the normal operating radiation dose to these actuators is minimal. These actuators are accessible for frequent inspections, tests, and maintenance. Further, even during post DBA/HELB conditions, these valves can be operated using manual handwheels independent of the brakes.

On the basis of the above it is concluded that continued plant operation in the interim with these equipment lacking substantiation of their environmental qualification will have little or no impact on safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

EQUIPMENT ITEM NO. 62

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB1 WITH MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 62

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE VALVE (MOV-1864B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-229, -228

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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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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		7.0	
SUMMARY	OF LICENSEE RESPONSES TO THE NR	SER - ONLY CHECKED I	TEMS ARE APPLICABLE
X The	e Licensee (has/h as-not) provided	response to the SER	concerns.
q u a	e Licensee (has/h as not) specifical little spe	-	
	e Licensee has presented informat estanding qualification deficienc		are no
	e Licensee (has/h as not) proposed em whose qualification has not be		or this equipment
_X	Justification for interim opera Licensee for this equipment ite		n provided by the
<u>X</u>	Corrective action specified by	e Licensee:	
<u> </u>	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 (REPLACE BRAKE)	abmergence level from radiation source sional (testing/analys d environment pment in progress	
	The Licensee has provided other that can be construed as a basis operation.		
<u> </u>		led a schedule for the accomplishing the conter 1982)	
	Licensee states that the equipment of the control o		
	ATION OF RESULTANT NRC QUALIFICAT LED ITEM ONLY: (See Section 3 of		Y BASED ON REVIEW
I.b Mo II.a Qu	nalified odification nalification Not Established ot Qualified	I.c Qualified Life I II.a Exempt II.b Not in Scope	-

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

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 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)	id
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	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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	LICENSEE RESPONSE TO NRC SER
·	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u>_X</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET PAGE NO.

MOV-1890A		6-215
MOV-18903		6-216
MOV-1890C		6 - 217
MOV-1115B		6-13
MOV-1115D	,	6 - 15
MOV-1863A		6 – 205
MOV-18633		6-206
MOV-1864A		6 - 228
MOV-1364B		6 - 229

7.2.8.2.1 Modification/Replacement Status

The valves listed above are addressed by Franklin Institute Research Laboratories Report F-C3271, which does not include radiation data. If the brakes are removed, the vendor has informed us that the valves will be qualified by their Qualification Report B0003. Therefore, the brakes will be removed from the motor operated valves.

7.2.8.2.2 Modification Replacement Schedule

VEPCO is currently reviewing two methods of qualification. One requires modification to the existing valve and the other requires complete actuator replacement. Our current projections indicate that if complete replacement is required, material availability will allow replacement to start during the last quarter of 1982.

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2.3 Justification For Continued Operation

Review of the available qualification documents, some dating back to the time at which Surry was built, indicates that valve actuators with parts similar to those slated for replacement were demonstrated by test and analysis, to be capable of functioning in the harsh environments more severe than that expected in Surry following DBA/HELB. Also no failures of any significance were experienced during these tests to indicate a potential for common mode failures. In these tests, the valve actuators included motor brakes that are similar in con-struction to those used in the Surry design. These tests included multicycle open/close operation prior to, during, and after entire DBA test sequence. The motor brakes satisfactorily in each of the eleven operational cycles thorughout the program's six days of test duration. These tests, however, did not include irradiation. Since these atuators are located outside the containment, the normal operating radiation dose to these actuators is minimal. These actuators are accessible for frequent inspections, tests, and maintenance. Further, even during post DBA/HELB conditions, these 'valves can be operated using manual handwheels independent of the brakes.

On the basis of the above it is concluded that continued plant operation in the interim with these equipment lacking substantiation of their environmental qualification will have little or no impact on safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

EQUIPMENT ITEM NO. 63

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB2 WITH CLASS B INSULATION; MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 63

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION STOP VALVE (MOV-1890A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-215 TO -217

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

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FRC Project No. C5257
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FRC Task No. 482

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SUMMARY OF LICENSEE RESPONSES TO THE	NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provi	ded a response to the SER concerns.
	fically stated that the equipment is hen exposed to the applicable DBE •
The Licensee has presented infor outstanding qualification defici	
X The Licensee (has/has not) propo item whose qualification has not	sed a corrective action for this equipment been fully established.
	eration (has/ has not) been provided by the item.
\times Corrective action specified	by the Licensee:
Verify qualification by Equipment relocation to Qualification testing of X Other (Replace Bra The Licensee has provided ot	ve submergence level ment from radiation source additional (testing/analysis) a mild environment equipment in progress
corrective action. (Schedul	rovided a schedule for the proposed e for accomplishing the corrective st quarter 1982)
The Licensee states that the equand/or should be exempted from e	ipment item does not require qualification
DESIGNATION OF RESULTANT NRC QUALIFI - CIRCLED ITEM ONLY: (See Section 3	CATION EVALUATION CATEGORY BASED ON REVIEW 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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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

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 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)	ded
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	ie
III.a Equipment Exempt From Qualification III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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	LICENSEE RESPONSE TO NRC SER	
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:	
	(1) COMPONENTS DELETED FROM THE MASTER LIST	
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION	
	(3) COMPONENTS DETERMINED TO BE QUALIFIED	
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET PAGE NO.

MOV-1890A	6 – 215
MOV-1890B	6-216
MOV-1890C	6-217
MOV-1115B	6-13
MOV-1115D	6-15
MOV-1863A	6-205
MOV-1863B	6-206
MOV-1864A	6-228
MOV-1864B	6 – 229

7.2.8.2.1 Modification/Replacement Status

The valves listed above are addressed by Franklin Institute Research Laboratories Report F-C3271, which does not include radiation data. If the brakes are removed, the vendor has informed us that the valves will be qualified by their Qualification Report B0003. Therefore, the brakes will be removed from the motor operated valves.

7.2.8.2.2 Modification Replacement Schedule

VEPCO is currently reviewing two methods of qualification. One requires modification to the existing valve and the other requires complete actuator replacement. Our current projections indicate that if complete replacement is required, material availability will allow replacement to start during the last quarter of 1982.

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RUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>63</u>

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2.3 Justification For Continued Operation

Review of the available qualification documents, some dating back to the time at which Surry was built, indicates that valve actuators with parts similar to those slated for replacement were demonstrated by test and analysis, to be capable of functioning in the harsh environments more severe than that expected in Surry following DBA/HELB. Also no failures of any significance were experienced during these tests to indicate a potential for common mode failures. In these tests, the valve actuators included motor brakes that are similar in con- struction to those used in the Surry design. These tests included multicycle open/close operation prior to, during, and after entire DBA test sequence. The motor brakes performed satisfactorily in each of the eleven operational cycles thorughout the program's six days of test duration. These tests, however, did not include irradiation. Since these atuators are located outside the containment, the normal operating radiation dose to these actuators is minimal. These actuators are accessible for frequent inspections, tests, and maintenance. Further, even during post DBA/HELB conditions, these valves can be operated using manual handwheels independent of the brakes.

On the basis of the above it is concluded that continued plant operation in the interim with these equipment lacking substantiation of their environmental qualification will have little or no impact on safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

04

EQUIPMENT ITEM NO. 64

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

LIMITORQUE MODEL WITH PEERLESS MOTOR CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 64

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHARGING PUMP RECIRCULATION TO REFUELING WATER STORAGE

TANK (MOV-1275A)

LICENSEE SUBMITTAL: SCEW(S): 6-2

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, 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	6a, 6b

Maintenance and Replacement Schedule Summary 7a.

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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.
$\overline{\underline{X}}$ 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)
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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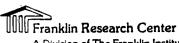
Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

G	2	
_		

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	<u>RW</u>
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 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 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	DESIGNATION: X = CATEGORY X Life
III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
<u> X</u>	(3) COMPONENTS DETERMINED TO BE QUALIFIED
-	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

65

EQUIPMENT ITEM NO. 65

MOTORIZED VALVE ACTUATOR LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL, SUBMERGED (RC-3A)

LIMITORQUE, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 65

LICENSEE REFERENCE(S): 43

FUNCTION (PLANT ID): ACCUMULATOR ISOLATION (MOV-1865A TO 1865C)

LICENSEE SUBMITTAL: SCEW(S): 6-207 TO -209

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
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SUMMA	RY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u> 1	he Licensee (has/h as-not) provided a response to the SER concerns.
q	the Licensee (has/has not) specifically stated that the equipment is ualified 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.
	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
 -3 	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 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 Valuation 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. 65

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 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)	ed
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	e

Refu to pages 4a & b for evaluation



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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

LICENSEE RESPONSE TO NRC SER

î .	
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
<u>X</u>	(1) COMPONENTS DELETED FROM THE MASTER LIST
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6



LICENSEE RESPONSE TO NRC SER (Continued)

7.3.9 Motor Operated Valves (Safety Injection)

MOV-1865A MOV-1865B MOV-1865C

These valves serve to isolate the safety injection accumulator tanks during refueling. They are administratively locked open for critical operations by locking out the breakers that supply power to these valves. Thus, the valves will remain in their required open position to mitigate an LOCA or MSLB.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/

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Reason for Concurrence

X	Equipment does not provide a
-	safety function or mitigate the
	consequences of a design basis
	accident. Equipment Environ-
	mental Qualification is not
	required by the DOR Guide-
_	lines. (NRC Qualification
	Evaluation Category IIIa)

- Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)
- Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

Reason for Non-Concurrence

- ____ Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.
- Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.
- Backup (equipment/system) is subject to a potentially disabling single active failure.
- Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.
- Failure of the primary equipment can result in erroneous indication which could mislead an opérator.
- Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.

Franklin Research Center

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65



Reason for Concurrence	Reason for Non-Concurrence
The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See	Although backup equipment is avail- able, it is not technically sound to relinquish defense-in-depth for this function.
note (1) below. (NRC Qualifi- cation Evaluation Category IIIb)	<pre>Backup (equipment/system) is not safety-related.</pre>
Other (see page) X Resultant NRC Qualification Evaluation Category (IIIa/ IIIb)	This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.
Note 1: The Licensee (has/ has not) stated that failure of the primary equipment will not affect other safety-related	The rationale presented by the Licensee is not supported by objective technical evidence.
equipment or cause an operator to be misled. (See page)	Other (see page)

LICENSEE STATEMENT

b See page 34 of this checksheet.

EVALUATION OF LICENSEE STATEMENT

These values are locked in Their required accident mitigating position with The power removed (breaker locked apen). These values are exempt from qualification

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 46

EQUIPMENT ITEM NO. 66

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB00 WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 66

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION (MOV-1862B)

LICENSEE SUBMITTAL: SCEW(S): 6-204

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION FROM REFUELING WATER

STORAGE TANK (MOV-1862A)

LICENSEE SUBMITTAL: SCEW(S): 6-203

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-1885A,

B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-230C, B, A

FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP SUCTION (MOV-RS-156A, B; -155A,

B)

LICENSEE SUBMITTAL: SCEW(S): 6-158 TO -161

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

(See Section 3 of this TER for Legend)

MOV-1885A, BC only

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

Not stated, Not applicable

Not for MOV-RS-156 A,B

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

nstalled TMI Lessons Learned Implementation Equipment Summary

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

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SUMM	IARY	OF LICE	isee r	ESPONS	ES TO	THE N	RC SER -	ONL:	Y CHECK	KED IT	EMS A	RE	APPLIC	ABLE:
X	Tne	License	has (has	/h as-r	iot) pi	covided	l a resp	onse	to the	e SER	conce	rns	•	
X,	qua.	Licensee lified an ironmenta	nd/or	will f	function	on wher	cally so n expose	tated ed to	that t	he eq pplica	quipme able D	nt BE	is	
<u>X</u>		Licenseestanding						ich s	hows th	nere a	are no)		
		Licensed M whose o									or thi	s e	quipme	nt
		Justific License						nas/h	as not)	been	prov	ide	d by t	he
		Correct	Lve ac	tion s	specif:	ied by	the Lie	cens e	e:					
		Equ: Equ: Relc Ver: Equ:	ipment ipment ocate ify qu ipment	modification relocation relocatio	ication leld ed sation sation	on above quipmen by add to a n	nt from Hitiona	ence radi l (te	level ation s sting/a	source analys				,
		The Lice that can operation	n be c	_							_			
		The Lic correct action				_								٠
- 1440		License										ali	ficati	on
	~, , .	TION OF :									Z BASE	D O	N REVI	<u>EW</u>
I.b II.a	Mo a Qu	alified dification alificat t Qualif	ion No	t Esta	ablish	ed	III.a	Exem Not	ified pt in Scop mentat:	pe				



EQUIPMENT.

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

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	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	. 1 <i>2</i> - 1 3
Adequate Similarity Between Equipment and Test Specimen Estab	olisned
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require Replacement Rep	(eu)
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	
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	d rile
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	, <u></u>
THE TOTAL THE THE TAXABLE THE TAXABLE TO THE TAXABL	OF
REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMIL	

NRC Contract No. NRC-03-79-118 FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482/483

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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
•	(1) COMPONENTS DELETED FROM THE MASTER LIŞT
-	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
X	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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FRC Assignment No. 13
FRC Task No. 48 2

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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

EQUIPMENT ITEM NO. 67 MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)LIMITORQUE MODEL SMB00 REQUIRED OPERATING TIME: 120 DAYS TER CHECKSHEET NO. 67 LICENSEE REFERENCE(S): 662, 659, 27 FUNCTION (PLANT ID): BORON INJECTION TANK BYPASS (MOV-1869B) LICENSEE SUBMITTAL: SCEW(S): 6-230 FUNCTION (PLANT ID): SAFETY INJECTION TO REACTOR HOT LEG ISOLATION (MOV-1869A) LICENSEE SUBMITTAL: SCEW(S): 6-214 FUNCTION (PLANT ID): BORON INJECTION TANK OUTLET ISOLATION (MOV-1867D) LICENSEE SUBMITTAL: SCEW(S): 6-213 FUNCTION (PLANT ID): BORIC ACID INJECTION TANK OUTLET VALVE (MOV-1867C) LICENSEE SUBMITTAL: SCEW(S): 6-212 FUNCTION (PLANT ID): BORIC ACID INJECTION TANK VALVE (MOV-1867A) LICENSEE SUBMITTAL: SCEW(S): 6-210 FUNCTION (PLANT ID): CHARGING TO REGENERATIVE HEAT EXCHANGER STOP VALVE (MOV-1289A)LICENSEE SUBMITTAL: SCEW(S): 6-17 FUNCTION (PLANT ID): CHARGING HEADER PENETRATION AREA (MOV-1289B) ICENSEE SUBMITTAL: SCEW(S): 6-18 UNCTION (PLANT ID): CHARGING PUMP RECIRCULATION TO REFUELING WATER STORAGE TANK HEADER ISOLATION (MOV-1373) LICENSEE SUBMITTAL: SCEW(S): 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, + MOV-18674, -1869B, and -1373 only Not stated, Not applicable * MOY-1373 only LISTING OF APPLICABLE CHECKSHEETS: Checksheet Page No. Contents Equipment Item la Summary of Licensee Responses to the NRC SER Equipment Environmental Qualification Summary Forms

Equipment Item

Summary of Licensee Responses to the NRC SER

Equipment Environmental Qualification Summary Forms

Licensee Response to NRC SER

System Consideration Review

Equipment Environmental Qualification Review

5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j

Installed TMI Lessons Learned Implementation

6a, 6b

Astalled TMI Lessons Learned Implementation Equipment Summary

Maintenance and Replacement Schedule Summary

7a, 7b, 7c

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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.
X	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)
حبيد	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)
I.b II.a	Oualified Modification Qualified Life Deficiency 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. __482

Page 2

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>6.7</u>

EQUIPMEN'T ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Estab	olished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requir	: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	
riteria 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)	
	PROTON STON
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
To the court our life and	X
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	д птте
or Replacement Schedule Justified	 ··
III.a Equipment Exempt From Qualification	- المراجع المر
III.b Equipment Not in the Scope of the Qualification Revi	ew
IV Documentation Not Made Available	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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•		LICENSEE RESPONSE TO NRC SER
	cate	present status of each component listed in Appendix B is indid in the resolution column of Table 3. Each component has placed into one of the following four categories:
• .	(1)	COMPONENTS DELETED FROM THE MASTER LIST
	(2)	COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
X_	(3)	COMPONENTS DETERMINED TO BE QUALIFIED
	(4)	COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING
	•	

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

EQUIPMENT ITEM NO. 68

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING (AB-13A) LIMITORQUE MODEL SMB00 WITH CLASS B INSULATION; MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 68

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE (MOV-1863A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-205, -206

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
nstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7s

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SIIMM	IARY 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.	
	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/h as not) been provided by the
	X 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 eq	
	X Other (Replace Bra	
		information for this equipment item s for justification for interim
	V	
	corrective action. (Schedule is action 82/23)	ided a schedule for the proposed for accomplishing the corrective suature 1982)
		, .
	and/or should be exempted from envi	ment item does not require qualification ronmental qualification.
DEST	GNATION OF RESULTANT NRC QUALIFICAT	TION EVALUATION CATEGORY BASED ON REVIEW
	IRCLED ITEM ONLY: (See Section 3 of	
I.a	Qualified	II.c Qualified Life Deficiency
I.b	Modification	III.a Exempt
	Qualification Not Established	III.b Not in Scope
II.b	Not Qualified	IV Documentation Not Available



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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION:
NRC REQUIREMENTS	K = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establis Aging Degradation Evaluated Adequately	shed
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	<u> </u>
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)	
	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 L	ııe
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	
	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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		LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is ind cated in the resolution column of Table 3. Each component has been placed into one of the following four categories:	
·	(1)	COMPONENTS DELETED FROM THE MASTER LIST
X	(2)	COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3)	COMPONENTS DETERMINED TO BE QUALIFIED
-	(4)	COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET PAGE NO.

MOV-1890A	•		6-215
MOV-18903			6-216
MOV-1890C			6-217
MOV-1115B		•	6-13 -
MOV-1115D			6 – 15
MOV-1863A			6-205
MOV-1863B			6 – 206
MOV-1864A		a	6-228
MOV-18643			6-229

.2.8.2.1 Modification/Replacement Status

The valves listed above are addressed by Franklin Institute Research Laboratories Report F-C3271, which does not include radiation data. If the brakes are removed, the vendor has informed us that the valves will be qualified by their Qualification Report B0003. Therefore, the brakes will be removed from the motor operated valves.

7.2.8.2.2 Modification Replacement Schedule

VEPCO is currently reviewing two methods of qualification. One requires modification to the existing valve and the other requires complete actuator replacement. Our current projections indicate that if complete replacement is required, material availability will allow replacement to start during the last quarter of 1982.

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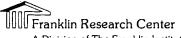
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2.3 Justification For Continued Operation

Review of the available qualification documents, some dating back to the time at which Surry was built, indicates that valve actuators with parts similar to those slated for replacement were demonstrated by test and analysis, to be capable of functioning in the harsh environments more severe than that expected in Surry following DBA/HELB. Also no failures of any significance were experienced during these tests to indicate a potential for common mode failures. In these tests, the valve actuators included motor brakes that are similar in con- struction to those used in the Surry design. These tests included multicycle open/close operation prior to, during, and after entire DBA test sequence. The motor brakes satisfactorily in each of the eleven operational cycles thorughout the program's six days of test duration. These tests, however, did not include irradiation. Since these atuators are located outside the containment, the normal operating radiation dose to these actuators is minimal. These actuators are accessible for frequent inspections, tests, and maintenance. Further, even during post DBA/HELB conditions, these valves can be operated using manual handwheels independent of the brakes.

On the basis of the above it is concluded that continued plant operation in the interim with these equipment lacking substantiation of their environmental qualification will have little or no impact on safety.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>69</u>

EQUIPMENT ITEM NO. 69

MOTORIZED VALVE ACTUATOR LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-47A)

LIMITORQUE MODEL SMB000

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 69

LICENSEE REFERENCE(S): 659, 706, 43

FUNCTION (PLANT ID): PRESSURIZER RELIEF BLOCK VALVE (MOV-1535, -1536)

LICENSEE SUBMITTAL: SCEW(S): 6-196, -197

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:

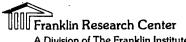
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb ·
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
nstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Bardananch Cabadala Communication	7 - 171

Maintenance and Replacement Schedule Summary

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FRC Task No. 482

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	••
SUMM	IARY 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.
X	The Licensee (has/has-net) proposed a corrective action for this equipment item whose qualification has not been fully established.
	X 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 821231 (last quarter of 1982).)
	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)
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 FO	RM .
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
	J
Documented Evidence of Qualification Adequate	<u>X</u>
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)	
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 = CATEGORY
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	X
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements Except Qualified	Life
or Replacement Schedule Justified	•
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Review	
IV Documentation Not Made Available	



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LICENSEE RESPONSE TO NRC SER			LICENSEE RESPONSE TO NRC SER
The present status of each component listed in Appendix B cated in the resolution column of Table 3. Each component been placed into one of the following four categories:			
		(1)	COMPONENTS DELETED FROM THE MASTER LIST
	X	(2)	COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	-	(3)	COMPONENTS DETERMINED TO BE QUALIFIED
		(4)	COMPONENTS DÉTERMINED TO BE QUALIFIED EXCEPT FOR AGING

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>69</u>

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8 Limitorque (Motor Operated Valve Actuators)

7.2.8.1 Motor Operators Without Brakes

PLANT ID NO.

MOV-FW151A	6 –96
MOV-FW151B	6 -9 7
MOV-FW151C	6-98
MOV-FW151D	6 -99
MOV-FW151E	6-100
MOV-FW151F	6–101
MOV-1535	6-196
MOV-1536	6-197

7.2.8.1.1 Modification/Replacement Status

Additional vendor qualification documentation comprised of a listing of the special operator features (e.g., actuator motor, limit switch and torque switches, insulating and housing materials, splices, etc., used in the various vendor qualification tests was received. For each MOV with incomplete qualification data, we conducted a field inspection to determine the existence of any unqualified components. We will replace all unqualified parts with qualified Modification/Replacement Schedule

WORKSHEET PAGE NO.

Based on current projections for purchase order placement, material delivery and our present outage schedule, these modifications are scheduled to start during the last quarter of 1982.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

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LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.1.3 Justification For Continued Operation

Review of the available qualification documents, some dating back to the time at which Surry was built, indicates that valve actuators with parts similar to those slated for replacement were demonstrated by testing and analysis, to be capable of functioning in the harsh environments more severe than that expected in Surry following DBA/HELB.

Also, no failure of any significance were experienced during these tests to indicate a potential for common mode failures. On this basis, it is concluded that continued operation of Surry Units in the interim with this equipment, albeit incomplete in qualification documentation, will have little or no effect on safety.

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			
Criteria: DOR Guidelines X; NUREG-0588, Cat. I; NUREG-0588, Cat. II			
NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
EQUIPMENT DESCRIPTION Equipment Type	MVA	MOTORIZED VALVE ACTUATOR	•
Manufacturer's Name (5.2.2/-/-)	:Limitorque	LIMITORQUE	? • •
Model Number (5.2.2/-/-)	: SMB; Various ! SIZES	SMB-0	: !
Serial Number	NOTE 1	189835(O/N 600456⊷A)	NOTE 1
Features/Mounting (5.2.6/-/-)	NOTE 2	RELIANCE CLASS RH INSUL. MOTOR, ID# 2Y267074A1EZ, TYPE P	NOTE 2,
Onnections/Interfaces (5.2.6/-/-)	NOTE 3	CONTROL & POWER LEADS THRU FLEXIBLE, PRESSURE	NOTE 3
Location/Elevation	:	AUTOCLAVE	,
Equipment ID No.	See B. La) • •
QUALIFICATION REPORT (8.0/5.0/5.0) Report ID Number	! !	600456 (with B-0058)	
Report Date	:	751201	
Issued by	!	LIMITORQUE	
Prepared for	: :	LIMITORQUE	1
Referenced Reports	! !	LOCKHEED 3521-4811	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	! ! !	SIMULTANEOUS AND SEQUENTIAL TEST	
QUALIFICATION TEST PROGRAM Functional Test Description (5.2.5/2.2.9/2.2.9)	! ! !	VALVE ACTUATION AND IR MEASUREMENTS	
perating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.	NOTE 4	40 ft⊷#/460 Volts/60 Hz	NOTE 4

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NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	DEFICIENCY (X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	!	SUCCESSFUL OPERATION OF THE MVA	1
Accuracy (5.2.5/-/-)		. ———	1
Number of Specimens	<u> </u>	1 COMPLETE MVA AND 1 ADDITIONAL MOTOR	:
Test Instruments Calibrated	!	YES	:
Safety Function (Active/Passive) (-/2.1.3/2.1.3)	ACTIVE		1
Test Duration (5.2.1/-/-)	1	30 DAYS	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	48hrs.		NOTE
Required Function Time	120 Days	• • •	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	<u> </u>	 	1
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	:		1
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		YES	1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 1 0
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	:120°F for : 40 years	100 HOURS @ 180 C FOR THE MOTOR STATORS ONLY	NOTE 6
Material Aging Evaluation (7.0/-/-)	NOTE 6	NO	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	:	NOT STATED	
Radiation Aging, Type	GAMMA	GAMMA	•

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	1.3E07rd	4 Mrd (COMPLETE UNIT)	1
Radiation Aging, Dose Rate		1 Mrd/Hr	1
Radiation Aging, Method		TEST (SEQUENTIAL)	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	<u> </u>	NOT STATED	
Operational Aging (-/4.2/-)	! !	1208 OPEN/CLOSE CYCLES+ 803 (LOCA+POST-LOCA) CYC + 2184 CYCLES OF MVA WIT BASE TEST MOTOR INSTALLE	н
Other Age Conditioning (-/4.2/-)	:	: SEISMIC/VIBRATIONAL	:
Qualified Life Claimed/ stablished (5.2.4/4.10/-)	40years/ None	NONE	:
Normal Ambient Temperature Normal Ambient Radiation* Normal Ambient Humidity**	120° F 37.1 R/m, 20-90°/.		
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	yes		
On-Going Analysis of Failures and Degradation (7.0/-/-)	yes		1
Margin (General) (6.0/3.0/3.0)	-	· !	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 + function time minimum)		NOT STATED, EXCEPT FOR THE POST-LOCA ADDITIONAL MVA CYCLING	
* (1.3 E07 rd) = 3 404r (8760 in) = 3 ** assumed by FRC	7.1 R/HR		
The second of the			

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
ACCIDENT CONDITIONS LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/1.1, 1.2, 1.5/1.1, 1.2, 1.5)	LOCA	LOCA	:
Radiation Type	GAMMA	CAMMA	•
Radiation Dose (rd) (4.1.2/1.4/1.4)	2.4E07rd	200 Mrd	
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)		1 Mrd/Hr TEST	:
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	NOT STATED	·	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	No ·	• • • • • • • • • • • • • • • • • • •	
Radiation Dose (Normal + Accident) (4.1.2/-/-)	3.7E07rd	204 Mrd TOTAL DOSE	: 1 • 1
Plateout Dose Considered (-/1.48/1.48)	!	·	• • • • • • • • • • • • • • • • • • •
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	3.7E07rd	economicocondesto	• • •

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NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	DEFICIENCY (X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE No.)
ENVIRONMENTAL PROFILE OF ACCIDENT CONDITIONS			: :
Rate of Temp./Press. Increase	26.7 F sec; 7.5 psig)sec	10F/SEC., 2.5 psig/SEC.	: :
Peak: °F/psig/RH/Time	280/45/100/	310/78/100/30 min.	2 PEAKS
Drop Drop To: °F/psig/RH/Time Drop	1280 -> 150 45->0 1 100 30-> 1 m.	255/50/100/91 Hodes	• ! !
Decrease To: °F/psig/RH/Time	11 We -> 40 mg;	195/10/100/623 hours	:
Decrease To: °F/psig/RH/Time	11200 100 ! 1>48 has	COOL TO AMBIENT	! !
Equipment Surface Temperature (MSLB) (-/1.2.5.C,	: - :		:
2.6/1.2.5.C, 2.2.6)	1	•	1
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		TEST PER IEEE-323-1974	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	H3BO3 (2000 - 12200PPMB), NOLOH, 8.5-11 1PH	3000 PPM BORON(0.28 molar H ₃ BO ₃),0.064 molar Na ₂ S ₂ O NaOH to pH of 10.5 @ 77F	
Spray Density (gpm/ft ²)	NOT STATED	· ·	:
Spray Duration	10-4 hrs	24 hours (ASSUMED)	•
Submergence Duration (4.1.3/2.2.5/2.2.5)	HONE		•
In-Leakage Considered (5.2.6, 5.3.2/-/-)			:
Time to Submergence			•
Dust Environment (-/2.2.11/2.2.11)			!

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NOTES: 5.

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\cdot
NOTES:
a. The installed motor is Class B
6. The replacement motor is Class RH
c. The extrapolation and Thermal aging
analyses use data from BOD 58.
d. Class RH data is used to extend
The test duration
e. Class B data is used in evaluating
Thermal aging and relative humidity.
f. The 165°F/100% RH1200 hr. exposure
cited in BOØ 58 for class B motors
was performed in Bpp\$3 and simulates
anly a small fraction of The installed life.
9. The Thermal aging (log-life) data in
BOD 58 (for both Class B and RH)
aid not consider RH. These were
• .
air-oven aging tests.
The following is noted with respect to
This application of the arrhenius
Methodology:
The thermal aging analyses presented for this facility have attempted o extrapolate test data obtained from saturated steam tests using the Arrhenius technique to extend qualified duration or calculate qualified life estimates. The assumption used in justifying this procedure is that the thermal degradation during the environmental test is greater than that accumulated during the postulated accident conditions. What the analyses have failed to recognize is the fact

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NOTES:
that the Arrhenius methodology is a theoretical relationship which attempts to predict how reaction rates vary with respect to increases in temperature. This technique is based on the premise that all organic materials degrade to some extent—primarily by oxidation—when exposed to elevated temperatures in the presence of air. The saturated steam tests, as a matter of procedure, purge the air from the test chamber prior to the onset of the environmental test. Therefore, the use of saturated steam, or superheated steam for that matter, in conjunction with the Arrhenius technique is not technically justified as an aging procedure. In addition, the Arrhenius technique does not take into account variations in the reaction rates due to changes in pressure (as would be experienced in a LOCA/MSLB/HELB test), nor does it account for possible anomalies due to the presence of moisture in the chamber atmosphere. The application of the Arrhenius methodology is limited to data obtained from air—oven thermal aging tests (minimum of three tests at different times and temperatures) where the only parameter affecting the reaction rate is temperature. Any application of this technique to thermodynamically different systems must be technically justified with valid analytical procedures.
Though the licensee has not promised the
technical basis for extending The test
duration by using arrhenids, The licinal
did state The Sollowing with respect to
Treimal agina (PSR #438)
"Question #13
Report B0058, Section 3.2.1.3 (Thermal Aging) addresses that 100% relative humidity was maintained during the thermal aging procedure. Because there is no known method to contemplate the effects of humidity aging it is sufficient to assume that this meets the condition by keeping 100% RH during thermal aging of the equipment.

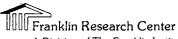
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NOTES:
This statement has not been related to
The first duration extension and pressure
effects were also not addressed. However,
There was no indication during
The first that continued exposure to
The post - LOCA conditions would result
·
such, This device is considered
qualified for the specified duration
6. Thermal aging has been addressed
in BOO58 (How The motor insulation
septem. The licensel has also address-
ed The qualification of The seals,
gaskets and The Intricants. The limit
and forque switches are to be
replaced along with The motor and Thermal aging of These devices bis
Tuernal aging of These devices his
been addressed in BO058. These
_ devices are composed of phenoleis and
metale which are not significantly
affected by Thermal aging digradation
affected by Tresmal aging digradation. Terminal strips (blocks) and connector
have been addressed also. The licinsus

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NOTES:
has stated That The equipment interfaces
will be addressed as separate itms.
The licensee should be aware that tellon
is used in many motor leads and
is susceptible to Thermal aging and rodiation effects.
radiation effects.
7. The difference in motor manufacturers
+. The difference in motor manufacturers has been adequately addressed
General Note:
Ince The licensee has committed to
replace The motor, limit switches,
Lorque switch, install "T" drains
an limit swetch compartments and
gear boy: The licinsie should provide
gear boy; The licensie should proude
documented svidence That The modified
MVA and The fixted are similar
bleause The changes are new
extensine. This request is meant as
a precaution to assure qualification.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

EQUIPMENT ITEM NO. 70

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

LIMITORQUE MODEL SMB WITH CLASS B INSULATION; SIZES 00, 000

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 70

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM VOLUME CONTROL TANK

(MOV-1115C, E)

LICENSEE SUBMITTAL: SCEW(S): 6-14, -16

FUNCTION (PLANT ID): CHARGING PUMP RECIRCULATION TO REFUELING WATER STORAGE

TANK (MOV-1275B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-3, -4

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	-5a, 5b, 5c, 5d, 5e, 5f, -5g, 5h, 5i, 5j
stalled TMI Lessons Learned Implementation Equipment Summary	- 6a, 6b
Maintenance and Replacement Schedule Summary	Ja. 7b. 7c

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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 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 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 equipmen Verify qualification by add Equipment relocation to a m Qualification testing of eq Other (submergence level t from radiation source itional (testing/analysis) ild environment		
	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.		
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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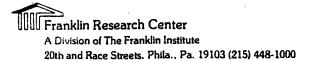
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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

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 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) 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

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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LICENSEE RESPONSE TO NRC SER The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION	
X	(3) COMPONENTS DETERMINED TO BE QUALIFIED	
*********	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING	
	ullet	

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

EQUIPMENT ITEM NO. 71

MOTORIZED VALVE ACTUATOR LOCATED IN THE CONTAINMENT SPRAY PUMP HOUSE (CSPH-11) BEIOW ELEV. 27'6"

LIMITORQUE MODEL SMB00 WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 71

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHEMICAL ADDITION TANK ISOLATION (MOV-CS-102B)

LICENSEE SUBMITTAL: SCEW(S): 6-77

FUNCTION (PLANT ID): CHEMICAL ADDITION (MOV-CS-102A)

LICENSEE SUBMITTAL: SCEW(S): 6-76

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (MOV-CS-101D)

LICENSEE SUBMITTAL: SCEW(S): 6-75

FUNCTION (PLANT ID): SPRAY PUMP DISCHARGE ISOLATION (MOV-CS-101C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-74, -73, -72

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

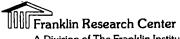
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3e, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c,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

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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. X 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 whose qualification has not been fully established.	
The Licensee (has/has net) 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 equitem whose qualification has not been fully established. Justification for interim operation (has/has not) been provided 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)	PLICABLE
The Licensee (has/has net) 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 equitem whose qualification has not been fully established. Justification for interim operation (has/has not) been provided 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)	
qualified and/or will function when exposed to the applicable DBE environmental service conditions. X The Licensee has presented information which shows there are no outstanding qualification deficiencies. The Licensee (has/has not) proposed a corrective action for this equitem whose qualification has not been fully established. Justification for interim operation (has/has not) been provided 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)	
outstanding qualification deficiencies. The Licensee (has/has not) proposed a corrective action for this equitem whose qualification has not been fully established.	
item whose qualification has not been fully established.	
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)	ipment
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)	by the
Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation source Verify qualification by additional (testing/analysis)	
aderburne reroccean co a mara entrommene	
Qualification testing of equipment in progress Other ()
The Licensee has provided other information for this equipment i that can be construed as a basis for justification for interim operation.	tem
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 qualifiand/or should be exempted from environmental qualification.	cation.
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	REVIEW
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	.e



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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

EQUIPMEN'T ENVIRONMENTAL QUALIFICATION SUMMARY FORM

·	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Esta	blished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requi	red)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	
o Peak Pressure Adequate	
o Duration Adequate	
o Required Profile Enveloped Adequately	<u> </u>
o Steam Exposure (If Required) Adequate	
Criteria Regarding Spray Satisfied	
Criteria Regarding Submergence 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	1.2° .
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
Cifferia Regarding Margins Satisfied (Mokes 0500) Cat. 1/	
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
NRC QUALIFICATION 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 Qualifie	d Life
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Revi	.ew
IV Documentation Not Made Available	

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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LICENSEE RESPONSE TO NRC SER		
The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
	(1) COMPONENTS DELETED FROM THE MASTER LIST	
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION	
X	(3) COMPONENTS DETERMINED TO BE QUALIFIED	
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING	

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NUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

EQUIPMENT ITEM NO. 72

MOTORIZED VALVE ACTUATOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)

LIMITORQUE MODEL SMB00 WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 72

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER (MOV-SW-105D, C)

LICENSEE SUBMITTAL: SCEW(S): 6-249, -248

FUNCTION (PLANT ID): SERVICE WATER OUTLET RECIRCULATION SPRAY HEAT EXCHANGER

(MOV-SW-105B)

LICENSEE SUBMITTAL: SCEW(S): 6-247

FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN

(MOV-SW-105A, -104D)

LICENSEE SUBMITTAL: SCEW(S): 6-246, -245

FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY

(MOV-SW-104C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-244, -243, -242

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
stalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. Z

SUMI	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.
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.
<u>X</u>	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
	<pre>Verify qualification by additional (testing/analysis) Equipment relocation to a mild environment</pre>
	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)
I.a	Qualified Life Deficiency

I.b Modification
II.a Qualification Not Established

II.b Not Qualified

III.a Exempt

III.b Not in Scope

IV Documentation Not Available



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: 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 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)	
	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 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	··· · · · · · · · · · · · · · · · · ·

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482/483

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LICENSEE RESPONSE TO NRC SER			
The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:			
	(1)	COMPONENTS DELETED FROM THE MASTER LIST	
	(2)	COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION	
X	(3)	COMPONENTS DETERMINED TO BE QUALIFIED	
	(4)	COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING	



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FRC Assignment No. 13
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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

EQUIPMENT ITEM NO. 73

MOTORIZED VALVE ACTUATOR LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)

LIMITORQUE MODEL SMB00

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 73

LICENSEE REFERENCE(S): 659, 706, 43

FUNCTION (PLANT ID): AUXILIARY FEEDWATER/HELB MITIGATION (MOV-FW-151A TO F)

LICENSEE SUBMITTAL: SCEW(S): 6-96 TO -101

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, 5e, 5d, 5e, 5f, 5g, 5h, 5i, 5j
nstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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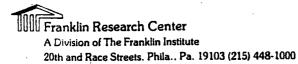
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SUMMARY OF LICENSEE RESPONSES TO THE NE	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/has not) provided	l a response to the SER concerns.
The Licensee (has/has not) specific qualified and/or will function when environmental service conditions.	
The Licensee has presented informat outstanding qualification deficience	
The Licensee (has/has not) proposed item whose qualification has not be	l a corrective action for this equipment en fully established.
	ation (has/h as not) been provided by the em.
imes 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 eco	submergence level at from radiation source ditional (testing/analysis) aild environment
The Licensee has provided other that can be construed as a basi operation.	information for this equipment item is for justification for interim
	vided a schedule for the proposed for accomplishing the corrective of 1982.
The Licensee states that the equipment and/or should be exempted from envi	ment item does not require qualification ironmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATION OF 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
	•

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

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 Priteria 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 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 d.III Documentation Not Made Available ΙV Refer to equipment item# 69 for detailed evaluation of the referenced reports previously reviewed for similar equipment.



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
•	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u> </u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
-	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

WORKSHEET PAGE NO.

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8 Limitorque (Motor Operated Valve Actuators)

7.2.8.1 Motor Operators Without Brakes

PLANT ID NO.

MOV-FW151A	6–96
MOV-FW151B	6-97
MOV-FW151C	6-98
MOV-FW151D	6-99
MOV-FW151E	6-100
MOV-FW151F	6-101
MOV-1535	6-196
MOV-1536	6-197

7.2.8.1.1 Modification/Replacement Status

Additional vendor qualification documentation comprised of a listing of the special operator features (e.g., actuator motor, limit switch and torque switches, insulating and housing materials, splices, etc., used in the various vendor qualification tests was received. For each MOV with incomplete qualification data, we conducted a field inspection to determine the existence of any unqualified components. We will replace all unqualified parts with qualified ones.

7.2.8.1.2 Modification/Replacement Schedule

Based on current projections for purchase order placement, material delivery and our present outage schedule, these modifications are scheduled to start during the last quarter of 1982.

7.2.8.1.3 Justification For Continued Operation

Review of the available qualification documents, some dating back to the time at which Surry was built, indicates that valve actuators with parts similar to those slated for replacement were demonstrated by testing and analysis, to be capable of functioning in the harsh environments more severe than that expected in Surry following DBA/HELB.

Also, no failure of any significance were experienced during these tests to indicate a potential for common mode failures. On this basis, it is concluded that continued operation of Surry Units in the interim with this equipment, albeit incomplete in qualification documentation, will have little or no effect on safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ITEM NO. 74

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-29)

LIMITORQUE MODEL SMB000 WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 74

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): BORIC ACID INJECTION TANK INLET VALVE (MOV-1867B)

LICENSEE SUBMITTAL: SCEW(S): 6-211

FUNCTION (PLANT ID): REACTOR COOLING PUMP SEAL WATER RETURN (MOV-1381)

LICENSEE SUBMITTAL: SCEW(S): 6-6

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, 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, 7

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FRC Assignment No. 13
FRC Task No. 482

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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/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 (nas/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.a Modification III.a Exempt III.b Not in Scope I.b Not Qualified IV Documentation Not Available	

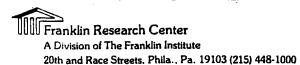
A Division of The Franklin Institute 20th and Race Streets, Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM			
	DESIGNATION:		
NRC REQUIREMENTS	X = DEFICIENCY		
And Angulation and the second			
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)			
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	Lire		
III.a Equipment Exempt From Qualification	- 12		
III.b Equipment Not in the Scope of the Qualification Review			
IV Documentation Not Made Available			

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
<u> </u>	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

EQUIPMENT ITEM NO. 75

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB000 WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 75

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION RECIRCULATION VALVE (MOV-1860A)

LICENSEE SUBMITTAL: SCEW(S): 6-201

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-1885D)

LICENSEE SUBMITTAL: SCEW(S): 6-230D

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION RECIRCULATION WATER (MOV-1860B)

LICENSEE SUBMITTAL: SCEW(S): 6-202

DESIGNATION FOR DEFICIENCY IDENTIFIÈD 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, Mov-1885 D only 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, 3o, 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	6ay 6b -

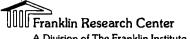
Maintenance and Replacement Schedule Summary 7a, 7

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Ιb

SUMMAI	RY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X TI	ne Licensee (has/h as not) provided a response to the SER concerns.
qı	ne Licensee (has/ has not) specifically stated that the equipment is nalified and/or will function when exposed to the applicable DBE nvironmental service conditions.
	ne Licensee has presented information which shows there are no atstanding 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
ก้า เชิ้น ก.	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 (nas/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 N	Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available
	"or Anattited to pocumentation not usuitable



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 25

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 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	fe		
III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available	especialisticali		

REFER TO EQUIPMENT ITEM #60 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS PREVIOUSLY REVIEWED FOR SIMILAR EQUIPMENT.



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
X	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ITEM NO. 76

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL LB831654E

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 76

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): BORON INJECTION TANK RECIRCULATION (SOV-1884C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-227, -226, -225

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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Equipment Item	la
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System Consideration Review	-4a, 4b, 4c, 4d, 4c, 4 f
Equipment Environmental Qualification Review	- 5a, 5b, 5c, 5d, 5e, 5f , -5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, -6 b

Maintenance and Replacement Schedule Summary 7a7

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FRC Task No. 482

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SUMMARY OF LICENS	EE RESPONSES TO THE N	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee	(has/bea.met) provide	d a response to the SER concerns.
qualified and		cally stated that the equipment is en exposed to the applicable DBE
	has presented informa ualification deficien	tion which shows there are no
		ed a corrective action for this equipment been fully established.
	tion for interim oper for this equipment it	ration (has/has not) been provided by the sem.
X Correctiv	e action specified by	the Licensee:
Equip Equip Reloc Verif Equip	y qualification by adment relocation to a sefication testing of e	submergence level ent from radiation source ditional (testing/analysis) mild environment
	be construed as a bas	r information for this equipment item sis for justification for interim
correctiv		for accomplishing the corrective 1982.
		ment item does not require qualification rironmental qualification.
		ATION EVALUATION CATEGORY BASED ON REVIEW of this TER for Legend)
I.a Qualified I.b Modification II.a Qualificatio	n Not Established	<pre>II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope</pre>
I.b Not Qualifie	đ	IV Documentation Not Available

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. __482

Page 2

DESIGNATION:

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

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 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 = CATEGOR
I.a	Equipment	Qualified	
I.b	Equipment	Qualification Pending Modification	<u>_X</u>
II.a	a Equipment	Qualification Not Established	
II.	b Equipment	Not Qualified	
II.		Satisfies All Requirements Except Qualified Life ement Schedule Justified)
III.	-	Exempt From Qualification	
III		Not in the Scope of the Qualification Review	
IV		tion Not Made Available	



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
•	(1) COMPONENTS DELETED FROM THE MASTER LIST
X	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>77</u>

EQUIPMENT ITEM NO. 77

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

ASCO MODEL LB831654

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 77

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER AUXILIARY SPRAY ISOLATION/MINIMUM BORATION

(SOV-1311)

LICENSEE SUBMITTAL: SCEW(S): 6-12

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



Maintenance and Replacement Schedule Summary



(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
nstalled 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
·
The Licensee (has/************************************
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
II.b Not Qualified IV Documentation Not Available



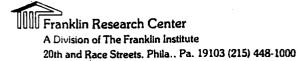
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

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 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	red)
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 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 Revi	<u> </u>



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UIPMENI	HEM	NO.	
		•.•	

The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:			
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION		
	(3) COMPONENTS DETERMINED TO BE QUALIFIED		
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING		

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

LICENSEE RESPONSE TO NRC SER (Continued)

7.3.14 Solenoid Operated Valves (Chemical and Volume Control)

SOV-1311

This valve will not be required during a LOCA because pressure and boration control are not necessary. During an Auxiliary Building HELB, this valve will not be affected, since it is inside containment.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

presented below.			
Reason for Concurrence	Reason for Non-Concurrence		
X Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)	 Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function. Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment. 		
X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification	Backup (equipment/system) is subject to a potentially disabling single active failure. Failure of the primary equipment can		
Evaluation Category IIIb)	compromise the ability of other safety-related equipment to perform		
Backup (equipment/system) is available which completely per-	its specified safety function.		
forms the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active	Failure of the primary equipment can result in erroneous indication which could mislead an operator.		
failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)	Requirement for continued function- ing throughout the post-accident period necessitates environmental		

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

Reason for Concurrence	Reason for Non-Concurrence
The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent	Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.
functions are necessary. See note (1) below. (NRC Qualifi- cation Evaluation Category IIIb)	<pre>Backup (ëquipment/system) is not safety-related.</pre>
Other (see page)	This equipment is necessary for the operator to ensure an ESF system is
<pre>Resultant NRC Qualification Evaluation Category (IIIa/IIIb)</pre>	performing its intended safety function.
Note 1: The Licensee (has/ has not) stated that failure of the primary equipment will not affect other safety-related	The rationale presented by the Licensee is not supported by objective technical evidence.
equipment or cause an operator to be misled. (See page 3+)	Other (see page)
LICENSEE STATEMENT	

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

EQUIPMENT ITEM NO. 78

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL HBX8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 78

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-150C, A)

LICENSEE SUBMITTAL: SCEW(S): 6-82, -80

FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-100C)

LICENSEE SUBMITTAL: SCEW(S): 6-169

FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-109A)

LICENSEE SUBMITTAL: SCEW(S): 6-166

FUNCTION (PLANT ID): NITROGEN SUPPLY LINE (SOV-DG-108A)

LICENSEE SUBMITTAL: SCEW(S): 6-164

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, 3b, 3c, 3d -
System Consideration Review	4a, 4b, 4c, 4d, 4c, 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, 7c

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SUMMARY OF	LICENSEE RESPONSES TO THE NRO	RC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Li	icensee (has/ kee est) provided	l a response to the SER concerns.
<u> </u>	icensee (nas/see not) provided	a response to the BER concerns.
qualif		ally stated that the equipment is exposed to the applicable DBE
	icensee has presented informati anding qualification deficienci	
	icensee (has/ karass t) proposed whose qualification has not bee	a corrective action for this equipment en fully established.
, <u>X</u> Ju Li	istification for interim operaticensee for this equipment item	ation (has/hammet) been provided by the
<u> </u>	orrective action specified by t	the Licensee:
	Equipment replacement with of Equipment modification Equipment relocation above so the Relocate or shield equipment verify qualification by additional Equipment relocation to a minute of Equipment (a) to the control of equipment (b) the control of equipment (c) the control of	submergence level it from radiation source litional (testing/analysis) ild environment
th		information for this equipment item s for justification for interim
co		ided a schedule for the proposed or accomplishing the corrective er of 1982)
	icensee states that the equipme s should be exempted from envir	ent item does not require qualification ronmental qualification.
	ON OF RESULTANT NRC QUALIFICATION ONLY: (See Section 3 of	ION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a Quali II.b Modif II.a Quali II.b Not Q	fication ification Not Established	II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available

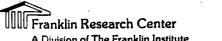


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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
	DESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establis Aging Degradation Evaluated Adequately	
Qualified Life or 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: $\underline{X} = CATEGORY$
 I.a Equipment Qualified I.b Equipment Qualification Pending Modification II.a Equipment Qualification Not Established 	X
II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified Li or Replacement Schedule Justified	.fe
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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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u> </u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specific installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

EQUIPMENT ITEM NO. 79

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL HBX8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 79

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR CONTAINMENT SUMP PUMP DISCHARGE (SOV-DA-100B)

LICENSEE SUBMITTAL: SCEW(S): 6-163

FUNCTION (PLANT ID): COMPONENT COOLING RETURN FROM CONTAINMENT COOLERS

ISOLATION (SOV-CC-110A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-69 TO -71

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

RT QT 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	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3e,-3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
stalled TMI Lessons Learned Implementation Equipment Summary	-6a, 6b

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FRC Assignment No. 13
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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE	APPLICABLE
X The Licensee (has/water) provided a response to the SER concerns	· ·
The Licensee (has/has not) specifically stated that the equipment qualified and/or will function when exposed to the applicable DBE environmental service conditions.	is
The Licensee has presented information which shows there are no outstanding qualification deficiencies.	·
The Licensee (has/has not) proposed a corrective action for this exitem whose qualification has not been fully established.	quipment
X Justification for interim operation (has/has not) been provide Licensee for this equipment item.	ed by the
X 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 that can be construed as a basis for justification for interim operation.	
X The Licensee (has/has tot) provided a schedule for the propose corrective action. (Schedule for accomplishing the corrective action to the propose action to the propose action to the propose corrective action.	
The Licensee states that the equipment item does not require qualitation and/or should be exempted from environmental qualification.	ification
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED (- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	ON REVIEW
I.a Qualified II.c Qualified Life Deficient II.a Qualification III.a Exempt 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. 79

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 iteria 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) 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

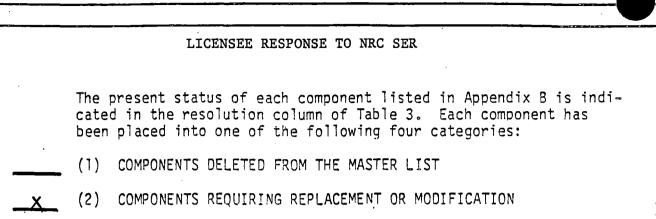


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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74



(3) COMPONENTS DETERMINED TO BE QUALIFIED

(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.c. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

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EQUIPMENT ITEM NO. 80

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL HBX832081RF

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 80

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLING HOT LEG SAMPLE (SOV-SS-106A)

LICENSEE SUBMITTAL: SCEW(S): 6-240

FUNCTION (PLANT ID): PRESSURE RELIEF TANK SAMPLE (SOV-SS-104A)

LICENSEE SUBMITTAL: SCEW(S): 6-238

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

RT QT RT, PH 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, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5e, 5d, 5e, 5f , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	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>#82</u>

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	Æ
V martingar (harden and a said de la company)	
The Licensee (has/Wester) 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/handlet) proposed a corrective action for this equipment item whose qualification has not been fully established.	
Justification for interim operation (has/has-mat) been provided by the Licensee for this equipment item.	
X 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/hat at) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action first quarter of 1982.	•
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	
I.b Not Qualified IV Documentation Not Available	



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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 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 	<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. 482/483

Page 3a

	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
X_	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

Page 3b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>81</u>

EQUIPMENT ITEM NO. 81

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-47A)

LAWRENCE MODEL 3300WA742DC

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 81

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF VALVE ACTUATION/LOCA

AND MSLB MITIGATION (SOV-1456-3, SOV-1455C-3)

LICENSEE SUBMITTAL: SCEW(S): 6-195, -192

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

K, T QT RT, E H, CS

RIT QT 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	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3d
System Consideration Review	4a, 4b, 4a, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5e, 5d, 5e, 5f, 5g, 5h, 5i, 5j
hstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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SUMM	ARY OF	LICENSE	E RESPONS	SES TO THE NI	RC SER	- ONLY CHEC	KED ITEMS	ARE	APPLICABLE
<u>X</u>	The Li	censee (nas/h	m≠) provided	l a res	ponse to th	e SER cond	erns	•
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				nak) proposed on has not be				nis e	quipment
		stificat censee f	ion for i	interim opera equipment ita	ation (em.	has/has) been pro	ovide	d by the
:	<u>Х</u> со	rrective	action s	specified by	the Li	censee:			
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				at the equip ted from env				quali	fication
				RC QUALIFICA Section 3 o			·····	SED C	N REVIEW
I.b II.a	Quali	ication		ablished	III.a	Qualified Exempt Not in Sco	pe	,	_
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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 48Z

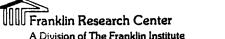
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2

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

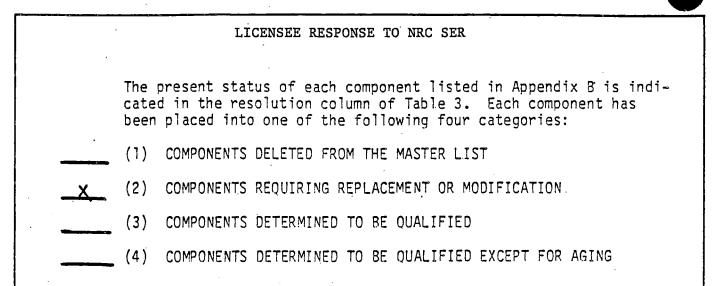
EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establis 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 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)	
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	fe
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. 2 %

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

EQUIPMENT ITEM NO. 82

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL HT8316C47E

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 82

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-101AA, AB, BA, BB, CA, CB)

LICENSEE SUBMITTAL: SCEW(S): 6-148 TO -153

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, 3o, 3d
System Consideration Review	4a, 4b, 4c, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5o, 5d, 5e, 5f , 5 g, 5h, 5i, 5 j
Installed TMI Lessons Learned Implementation	-6a, 6b-

Equipment Summary

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

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. <u>482</u>

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SUMMARY	Y OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The	e Licensee (has/has not) provided a response to the SER concerns.
qua	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.
	e Licensee (has/ has no t) proposed a corrective action for this equipment em 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:
ी	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 (has/https://provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action first quarter of 1982.)
	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 Mo	ualified II.c Qualified Life Deficiency odification III.a Exempt ualification Not Established III.b Not in Scope ot Qualified IV Documentation Not Available



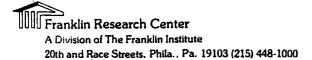
NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 48Z

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQ	JIREMENTS	DESIGNATION: X = DEFICIENCY
Adequate Aging De Qualifie Program Criteria O O O Criteria	ted Evidence of Qualification Adequate a Similarity Between Equipment and Test Specimen Estable agradation Evaluated Adequately and Life or Replacement Schedule Established (If Require a 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 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 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 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	



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	LICENSEE RESPONSE TO NRC SER	
The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
	(1) COMPONENTS DELETED FROM THE MASTER LIST	
<u>×</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION	
	(3) COMPONENTS DETERMINED TO BE QUALIFIED	
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. S



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

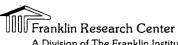
7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.



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FRC Task No. 482

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

EQUIPMENT ITEM NO. 83

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

ASCO, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 83

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REFUELING WATER STORAGE TANK CROSS CONNECT

(SOV-SI-102B2, A2)

LICENSEE SUBMITTAL: SCEW(S): 6-224, -222

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	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b, 3c, 3 d
System Consideration Review	4a, 4b, 4e, 4d, 4e, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 5i, 5j
nstalled TMI Lessons Learned Implementation Equipment Summary	-6a; 6b
Maintenance and Penlacement Schedule Summary	-7

Maintenance and Replacement Schedule Summary

7a, 7b, ?c

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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 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/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.	SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
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 The Licensee (has/has-net) provided a response 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.	qualified and/or will function when exposed to the applicable DBE
item whose qualification has not been fully established.	
Licensee for this equipment item. Corrective action specified by the Licensee: Equipment replacement with qualified equipment Equipment modification Bquipment 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	
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) X 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 III.a Exempt III.a Description of the scope III.a Qualification Not Established III.D Not in Scope	
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 III.a Exempt III.a Exempt III.a Exempt	Corrective action specified by the Licensee:
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 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
corrective action. (Schedule for accomplishing the corrective action	that can be construed as a basis for justification for interim
and/or should be exempted from environmental qualification. DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend) I.a Qualified II.c Qualified Life Deficiency I.b Modification III.a Exempt III.a Qualification Not Established III.b Not in Scope	corrective action. (Schedule for accomplishing the corrective
- 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	
I.b Modification	
	I.b Modification



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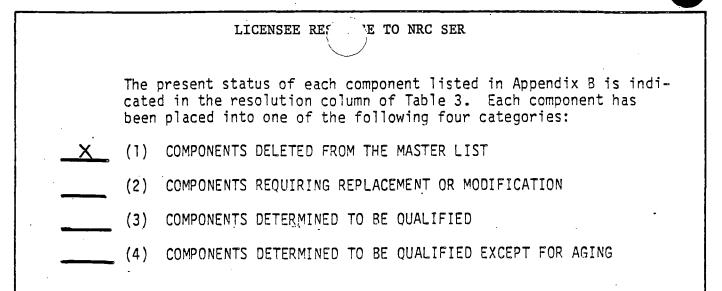
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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>83</u>

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 iteria Regarding Test Failures or Severe Anomalies (If Any) Satisfied to-teria Regarding Functional Testing Satisfied a Regarding Instrument Accuracy Satisfied Duration Margin (1 hour + Function Time) Satisfied Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I) DESIGNATION: X = CATEGORYNRC QUALIFICATION 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 III.a Equipment Exempt From Qualification Equipment Not in the Scope of the Qualification Review d.III VI Documentation Not Made Available



Page 3a



Page 3b

DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

LICENSEE RESPONSE TO NRC SER (Continued)

7.3.15 Solenoid Operated Valves (Safety Injection)

SOV-SI-102A1

SOV-SI-102A2

SOV-SI-102B1

SOV-SI-102B2

These valves serve to cross-connect the LHSI suction line from the Refueling Water Storage Tank (RWSI) in Unit 2, to supply the LHSI pump suctions for Unit 1. If an HELB occurs in the MSVH for Unit 1 (Location of LHSI line from the RWST of (Unit 1), these valves can be operated to put the RWST of Unit 2 on service. Due to the location of thse valves, thse valves will not see the effects of an HELB in Unit one's main steam valve house. Thus, these valves have been deleted.

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FRC Project No. C5257
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FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

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SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

Reason for Concurrence

- Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)
- Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIb)
 - Backup (equipment/system) is available which completely performs the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)

Reason for Non-Concurrence

- Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function.
- Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.
- Backup (equipment/system) is subject to a potentially disabling single active failure.
- ____ Failure of the primary equipment can compromise the ability of other safety-related equipment to perform its specified safety function.
- Failure of the primary equipment can result in erroneous indication which could mislead an operator.
- Requirement for continued functioning throughout the post-accident period necessitates environmental qualification.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

Reason for Concurrence	Reason for Non-Concurrence
The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent	Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.
functions are necessary. See note (1) below. (NRC Qualifi- cation Evaluation Category IIIb)	<pre>Backup (equipment/system) is not safety-related.</pre>
Other (see page)	This equipment is necessary for the operator to ensure an ESF system is
Resultant NRC Qualification Evaluation Category (IIIa/IIIb)	performing its intended safety function.
X Note 1: The Licensee (has/	The rationale presented by the
has not) stated that failure of the primary equipment will not affect other safety-related	Licensee is not supported by objective technical evidence.
equipment or cause an operator to be misled. (See page 3 +)	Other (see page)

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

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Page la

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

EQUIPMENT ITEM NO. 84

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

MANUFACTURER AND MODEL NOT STATED

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 84

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-100A)

LICENSEE SUBMITTAL: SCEW(S): 6-170

FUNCTION (PLANT ID): PRIMARY GRADE WATER TO PRESSURIZER RELIEF TANK

(SOV-1519A)

LICENSEE SUBMITTAL: SCEW(S): 6-189

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	1a, 4b, 4c, 4d, 4e, 4 f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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Page Ib

SUMM	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
V	
<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.
<u>X</u>	The Licensee (has/hastat) 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.
	X 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/hat not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action first quarter of 1982.
	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)
II. ā	Qualified II.c Qualified Life Deficiency Modification III.a Exempt Qualification Not Established III.b Not in Scope Not Qualified IV Documentation Not Available



IV

Documentation Not Made Available

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

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FRC Task No. <u>487</u>

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM		
GNATION: DEFICIENCY		
ESIGNATION: = CATEGORY		
X		



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LICENSEE RESPONSE TO NRC SER		
The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
	(1) COMPONENTS DELETED FROM THE MASTER LIST	
X_	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION	
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED	
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

ENTAL GOALII IOATION TILVILM OF LEGIT MENT ITEM NO.

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>85</u>

EQUIPMENT ITEM NO. 85

SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)

ASCO, MODEL NOT STATED

REQUIRED OPERATING TIME: 60 SECONDS -

TER CHECKSHEET NO. 85

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): MAIN STEAM LINE DRAINS TO CONDENSER (SOV-MS-110)

LICENSEE SUBMITTAL: SCEW(S): 6-155

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:

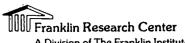
Maintenance and Replacement Schedule Summary

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, 5 <u>f</u> , 5g, 5h, 5i, 5j
nstalled 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/han-ne	e) provided a response to the SER concerns.	
	e) specifically stated that the equipment is action when exposed to the applicable DBE aditions.	
The Licensee has present outstanding qualification	ed information which shows there are no deficiencies.	
	e) proposed a corrective action for this equipment has not been fully established.	
X Justification for in- Licensee for this eq	erim operation (has/hammat) been provided by the sipment item.	
X Corrective action spe	cified 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/analysis) Equipment relocation to a mild environment Qualification testing of equipment in progress Other (</pre>		
	vided other information for this equipment item I as a basis for justification for interim	
X The Licensee (has/the provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action first quarter of 1982.)		
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 Estab II.b Not Qualified	II.c Qualified Life Deficiency III.a Exempt Lished III.b Not in Scope IV Documentation Not Available	



IV

Documentation Not Made Available

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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

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: X = CATEGORYNRC QUALIFICATION 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 Equipment Not in the Scope of the Qualification Review d.III



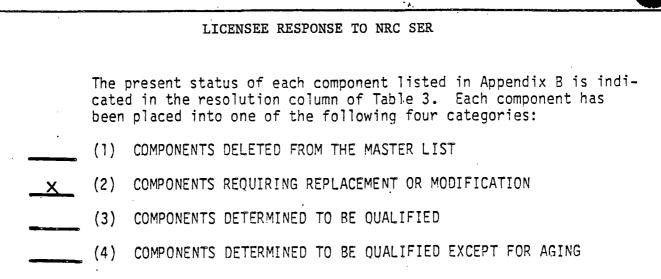
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HIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

LICENSEE RESPONSE TO NRC SER

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 <u>Modification/Replacement Schedule</u>

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

EQUIPMENT ITEM NO. 86

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-47A)

ASCO MODEL NP831654E

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 86

LICENSEE REFERENCE(S): 2850

FUNCTION (PLANT ID): CHEMICAL VOLUME CONTROL SYSTEM ISOLATION VALVE FOR

LETDOWN (SOV-1200A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-20, -21, -22

FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF (SOV-1456-2, -1;

-1455C-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 6-190 TO -194

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, 2b, 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	6ar 6b

Equipment Summary

Maintenance and Replacement Schedule Summary

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SUMMARY	OF LICENSEE RESPONSES TO THE NRC	SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The	Licensee (has/kman) provided	a response to the SER concerns.
qual	Licensee (has/has not) specifical lified and/or will function when cironmental service conditions.	- -
	Licensee has presented information standing qualification deficiencies	
	Licensee (has/has not) proposed a m whose qualification has not been	a corrective action for this equipment fully established.
	Justification for interim operat Licensee for this equipment item	ion (has/has not) been provided by the
	Corrective action specified by the	ne Licensee:
in the second se	Equipment replacement with question Equipment modification Equipment relocation above so Relocate or shield equipment Verify qualification by additionation to a minus 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
_	The Licensee (has/has not) provide corrective action. (Schedule for action	
	Licensee states that the equipment of should be exempted from environment.	nt item does not require qualification onmental qualification.
	TION OF RESULTANT NRC QUALIFICATION OF ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
II.a Qua	dification alification Not Established	Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available



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NRC REQU	UIREMENTS	DESIGNATION: X = DEFICIENCY
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NRC QUA	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a I.b II.a II.b III.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	Life X



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LICENSEE RESPONSE TO NRC SER		
The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
(1) COMPONENTS DELETED FROM THE MASTER LIST		
(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION		
(3) COMPONENTS DETERMINED TO BE QUALIFIED		
(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING		



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>81</u>

EQUIPMENT ITEM NO. 87

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 830281RF

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 87

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER PUMP/CONTAINMENT ISOLATION VALVE

OPERATOR (SOV-DG-108B)

LICENSEE SUBMITTAL: SCEW(S): 6-165

FUNCTION (PLANT ID): PRIMARY COOLANT HOT LEG SAMPLE (SOV-SS-106B)

LICENSEE SUBMITTAL: SCEW(S): 6-241

FUNCTION (PLANT ID): PRESSURE RELIEF TANK SAMPLE (SOV-SS-104B)

LICENSEE SUBMITTAL: SCEW(S): 6-239

FUNCTION (PLANT ID): RESIDUAL HEAT REMOVAL SAMPLE (SOV-SS-103)

LICENSEE SUBMITTAL: SCEW(S): 6-237

FUNCTION (PLANT ID): PRESSURE VAPOR SPACE (SOV-SS-101B1)

LICENSEE SUBMITTAL: SCEW(S): 6-234

FUNCTION (PLANT ID): PRESSURE LIQUID SPACE SAMPLE (SOV-SS-100B1)

LICENSEE SUBMITTAL: SCEW(S): 6-232

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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, 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
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System Consideration Review	4a, 4b, 4c, 4d, 4c, 4f
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 5i, 5j
talled TMI Lessons Learned Implementation quipment Summary	6a, 6b

Maintenance and Replacement Schedule Summary

70. 70. 70

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE	Ε
X The Licensee (has/bas 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/hermost) proposed a corrective action for this equipment item whose qualification has not been fully established.	
Y Justification for interim operation (has/hermat) been provided by the Licensee for this equipment item.	
X 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.	•
X The Licensee (has/First) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982)	
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 SUMMARY FORM	
	IGNATION: 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)	
•	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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	LICENSEE RESPONSE TO NRC SER			
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:			
	(1) COMPONENTS DELETED FROM THE MASTER LIST			
<u>X</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION			
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED			
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING			

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

Justification For Continued Operation

The solenoid valves that exist in the plant have been specified installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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NUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. <u>88</u>

EQUIPMENT ITEM NO. 88

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL 8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 88

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR CONTAINMENT PUMP DISCHARGE (SOV-DA-100A)

LICENSEE SUBMITTAL: SCEW(S): 6-162

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

RTQT RT, PH SA 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
nstalled 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. 482

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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.
<u>X</u>	The Licensee (has/the not) proposed a corrective action for this equipment item whose qualification has not been fully established.
	X Corrective 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/analysis) Equipment relocation to a mild environment Qualification testing of equipment in progress Other () </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/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)
LD II.	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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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUI	DEMENING	DESIGNATION: X = DEFICIENCY
MAC AMOUT	ADDIN 15	A DDITCHMCI
Documente	d Evidence of Qualification Adequate	
	Similarity Between Equipment and Test Specimen Establi	shed
	radation Evaluated Adequately	
	Life or Replacement Schedule Established (If Required	
	stablished to Identify Aging Degradation	· · · · · · · · · · · · · · · · · · ·
_	Regarding Aging Simulation Satisfied (If Required)	- Company of the Comp
	Regarding Temperature/Pressure Exposure:	
	ak Temperature Adequate	
	ak Pressure Adequate	
	ration Adequate	
	quired Profile Enveloped Adequately	······································
o St	eam 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	
	Regarding Instrument Accuracy Satisfied	" •
	tion Margin (l hour + Function Time) Satisfied	, ·
Criteria	Regarding Margins Satisfied (NUREG-0588, Cat. I)	
		·
		DESIGNATION:
NRC QUALI	FICATION CATEGORY	X = CATEGORY
_		
	quipment Qualified	-7
	quipment Qualification Pending Modification	X
	quipment Qualification Not Established	
	quipment Not Qualified	
	quipment Satisfies All Requirements Except Qualified I	life
	r Replacement Schedule Justified	
	quipment Exempt From Qualification	
	quipment Not in the Scope of the Qualification Review	
IA D	ocumentation Not Made Available	•



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LICENSEE RESPONSE TO NRC SER				
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:			
•	(1) COMPONENTS DELETED FROM THE MASTER LIST			
X	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION			
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED			
***********	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING			

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

EOUIPMENT ITEM NO. 89

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING (AB-13A)

ASCO MODEL 8320A12

REQUIRED OPERATING TIME: 60 SECONDS

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

TER CHECKSHEET NO. 89

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-101B)

LICENSEE SUBMITTAL: SCEW(S): 6-129

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

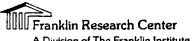
LISTING OF APPLICABLE CHECKSHEETS:

<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, 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, ?c-

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•
X The Licensee (has/bes-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/hammet) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/keenet) been provided by the Licensee for this equipment item.
X 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.
X The Licensee (has/Aller) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982.
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.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. <u>89</u>

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

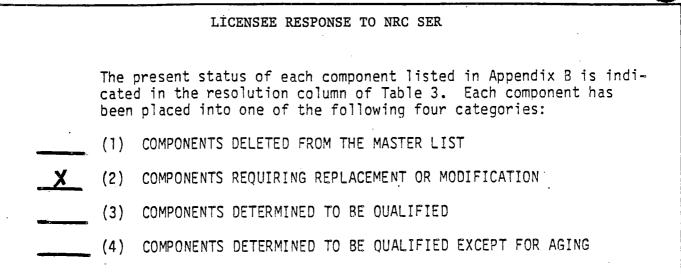
	·	*
NDC DEC	ITT DEMENING	DESIGNATION: X = DEFICIENCY
NRC REO	UIREMENTS	1. 551 1012.101
Documen	ted Evidence of Qualification Adequate	<u> </u>
	e Similarity Between Equipment and Test Specimen Establ	ished
Aging D	egradation Evaluated Adequately	
	ed Life or Replacement Schedule Established (If Require	:d)
	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	
1.4	a Regarding Instrument Accuracy Satisfied	
	ration Margin (1 hour + Function Time) Satisfied	
Criteri	a Regarding Margins Satisfied (NUREG-0588, Cat. I)	
		DESIGNATION:
NRC OIL	ALIFICATION CATEGORY	X = CATEGORY
inc gon	and the term of th	
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
ı	or Replacement Schedule Justified	
III.a	Equipment Exempt From Qualification	
III.b	Equipment Not in the Scope of the Qualification Review	<i></i>
IV	Documentation Not Made Available	



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

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ITEM NO. 90

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 90

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-101B)

LICENSEE SUBMITTAL: SCEW(S): 6-220

FUNCTION (PLANT ID): NITROGEN SUPPLY (SOV-SI-100)

LICENSEE SUBMITTAL: SCEW(S): 6-218

FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-100B)

LICENSEE SUBMITTAL: SCEW(S): 6-168

FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-109B)

LICENSEE SUBMITTAL: SCEW(S): 6-167

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-150D)

LICENSEE SUBMITTAL: SCEW(S): 6-83

FUNCTION (PLANT ID): REACTOR CONTAINMENT PUMP COOLANT WATER ISOLATION

(SOV-CC-105A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-63 TO -65

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, 4c, 4d, 4e, 41
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. 90

EQUIPMENT ITEM NO. 90 (CONTINUED)

FUNCTION (PLANT ID): REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION

(SOV-CC-107)

LICENSEE SUBMITTAL: SCEW(S): 6-66

FUNCTION (PLANT ID): COOLING WATER RETURN FROM RESIDUAL HEAT EXCHANGER

ISOLATION (SOV-CC-109A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-67, -68

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-150B)

LICENSEE SUBMITTAL: SCEW(S): 6-81

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	Checksh	eet :	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,	3с,	3d		
System Consideration Review	4a, 4b,	4c,	4đ,	4e,	4f
Equipment Environmental Qualification Review	5a, 5b, 5g, 5h,			5e,	5f,
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b				

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

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		# .*
SUMMARY OF LIC	ENSEE RESPONSES TO THE N	NRC SER - ONLY CHECKED ITEMS ARE APPLI
		· · · · · · ·
X The Licens	ee (has/b es not) provide	ed a response to the SER concerns.
qualified		ically stated that the equipment is en exposed to the applicable DBE
	ee has presented informa g qualification deficien	ation which shows there are no noices.
	ee (has/ hammet) propose qualification has not b	ed a corrective action for this equipm been fully established.
X Justif Licens	ication for interim oper ee for this equipment it	ration (has/ kernet) been provided by mem.
X Correc	tive action specified by	the Licensee:
Eq Re Ve Eq Qu	rify qualification by acuipment relocation to a alification testing of e	e submergence level ent from radiation source dditional (testing/analysis) mild environment
	an be construed as a bas	er information for this equipment item sis for justification for interim
correc	censee (has/ protive action. (Schedule during first quar	ovided a schedule for the proposed for accomplishing the corrective ter of 1982.
		pment item does not require qualificat vironmental qualification.
	RESULTANT NRC QUALIFICATION 3 CONLY: (See Section 3 C	ATION EVALUATION CATEGORY BASED ON REV of this TER for Legend)
I.a Qualified II.b Modificat II.a Qualifica II.b Not Quali	ion tion Not Established	<pre>II.c Qualified Life Deficiency III.a Exempt III.b Not in Scope IV Documentation Not Available</pre>



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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482/483

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•	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	<u>RM</u>
NRC REQU	JIREMENTS	DESIGNATION: X = DEFICIENCY
Adequate Aging De Qualifie Program Criteria Criteria O I O I Criteria Criteria Criteria	ed 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 Expanding Aging Simulation Satisfied (If Required) Expanding Temperature/Pressure Exposure: Expected Pressure Adequate Exposure Adequate Exposure Adequate Exposure Adequate Exposure Profile Enveloped Adequately Exposure (If Required) Adequate Exposure Exposure (If Required) Adequate Expanding Spray Satisfied Expanding Submergence Satisfied Expanding Radiation Satisfied	
Criteria Criteria (If An Criteria Criteria Test Dun	Regarding Radiation Satisfied Regarding Test Sequence Satisfied Regarding Test Failures or Severe Anomalies Regarding Functional Testing Satisfied Regarding Instrument Accuracy Satisfied Ration Margin (1 hour + Function Time) Satisfied Regarding Margins Satisfied (NUREG-0588, Cat. I)	
NRC QUAI	LIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a I.b 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	المرادي ميايسوراندون. المرادي والمرادي المرادي



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FRC Task No. 482/483

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,	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
X	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ITEM NO. 91

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL NP8320A173B

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 91

LICENSEE REFERENCE(S): 2850

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENTATION AIR COMPRESSOR SUCTION

(SOV-BD-100E)

LICENSEE SUBMITTAL: SCEW(S): 6-258

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-100C)

LICENSEE SUBMITTAL: SCEW(S): 6-256
FUNCTION (PLANT ID): OUTSIDE BLOWDOWN TRIP VALVE (SOV-BD-100A)

LICENSEE SUBMITTAL: SCEW(S): 6-254

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, 5£ , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a, 6b-

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SUMMA	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u> :	The Licensee (has/her mat) 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.
-	The Licensee (nas/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.
	CNATION 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 Modification Qualification Not Established Not Qualified 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. 482

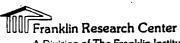
Page 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

VICIOINIE	ALVE GOVER TOWARD LEAVES OF EGGILMENT HEN	1 NO. <u>7</u>
POUTDMENT	ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
EQUIPMENT	ENVIRONMENTAL COMBIFICATION SOMMANT PONT	

	DESIGNATION:
NRC REQUIREMENTS	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 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)	quired) X
NRC QUALIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a Equipment Qualified	, about the Column of the Colu
I.b Equipment Qualification Pending Modification	-
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified	#Signer_spreadings
II.c Equipment Satisfies All Requirements Except Quali	fied Life
or Replacement Schedule Justified	X
III.a Equipment Exempt From Qualification	AND THE PROPERTY OF THE PROPER
III.b Equipment Not in the Scope of the Qualification R	Review
IV Documentation Not Made Available	
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	LICENSEE RESPONSE TO NRC SER		
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:		
	(1) COMPONENTS DELETED FROM THE MASTER LIST.		
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION		
<u>X</u>	(3) COMPONENTS DETERMINED TO BE QUALIFIED		
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING		

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ITEM NO. 92

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

ASCO MODEL 830282G

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 92

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG (SOV-SI-102B1, A1)

LICENSEE SUBMITTAL: SCEW(S): 6-223, -221

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, 4£
Equipment Environmental Qualification Review	-5a, 5b, 5c, 5d, 5e, 51, -5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a, 6b-

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

failure criterion. See note (1) on page 4b. (NRC Qualification

Evaluation Category IIIa)

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FRC Task No. 484

Requirement for continued function-

ing throughout the post-accident

period necessitates environmental

qualification.

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/non-concurrence with the technical basis of the Licensee's position are presented below.

MON-Concarrence with the technical bas	and of the dicenset b position are
presented below.	
Reason for Concurrence	Reason for Non-Concurrence
Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guidelines. (NRC Qualification Evaluation Category IIIa)	 Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function. Backup (equipment/system) is not environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.
X Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1)	Backup (equipment/system) is subject to a potentially disabling single active failure.
on page 4b. (NRC Qualification Evaluation Category IIIb)	Failure of the primary equipment car compromise the ability of other safety-related equipment to perform
<pre>Backup (equipment/system) is available which completely per-</pre>	its specified safety function.
forms the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active	Failure of the primary equipment car result in erroneous indication which could mislead an operator.



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

Reason for Concurrence	Reason for Non-Concurrence	
The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See	Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.	
note (1) below. (NRC Qualifi- cation Evaluation Category IIIb)	Backup (equipment/system) is not safety-related.	
Other (see page)	This equipment is necessary for the operator to ensure an ESF system is	
Resultant NRC Qualification Evaluation Category (IIIa/IIIb)	performing its intended safety function.	
Note 1: The Licensee (has not) stated that failure of the primary equipment will not affect other safety-related	The rationale presented by the Licensee is not supported by objective technical evidence.	
equipment or cause an operator to be misled. (See page 36)	Other (see page)	

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

EQUIPMENT ITEM NO. 93

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 8320A102

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 93

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-100D, B)

LICENSEE SUBMITTAL: SCEW(S): 6-257, -255

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, 3b, -3e, 3d
System Consideration Review	-4a, 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5c, 5f, 5g, 5h, 5i, 5j.
stalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	-7a, 7b, -7c-

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X The Licensee (has/bes-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/harmet) proposed a corrective action for this equipment item whose qualification has not been fully established.
Justification for interim operation (has/herrat) been provided by the Licensee for this equipment item.
X 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 progressOther ()
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/ provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982)
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



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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Establic Program Established to Identify Aging Degradat Criteria Regarding Aging Simulation Satisfied Criteria Regarding Temperature/Pressure Exposur 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	Specimen Established shed (If Required) ion (If Required)
Criteria Regarding Submergence Satisfied	
Criteria Regarding Radiation Satisfied Titeria Regarding Test Sequence Satisfied Iteria Regarding Test Failures or Severe Ano. (If Any) Satisfied	malies
Criteria Regarding Functional Testing Satisfie Criteria Regarding Instrument Accuracy Satisfi	
Test Duration Margin (1 hour + Function Time) Criteria Regarding Margins Satisfied (NUREG-05	Satisfied
NRC QUALIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a Equipment Qualified	cation X
I.b Equipment Qualification Pending Modifi II.a Equipment Qualification Not Establishe	
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	



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
 · ——	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u>X</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
 <i>*</i>	(3) COMPONENTS DETERMINED TO BE QUALIFIED
 · · · · · · · · · · · · · · · · · · ·	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ITEM NO. 94

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING (AB-13A)

ASCO MODEL 8320A102

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 94

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-100A TO G)

LICENSEE SUBMITTAL: SCEW(S): 6-120 TO -126

FUNCTION (PLANT ID): CONTAINMENT PRESSURE (SOV-LM-100H)

LICENSEE SUBMITTAL: SCEW(S): 6-127

FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-101A)

LICENSEE SUBMITTAL: SCEW(S): 6-128

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-100F)

LICENSEE SUBMITTAL: SCEW(S): 6-259

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	6a, 6b

Equipment Summary

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

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SUMM	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
X	The Licensee (has/bes ast) 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/hammet) proposed a corrective action for this equipment item whose qualification has not been fully established.
	Y Justification for interim operation (has/hearnet) been provided by the Licensee for this equipment item.
	Z 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.
•	X The Licensee (has/Mark) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982.
	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



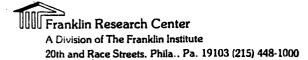
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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	<u>RM</u>
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate	<u>X</u>
Adequate Similarity Between Equipment and Test Specimen Establ	ished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Require	d)
Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	
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 Not Qualified II.c Equipment Satisfies All Requirements Except Qualified	Tifo:
or Replacement Schedule Justified	#44C
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Review	
IV Documentation Not Made Available	
T. Socialitation work water unarrante	



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		LICENSEE RESPONSE TO NRC SER
	cate	present status of each component listed in Appendix B is indi- d in the resolution column of Table 3. Each component has placed into one of the following four categories:
	(1)	COMPONENTS DELETED FROM THE MASTER LIST
<u>_X</u>	(2)	COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
-	(3)	COMPONENTS DETERMINED TO BE QUALIFIED
	(4)	COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482/483

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
X The Licensee (has/bes-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/herest) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/hearner) been provided by the Licensee for this equipment item.
X 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.
X The Licensee (has/ provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982.)
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.a Modification 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. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

EQUIPMENT ITEM NO. 95

SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)

ASCO MODEL 80174

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 95

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): MAIN STEAM LINE DRAINS TO CONDENSER (SOV-MS-109)

LICENSEE SUBMITTAL: SCEW(S): 6-154

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, 3b, 3e, 3d
System Consideration Review	4a, 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	6a, 6b.

Maintenance and Replacement Schedule Summary 7a, 7b



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FRC Project No. C5257
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FRC Task No. 482/483

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. $\underline{95}$

	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u>X</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

IV

Documentation Not Made Available

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

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

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 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 = 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

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

EQUIPMENT ITEM NO. 96

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL NP8320175E

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 96

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-101A)

LICENSEE SUBMITTAL: SCEW(S): 6-219

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, 5c, 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/har wat) 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.
X 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 IV Documentation Not Available

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	<u>PRM</u>
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 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	<u>X</u>

See equipment item mo. 86 for evoluction



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
·	(1) COMPONENTS DELETED FROM THE MASTER LIST
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
X	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ITEM NO. 97

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 831654

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 97

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): LETDOWN INLET NON-REGENERATIVE HEAT EXCHANGER (SOV-1204)

LICENSEE SUBMITTAL: SCEW(S): 6-19

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

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SUMMA	ARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE
<u>X</u>	ne Licensee (has/bes-not) provided a response to the SER concerns.
q	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/manust) proposed a corrective action for this equipment tem whose qualification has not been fully established.
2	Y Justification for interim operation (has/hearner) been provided by the Licensee for this equipment item.
3	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>	X The Licensee (has/ provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982.)
	the Licensee states that the equipment item does not require qualification and/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)
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



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. 97

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 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 (I 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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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
X	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
	(3) COMPONENTS DETERMINED TO BE QUALIFIED
ورينستانيه	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING
<u>x</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION (3) COMPONENTS DETERMINED TO BE QUALIFIED

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

EQUIPMENT ITEM NO. 98

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 830281R

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 98

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-102B1)

LICENSEE SUBMITTAL: SCEW(S): 6-236

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
stalled TMI Lessons Learned Implementation Equipment Summary	úa, 6b.

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHEC	KED ITEMS ARE APPLICABLE
X The Licensee (has/bee not) provided a response to the	e SER concerns.
The Licensee (has/has not) specifically stated that qualified and/or will function when exposed to the a environmental service conditions.	
The Licensee has presented information which shows to outstanding qualification deficiencies.	there are no
The Licensee (has/kernst) proposed a corrective act item whose qualification has not been fully establish	
Y Justification for interim operation (has/hearns) Licensee for this equipment item.	e) been provided by the
X Corrective action specified by the Licensee:	
Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation Verify qualification by additional (testing/ Equipment relocation to a mild environment Qualification testing of equipment in progression of the control of the c	source (analysis)
The Licensee has provided other information for that can be construed as a basis for justificationeration.	
X The Licensee (has/ provided a schedule for accomplishing action during first quarter of 1982	- -
The Licensee states that the equipment item does not and/or should be exempted from environmental qualifity	
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CO- - CIRCLED ITEM ONLY: (See Section 3 of this TER for Leg	
II.a Qualification Not Established III.b Not in Sco	Life Deficiency Ope Lion Not Available

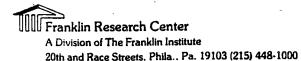
A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482/483

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

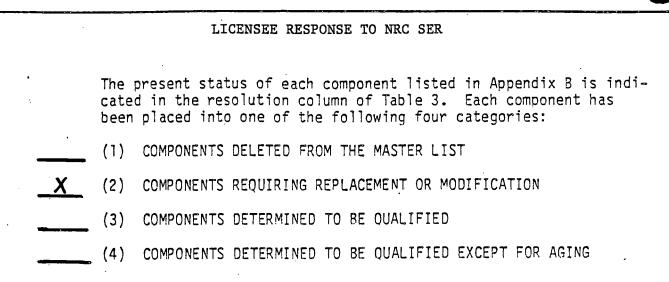
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
	
Documented Evidence of Qualification Adequate	. <u>X</u>
Adequate Similarity Between Equipment and Test Specimen Estab	lished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requir	ed)
Program Established to 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 Radiation Satisfied Criteria Regarding Test Sequence Satisfied	· · · · · · · · · · · · · · · · · · ·
riteria 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)	
	DESIGNATION:
NDG OURT TETGRATON GRAECODY	X = CATEGORY
NRC QUALIFICATION CATEGORY	A - CRIEGORI
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	L I.ifa
	HTTG
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	



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ITEM NO. 99

SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)

ASCO MODEL HBX8320A26

REQUIRED OPERATING TIME: 60 SECONDS

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

TER CHECKSHEET NO. 99

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): AIR REMOVAL TO CONTAINMENT (SOV-SV-102)

LICENSEE SUBMITTAL: SCEW(S): 6-1

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

<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, 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	-6a; 6b-

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SUMMAI	MARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECK	KED ITEMS AR	E APPLICABLE:
<u> </u>	The Licensee (has/b as no t) provided a response to the	SER concer	ns.
qυ	The Licensee (has/has not) specifically stated that to qualified and/or will function when exposed to the approximantal service conditions.		
	The Licensee has presented information which shows the outstanding qualification deficiencies.	nere are no	
	The Licensee (has/hammet) proposed a corrective active item whose qualification has not been fully establish		equipment
×	Justification for interim operation (has/keenet) Licensee for this equipment item.	been provi	ded by the
<u> </u>	X 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 so Verify qualification by additional (testing/a	ource	
	Equipment relocation to a mild environment Qualification testing of equipment in progres Other (s)
	The Licensee has provided other information for that can be construed as a basis for justification operation.		
· <u>×</u>	X The Licensee (has/ provided a schedule for corrective action. (Schedule for accomplishing taction during first quarter of 1982		
	The Licensee states that the equipment item does not and/or should be exempted from environmental qualific		lification
	IGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CAT	· · · · · · · · · · · · · · · · · · ·	ON REVIEW
II.a Ç	Modification III.a Exempt a Qualification Not Established III.b Not in Scop		· .



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	EQUIPMENT DAVIRONMENTAL QUALIFICATION SUMMANT FOR	<u> </u>
NRC REC	UIREMENTS	DESIGNATION: X = DEFICIENCY
a ^t		
	ated Evidence of Qualification Adequate	<u> X</u>
_	e Similarity Between Equipment and Test Specimen Establi	shed
	Degradation 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	·
0	Required Profile Enveloped Adequately	
0	Steam Exposure (If Required) Adequate	
Criteri	a Regarding Spray Satisfied	
Criteri	la Regarding Submergence Satisfied	`
Criteri	a Regarding Radiation Satisfied	
Criteri	a Regarding Test Sequence Satisfied	
Criteri	a Regarding Test Failures or Severe Anomalies	
(If A	Any) Satisfied	
Criteri	a Regarding Functional Testing Satisfied	
Criteri	a Regarding Instrument Accuracy Satisfied	
	ration Margin (1 hour + Function Time) Satisfied	
	la Regarding Margins Satisfied (NUREG-0588, Cat. I)	
una orri		DESIGNATION:
NRC QUA	ALIFICATION 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	engline giornice en quintie
II.c	Equipment Satisfies All Requirements Except Qualified	ife
	or Replacement Schedule Justified	-
III.a	Equipment Exempt From Qualification	
III.b	Equipment Not in the Scope of the Qualification Review	
T17	Dogumentation Not Made Available	



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LICENSEE RESPONSE TO NRC SER
The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
(1) COMPONENTS DELETED FROM THE MASTER LIST
(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
(3) COMPONENTS DETERMINED TO BE QUALIFIED
(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

LICENSEE RESPONSE TO NRC SER (Continued)



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7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

EQUIPMENT ITEM NO. 100

SOLENOID VALVE LOCATED INSIDE CONTAINMENT (RC-3B)

ASCO MODEL HBX8320A26

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 100

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION

(SOV-IA-101A)

LICENSEE SUBMITTAL: SCEW(S): 6-114

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

RT 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, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j
nstalled TMI Lessons Learned Implementation Equipment Summary	-6a, 6b ∙

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X The Licensee (has/herent) 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. X The Licensee (has/herent) proposed a corrective action for this equipment item whose qualification has not been fully established. X Justification for interim operation (has/herent) 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 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/herent) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982 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 Qualified Life Deficiency III.a Exempt III.b Not in Scope III.b Not Qualified III.b Not Qualified III.b Not Qualified III.b Not consenses the proposed to pounce that on the proposed consenses the proposed consense	SUMMARY OF LICENSEE RESPONSES TO THE NRC SE	R ONLY CHECKED ITEMS ARE APPLICABLE
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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

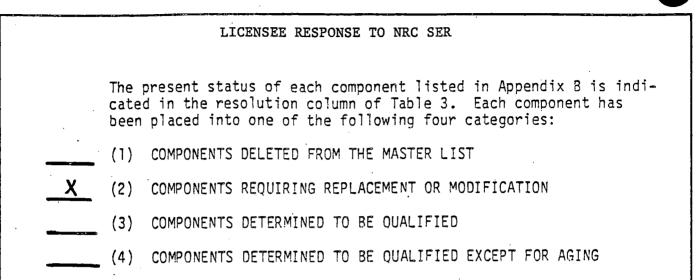
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establ Aging Degradation Evaluated Adequately Qualified Life or Replacement Schedule Established (If Require Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required) Criteria Regarding Temperature/Pressure Exposure: o Peak Temperature Adequate	
 Peak Pressure Adequate Duration Adequate 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	
riteria 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)	
NRC QUALIFICATION CATEGORY	DESIGNATION: $X = CATEGORY$
I.a Equipment QualifiedI.b Equipment Qualification Pending ModificationII.a Equipment Qualification Not Established	<u> </u>
<pre>II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified</pre>	Life
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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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

EQUIPMENT ITEM NO. 101

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL 830281R

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 101

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-102A1)

LICENSEE SUBMITTAL: SCEW(S): 6-235

FUNCTION (PLANT ID): PRESSURE LIQUID SPACE SAMPLE (SOV-SS-101A1, -100A1)

LICENSEE SUBMITTAL: SCEW(S): 6-233, -231

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

Maintenance and Replacement Schedule Summary

Page 1 b

SUMM	ARY OF LICENSEE RESPONSES TO THE NR	C SER - ONLY CHECKED ITEMS ARE APPLICABLE
X	The Licensee (has/hee not) provided	a response to the SER concerns.
	The Licensee (has/has not) specificate qualified and/or will function when environmental service conditions.	
	The Licensee has presented informat outstanding qualification deficienc	
	The Licensee (has/hammet) proposed item whose qualification has not be	a corrective action for this equipment en fully established.
	X Justification for interim operation Licensee for this equipment item	tion (has/hearner) been provided by the
	X Corrective action specified by	the Licensee:
	Equipment replacement with of Equipment modification Equipment relocation above as 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
· · ·	The Licensee has provided other that can be construed as a basis operation.	information for this equipment item s for justification for interim
	X The Licensee (has/ province corrective action. (Schedule for action during first quarte	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.
DESI	GNATION OF RESULTANT NRC OUALIFICAT	ION EVALUATION CATEGORY BASED ON REVIEW
	RCLED ITEM ONLY: (See Section 3 of	
	Qualified	II.c Qualified Life Deficiency
	Modification	III.a Exempt
	Qualification Not Established Not Oualified	III.b Not in Scope IV Documentation Not Available
= 1 L . D	NUL VUALIEIQ	IV LOCUMENCACION NOT AVAILABLE



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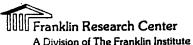
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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMART FOR	
•	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	<u> </u>
Adequate Similarity Between Equipment and Test Specimen Establi	shed
Aging Degradation Evaluated 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	the second of the second
Criteria Regarding Functional Testing Satisfied	The second secon
Criteria Regarding Instrument Accuracy Satisfied	
Test Duration Margin (1 hour + Function Time) Satisfied	
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)	
	DESIGNATION:
NDC OUR TETCAMION CAMECODY	X = CATEGORY
NRC QUALIFICATION CATEGORY	A - CATEGORI
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 I	ife
or Replacement Schedule Justified	_
III.a Equipment Exempt From Qualification	<u> — Colon do Colon do</u>
III.b Equipment Not in the Scope of the Qualification Review	
IV Documentation Not Made Available	



Franklin Research Center
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_	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
·	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u>X</u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
~	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 194



LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specific installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ITEM NO. 102

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL HBX8320A26

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 102

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION

(SOV-IA-101B)

LICENSEE SUBMITTAL: SCEW(S): 6-115

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR DISCHARGE

(SOV-IA-100)

LICENSEE SUBMITTAL: SCEW(S): 6-113

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
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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
nstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b-

Maintenance and Replacement Schedule Summary 7a,

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABL
X The Licensee (has/bee-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/hammet) proposed a corrective action for this equipment item whose qualification has not been fully established.
X Justification for interim operation (has/herenet) been provided by the Licensee for this equipment item.
X 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.
X The Licensee (has/ provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action during first quarter of 1982)
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 Modification II.a Qualification Not Established III.b Not Qualified IV Documentation Not Available

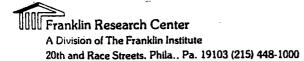
A Division of The Franklin Institute 20th and Race Streets. Phila., Pa. 19103 (215) 448-1000 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482/483

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QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establic 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 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



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	LICENSEE RESPONSE TO NRC SER
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:
	(1) COMPONENTS DELETED FROM THE MASTER LIST
<u> </u>	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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. 482/483

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are of NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and severe external environments. They are heat resistant. They are Underwriter's Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e. insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will peform their intended safety function when exposed to harsh environments. Therefore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

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FRC Task No. 487

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

EQUIPMENT ITEM NO. 103

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING

MANUFACTURER AND MODEL NOT STATED REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 103

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CHARGING FLOW CONTROL/MINIMUM BORATION (FCV-1122)

LICENSEE SUBMITTAL: SCEW(S): 6-10

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,

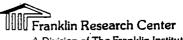
Not stated, Not applicable

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	Ha 4b, 4c, 4d, 4e, 4£
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f , 5g, 5h, 5i, 5j
Installed TMI Lessons Learned Implementation	-6a, 6b

Maintenance and Replacement Schedule Summary 7a, 7b,



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SUMI	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.
_	qua.	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:
		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)
<u>X</u>		Licensee states that the equipment item does not require qualification or 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 II.a	Mod a Qua	alified II.c Qualified Life Deficiency dification alification Not Established III.b Not in Scope t Qualified IV Documentation Not Available



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<u> </u>	

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 Establic 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	economical de la constante de
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	engangementender webstermentender webstermentender



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FRC Task No. 482/483

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LICENSEE RESPONSE TO NRC SER					
	The present status of each component listed in Appendix B is indicated in the resolution column of Table 3. Each component has been placed into one of the following four categories:				
X	(1) COMPONENTS DELETED FROM THE MASTER LIST				
	(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION				
-	(3) COMPONENTS DETERMINED TO BE QUALIFIED				
	(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING				

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 201



SYSTEM CONSIDERATION REVIEW

The Licensee has stated that this equipment item does not require environmental qualification and/or should be exempted from qualification. The Licensee's rationale has been evaluated and the reasons for concurrence/
non-concurrence with the technical basis of the Licensee's position are presented below.

The state of the s						
non concurrence with the technical basis of the Licensee's position are						
presented below.						
Reason for Concurrence	Reason for Non-Concurrence					
Equipment does not provide a safety function or mitigate the consequences of a design basis accident. Equipment Environmental Qualification is not required by the DOR Guide-		Backup (equipment/system) is not fully capable of performing the intended safety function or accident mitigating function. Backup (equipment/system) is not				
lines. (NRC Qualification Evaluation Category IIIa)		environmentally qualified and can be exposed to a hostile environment simultaneously with the primary equipment.				
Equipment is not exposed to a harsh environment by the accident it is intended to mitigate. See note (1)	_	Backup (equipment/system) is subject to a potentially disabling single active failure.				
on_ page 4b. (NRC Qualification Evaluation Category IIIb)		Failure of the primary equipment can compromise the ability of other safety-related equipment to perform				
<pre>Backup (equipment/system) is available which completely per-</pre>		its specified safety function.				
forms the safety function. The backup (equipment/system) is environmentally qualified and appears to meet single active		Failure of the primary equipment can result in erroneous indication which could mislead an operator.				
failure criterion. See note (1) on page 4b. (NRC Qualification Evaluation Category IIIa)		Requirement for continued function- ing throughout the post-accident period necessitates environmental qualification.				

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ITEM NO. 104

PRESSURE TRANSMITTER LOCATED IN THE AUXILIARY BUILDING

ROSEMOUNT MODEL 1152AP7A22PB

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 104

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT PRESSURE POST-ACCIDENT MONITORING

(PT-LM-101A, -101B)

LICENSEE SUBMITTAL: SCEW(S): T-1, T-2 [3]

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, \$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-
nstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b.

Maintenance and Replacement Schedule Summary

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLIC	ABLE				
NA new item					
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 equipme item whose qualification has not been fully established.	nt				
Justification for interim operation (has/has not) been provided by t Licensee for this equipment item.	he				
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 (nas/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.	.on				
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	4				



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY			
	Y			
Documented Evidence of Qualification Adequate	X lished			
Adequate Similarity Between Equipment and Test Specimen Estab	Lisned			
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				
Triteria Regarding Test Sequence Satisfied				
riteria Regarding Test Failures or Severe Anomalies				
(If Any) Satisfied	·			
Criteria Regarding Functional Testing Satisfied	<u> </u>			
Criteria Regarding Instrument Accuracy Satisfied				
Test Duration Margin (1 hour + Function Time) Satisfied				
Criteria Regarding Margins Satisfied (NUREG-0588, Cat. I)				
	· · · · · · · · · · · · · · · · · · ·			
	BEGIGNAETON.			
	DESIGNATION:			
NRC QUALIFICATION CATEGORY	X = CATEGORY			
I.a Equipment Qualified				
I.b Equipment Qualification Pending Modification	and the second second			
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 Revie	w .			
IV Documentation Not Made Available				



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

LICENSEE RESPONSE TO NRC SER

5. Rosemount Inc. - Pressure Transmitters

Plant ID No.	<u>Model</u>	Worksheet Page No.
PT-LM-101A	1152AP7A22PB	10.3-1
PT-LM-101B	1152AP7A22PB	10.3-2

Transmitters test documentation is presently being upgraded from IEEE 323-1971 to IEEE 323-1974.



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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

EQUIPMENT ITEM NO. 105

SOLENOID VALVE LOCATED IN THE SAFEGUARDS AREA

ASCO MODEL NP831654E

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 105

LICENSEE REFERENCE(S): 649

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (SOV-DA-103A, B)

LICENSEE SUBMITTAL: SCEW(S): T-3, T-4 [3]

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 meet item

LISTING OF APPLICABLE CHECKSHEETS:

Maintenance and Replacement Schedule Summary

Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	í lb
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3 a, 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
stalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b

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SHAMADA OE LIGENSEE DESDONSES TO	THE NRC SER - ONLY CHECKED ITEMS ARE APPLICABLE:
SUPPART OF LICENSEE RESPONSES TO	THE NAC SER - ONLY CHECKED TIEMS ARE APPLICABLE.
The Licensee (has/has not) pr	rovided a response to the SER concerns.
	pecifically stated that the equipment is on when exposed to the applicable DBE ions.
The Licensee has presented in outstanding qualification def	nformation which shows there are no ficiencies.
The Licensee (has/has not) printed item whose qualification has	roposed a corrective action for this equipment not been fully established.
Justification for intering Licensee for this equipment	m operation (has/has not) been provided by the ent item.
Corrective action specifi	ied by the Licensee:
Equipment modification	t with qualified equipment on above submergence level
Relocate or shield ed	quipment from radiation source
Verify qualification Equipment relocation	by additional (testing/analysis)
	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	<pre>(II.c) Qualified Life Deficiency III.a Exempt</pre>
II.a Qualification Not Establish	-
II.b Not Qualified	IV Documentation Not Available

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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	
Adequate Similarity Between Equipment and Test Specimen Est	ablished
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Requ	ired) X
Program Established to Identify Aging Degradation	·
Criteria Regarding Aging Simulation Satisfied (If Required)	
Criteria Regarding Temperature/Pressure Exposure:	
o Peak Temperature Adequate	
o Peak Pressure Adequate	
o Duration Adequate	·
o Required Profile Enveloped Adequately	
o Steam Exposure (If Required) Adequate	
Criteria Regarding Spray Satisfied	
Criteria Regarding Submergence Satisfied	
Criteria Regarding Radiation Satisfied	
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)	دان هند د د د منون د
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
ARC QUADIFICATION CATAGORI	
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modification	and the second s
II.a Equipment Qualification Not Established	
II.b Equipment Not Qualified	
II.c Equipment Satisfies All Requirements Except Qualifi	led Life
or Replacement Schedule Justified	<u>X</u>
III.a Equipment Exempt From Qualification	
III.b Equipment Not in the Scope of the Qualification Rev	riew
IV Documentation Not Made Available	
·	

See Item 86 for evaluation

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQIUPMENT ITEM NO. 106

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

GEMS MODELS XM-54854 AND XM-54853 REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 106

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR COOLANT WATER LEVEL (WIDE RANGE) (LT-RS-151A, B)

LICENSEE SUBMITTAL: SCEW(S): T-30, T-31 [3]

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,

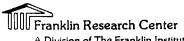
Not stated, (Not applicable) New tem

Maintenance and Replacement Schedule 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, 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, 60

7a, 7b, 7e



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



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EQUIPMEN'T ENVIRONMENTAL QUALIFICATION SUMMARY FO	PRM .
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 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	X Life
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. 106

LICENSEE RESPONSE TO NRC SER

1. GEMS - Level Transmitters

Plant ID Nos.	<u>Model</u>	Worksheet Page N
LT-RS-151A LT-RS-151B LT-DA-110A	XM-54854 & XM-54853 XM-54854 & XM-54853 XM-54854 XM-54854	10.3-30 10.3-31 10.3-5 10.3-6
LT-DA-110B	- MITT_04004 -	10.5-0

Components are presently being qualified to IEEE 323-7974.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

0

EQUIPMENT ITEM NO. 107

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

GEMS MODEL XM-54854

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 107

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR COOLANT SUMP WATER LEVEL, NARROW RANGE

(LT-DA-110A, B)

LICENSEE SUBMITTAL: SCEW(S): T-5, T-6 [3]

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) New Hem

Maintenance and Replacement Schedule 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, 5e, 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 APPLICABL
NA nour item
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 Life Deficiency
I.b Modification III.a Exempt
Qualification Not Established III.b Not in Scope 1. Documentation Not Available



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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 19

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	EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM	
NRC REQU		ESIGNATION: = DEFICIENCY
Adequate Aging De Qualifie Program Criteria Criteria O Criteria Criteri Criteri Criteri Criteri Criteri Criteri Criteri Criteri Criteri Test Du	End Evidence of Qualification Adequate Similarity Between Equipment and Test Specimen Establish Egradation Evaluated Adequately Ed Life or Replacement Schedule Established (If Required) Established to Identify Aging Degradation Established gramperature/Pressure Exposure: Peak Temperature Adequate Peak Temperature Adequate Peak Pressure Adequate Peak Pressure Adequate Peak Profile Enveloped Adequately Steam Exposure (If Required) Adequate Engarding Spray Satisfied Engarding Regarding Submergence Satisfied Engarding Regarding Radiation Satisfied Engarding Test Sequence Satisfied Engarding Test Failures or Severe Anomalies Engarding Functional Testing Satisfied Engarding Instrument Accuracy Satisfied Engarding Instrument Accuracy Satisfied Engarding 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	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	fe

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PIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

LICENSEE RESPONSE TO NRC SER

1. GEMS - Level Transmitters

Plant ID Nos.	<u>Model</u>	Worksheet Page No.
LT-RS-151A	xm-54854 & xm-54853	10.3-30
LT-RS-151B	XM-54854 & XM-54853	10.3-31.
LT-DA-110A	XM-54854	10.3-5
LT-DA-110B	XM-54854	10.3-6

Components are presently being qualified to IEEE 323-7974.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

EQUIPMENT ITEM NO. 108

LIMIT SWITCH LOCATED IN THE SAFEGUARDS AREA

NAMCO MODEL EA180-31302

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 108

LICENSEE REFERENCE(S): 4447

FUNCTION (PLANT ID): CONTAINMENT ISOLATION AUXILIARY BUILDING SUMP

(ZS-DA-103A, B)

LICENSEE SUBMITTAL: SCEW(S): T-7, T-8 [3]

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) New ten

Maintenance and Replacement Schedule Summary

LISTING OF APPLICABLE CHECKSHEETS:

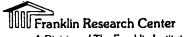
Contents	Checksheet Page No.
Equipment Item	la
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3 a, 3b, 3e, 3d -
System Consideration Review	4a, 4b, 4c, 4d, 4c, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 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:
NA New Hem
The Licensee (has/has not) provided a response to the SER concerns.
The Licensee (has/has not) specifically stated that the equipment is qualified and/or will function when exposed to the applicable DBE environmental service conditions.
The Licensee has presented information which shows there are no outstanding qualification deficiencies.
The Licensee (has/has not) proposed a corrective action for this equipment item whose qualification has not been fully established.
Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
Corrective action specified by the Licensee:
Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate or shield equipment from radiation source Verify qualification by additional (testing/analysis) Equipment relocation to a mild environment Qualification testing of equipment in progress Other (
The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action)
The Licensee states that the equipment item does not require qualification and/or should be exempted from environmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)
I.a Qualified I.b Modification II.a Qualification Not Established III.b Not in Scope IV Documentation Not Available

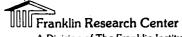


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EQUIPMENT ENVIRONMENTAL QUALIFICATION BUMMANT FORM	
_	ESIGNATION: = DEFICIENCY
Documented Evidence of Qualification Adequate Adequate Similarity Between Equipment and Test Specimen Establish Aging Degradation Evaluated Adequately Qualified Life or 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 Failures or Severe Anomalies (If Any) Satisfied Criteria Regarding Functional Testing Satisfied Criteria Regarding Instrument Accuracy Satisfied Test Duration Margin (I 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	



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<u>EQUIPMENT EN</u>	VIRONMENTAL Q	UALIFICATION REVIEW	•
Criteria: DOR Guidelines	; NUREG-0588,	Cat. IX; 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	Limit Switch	Limit Switch	1
Manufacturer's Name (5.2.2/-/-)	! NAMEO	NAMCO Controls	!
Model Number (5.2.2/-/-)	EA180-31302	EA-180, Type 23	!
Serial Number	!	EA-180-11302, RevD	!
Features/Mounting (5.2.6/-/-)	!	Horizontal in Autoclave	!
nnections/Interfaces (5.2.6/-/-)	: :	: ! !	1
Location/Elevation	: outside : Containment	Not Applicable	•
Equipment ID No.	_	Not Applicable	:
QUALIFICATION REPORT (8.0/5.0/5.0)		: !	
Report ID Number	Not stated	No Report I/D Number	!
Report Date	March 3, 1980	8/20/8/	1
Issued by	Eleveland Development	ACME CLEVELAND DEVELOPMENT COMPANY	r
Prepared for	!Co.	: !NAMCO CONTROLS	:
Referenced Reports	1	Not Stated	!
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	Sequential Test	Sequential Test	:
QUALIFICATION TEST PROGRAM Functional Test Description (5.2.5/2.2.9/2.2.9)	-	Make/break contact	• • • •
perating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/		0.5Amps @ 100 Vdc	:
Current/Freq.		:	:

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			· · · · · · · · · · · · · · · · · · ·
NRC REQUIREMENTS			DEFICIENCY
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
And the mile	1		:
Acceptance Criteria	<u> </u>	Not Stated	•
(5.2.5/2.2.1/2.2.1)	1	i Not beated	•
Accuracy (5.2.5/-/-)	· Hot	Not Stated	•
110021403 (51210, , ,	Required	NOT Stated	1
Number of Specimens	:	! One (1)	1
	!	!	!
Test Instruments Calibrated	!	Yes	•
	!	1	•
Safety Function (Active/	Active		
Passive) (-/2.1.3/2.1.3)	Helioc	•	•
Mast Dunstion (5.2.1/-/-)	·	30 days	•
Test Duration (5.2.1/-/-)	!	1	•
Accident Duration (Envir.	1	1	i
Above Normal) (5.2.1/-/-)	: 120 days	Not Applicable	: Note 2.
· · · · · · · · · · · · · · · · · · ·		1	! page 55'
Required Function Time	: 120 days	! Not Applicable	. 1
		•	
Test Sequence (General)		! !Inspection/Base line dat	3
(5.2.3/2.3.1/2.3.1)		! Heat/Humidity Aging	a ;
(NVIDE 0500	•	• Mechanical Aging	ě
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	<u> </u>	! Irradiation	•
Cac. 1) (-/2:3:1/-/	•	Seismic testing	1
1. Representative Sample	!	LOCA Simulation	1
2. Baseline Data	1	1	1
3. Performance Extremes	1 0	•	
4. Thermal Aging	1	1	9
5. Radiation Aging	!		
6. Wear Aging	:		•
7. Vibration/Seismic	•	•	
8. DBE Exposure 9. Post-DBE Exposure	:	•	1
10. Inspection	• •	•	
10. 1	1		
Aging	: See Note		1
(5.2.4, 7.0/4.0/4.0)	: 3, page 5f.	MADOR C	C. Jack
Thermal Aging/Basis	: ' '	120°C for 400 hours	•
	:		•
Material Aging		Not Stated	1
Evaluation (7.0/-/-)	• •	1 ,	; 1
Materials Susceptible	; !	1	
-	•	Not Stated	•
(Thermal) (5.2.4, 7.0/-/-)	• !	•	
Radiation Aging, Type	·	Commi	1
	-	Gamma	·

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NRC REQUIREMENTS	LICENSEE	QUALIFICATION	DEFICIENCY (X OR
WITH SECTION REFERENCE	SUBMITTAL	DOCUMENTATION	NOTE NO.)
(DOR/0588-I/0588-II)	!	200012111111111	!
	•		:
Radiation Aging, Dose (rd)	8.8 E 2 Rads	204 Megarads	*
Radiation Aging, Dose Rate	!	0.7 Megarads/ hour	1
Radiation Aging, Method	Sequential Test	Test	1
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	!Test	Not Stated	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Operational Aging (-/4.2/-)		100,000 Actuation Cycles	!!!
Other Age Conditioning (-/4.2/-)	-	Not Stated	:
ualified Life Claimed/ stablished (5.2.4/4.10/-)	None Claimed	None Claimed	See Note 1, page 5f.
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	! 120°F !—	Not Applicable Not Applicable Not Applicable	:
On-Going Surveillance and Preventive Maintenance (7.0/-/-)		Not Applicable	See Note 3, page 5-f.
On-Going Analysis of Failures and Degradation (7.0/-/-)		Not Applicable	
Margin (General) (6.0/3.0/3.0)	-	Not Stated/ Not Appicabl	Lei
Margin (NUREG-0588, Cat. I) (-/3.2/-)	_	Not Stated	
 Temperature (+15°F) Pressure (+10%, psig max) 	: :	! ! !	
3. Radiation	!	!	:
(not required)	:		1
4. Time (+10%, +1 hour	!	!	:
+ function time minimum)	!	1	!

^{*} Radiation aging and accident doses were combined in a single Exposure prior to the LOCA Simulation.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
ACCIDENT CONDITIONS LOCA/MSLB/HELB/Uncontrolled (4.1, 4.2, 4.3.1, 4.3.3/	LocA	LOCA/MSLB	
1.1, 1.2, 1.5/1.1, 1.2, 1.5)	!	1	1
Radiation Type	-	Gamma	:
Radiation Dose (rd) (4.1.2/1.4/1.4)	8 E 6 Rads	204 Megarads	*
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)	Test	0.7 Megarads per hour Test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	<u></u>	Not Applicable	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)		Not Stated .	
Radiation Dose (Normal + Accident) (4.1.2/-/-)		Not Stated	
Plateout Dose Considered (-/1.48/1.48)		Not Applicable	
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	1	Not Applicable	9 0

^{*}Radiation aging and accident doses were combined in a single Exposure prior to the LOCA Simulation.

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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	Not Reguired	11°F/8psi/sec	:
Peak: °F/psig/RH/Time		340/115/100/3h4s	
Decrease To: °F/psig/RH/Time		140/-/-/2h4r 340/105/100/3hrs	:
Decrease To: °F/psig/RH/Time		320/76/100/2hrs 300/57/100/1hr	
Decrease To: °F/psig/RH/Time		250/25/100/4days 150/10/100/25 days	:
Equipment Surface Temperature (MSLB) (-/1.2.5.C,		Not Applicable	
2.6/1.2.5.C, 2.2.6)			
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		Test	:
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)		Boric Acid/water/sodium thiosulfate/sodium hydro ide	KT
Spray Density (gpm/ft ²)		0.15	!
Spray Duration		30Days	
Submergence Duration (4.1.3/2.2.5/2.2.5)		Not Applicable	1
In-Leakage Considered (5.2.6, 5.3.2/-/-)		Not Applicable	1
Time to Submergence		Not Applicable	!
Dust Environment (-/2.2.11/2.2.11)	V	Not Applicable	!

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NOTES:
1. The qualification report (reference [4447]) provides
a reasonable estimate of qualified life, VIZ.
5 years at 55°C. The licensee should implement
a replacement program for complete gualification
of this item.
2. This is a harsh environment due to radiation. The
accident duration is assumed to be the full
120 days of the required function time.
3. The licensee's response to equipment aging is as
follows:
Vepco has not fully developed an aging evaluation program to meet the current requirements for addressing aging as outlined in the Safety Evaluation Report and as discussed in the meetings held in Bethesda on July 7-10, 1981. As indicated previously in I.E. Bulletin 79-01B 90 Day Review, Revision 3, a program to assess the failure mechanisms of all class IE electrical equipment has been developed and implemented at Surry.
The Atomic Industrial Forum is currently drafting a position paper which Vepco feels has merit with regard to addressing the aging concerns. Implementation of this program is contingent, however, on review of the existing preventive maintenance program at the station. Vepco is currently reviewing the draft AIF position paper on aging evaluation methods in conjunction with the existing preventive maintenance program at Surry. An aging evaluation program which meets the requirements of the SER will be implemented by June 1982.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

INSTALLED TMI LESSONS LEARNED IMPLEMENTATION EQUIPMENT SUMMARY

NRC requested an evaluation of the environmental qualification of safety-related electrical equipment located in harsh environments required for TMI Lessons Learned Implementation. The objective is to evaluate qualification documentation of equipment within the scope of IE Bulletin 79-01B, Supplement 3 (item 2), in accordance with criteria established by the NRC (see Section 2 of this report) in a manner identical to the evaluation of all other safety-related electrical equipment. The scope of this review is limited to TMI Action Plan equipment associated with specific sections of NUREG-0737 which have an installation implementation date of January 1, 1981 (sections are identified below). Where applicable, a review is to be performed on installed equipment with implementation dates after January 1, 1981 if adequately identified by the licensee.

identiii	ed by the licensee.
The NSSS	The control of the co
With res	spect to this equipment item, it is noted (applicable section checked)
	Licensee does not provide adequate information with respect to tification of TMI Action Plan equipment installed as of 1/1/81.
the that iden	Licensee has not provided the correlation of this equipment item with specific sections of NUREG-0737. [The correlation is needed to ensure all items are included in the review, e.g., if a transmitter is tified as a TMI Action Plan item, are the cable and the terminal ks associated with the device also identified?]
TMI	Licensee has not provided the approximate installation date for the Action Plan equipment items so that the appropriate qualification eria (NUREG-0588 or DOR Guidelines) can be used in the EEQ evaluation.
	Licensee has provided a standard Owners' Group position with respect NUREG-0737 technical area.
The	Licensee has requested extensions of implementation dates.
foll sect	Licensee has stated that this equipment item is associated with the owing section of NUREG-0737. (This list of applicable NUREG-0737 ions has been identified by NRC as sections within the scope of this ew):
	II.B.3 (ALL/1-1-81) Post-Accident Sampling Capability of Reactor Coolant and Containment
	II.D.3 (ALL/1-1-81) Direct Indication of Relief and Safety Valve Position

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II.E.l.2 (PWR/1-1-81) Auxiliary Feedwater System Automatic Initiation and Flow Indication
II.E.3.1 (PWR/1-1-81) Emergency Power Supply for Pressurizer Heaters (Safety-Grade Interfaces
II.E.4.1 (ALL/7-1-81) Dedicated Hydrogen Penetrations
X II.E.4.2 (ALL/1-1-81) Containment Isolation Dependability
II.F.2 (PWR/1-1-81) Instrumentation for Detection of Inadequate Core Cooling
II.G.l (PWR/l-1-81) Emergency Power for Pressurizer Equipment (Safety-Grade Interfaces)
II.K.2.10 (PWR/B&W/7-1-81) Safety-Grade Anticipatory Reactor Trip
II.K.3.9 (PWR/W/1-1-81) PID Controller Modification (If Hardware Change Involved)
II.K.3.12 (PWR/W/1-1-81) Anticipatory Reactor Trip upon Turbine Trip
II.K.3.13 (BWR/GE/7-1-81) Separation of HPCI and RCIC Initiation Signals
II.K.3.15 (BWR/GE/7-1-81) Prevention of Spurious Isolation of HPCI and RCIC Systems
II.K.3.19 (BWR/GE/7-1-81) Interlock on Recirculation Pump Loop
II.K.3.21 (BWR/GE/7-1-81) Restart of Core Spray and LPCI Systems (If Hardware Changed Out)
II.K.3.27 (BWR/GE/7-1-81) Provide Common Reference Level for Vessel Level Instrumentation (If Hardware Changed Out)

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DIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

EQUIPMENT ITEM NO. 109

ACCELEROMETER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

ENDEVCO MODEL 2273AM20

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 109

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER SAFETY AND PORV VALVE POSITION INDICATOR

(YE-100A-1, -2; -100B-1, -2; -100C-1, -2; -101A-1, -2;

101B-1, -2)

LICENSEE SUBMITTAL: SCEW(S): T-9 THROUGH T-18 [3]

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) New Item

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, 41
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
Astalled TMI Lessons Learned Implementation	6a, 60

Astalled TMI Lessons Learned Implementation Equipment Summary

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

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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 informat outstanding qualification deficience	
The Licensee (has/hes 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
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 m X 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
	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 ronmental qualification.
DESIGNATION OF RESULTANT NRC QUALIFICATE 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



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

			• • •		
					DESIGNATION:
NRC REC	UIREMENTS			<u>2</u>	K = DEFICIENCY
		•		•	
		ce of Qualificati			
			ment and Test Specim	en Establis	shed
		Evaluated Adequa			
			edule Established (I	f Required)	
		ed to Identify Ag			
			on Satisfied (If Req	ured)	
		g Temperature/Pre	essure Exposure:		
	_	rature Adequate			
		ure Adequate			
	Duration A				
		rofile Enveloped			
	_	sure (If Required			
		g Spray Satisfied			
		g Submergence Sat			
		g Radiation Satis			
		g Test Sequence S			·
	_		or Severe Anomalies		
	Any) Satisf			•	
		g Functional Test			
		g Instrument Acci			
			nction Time) Satisfi		
Criter	ia Regardin	g Margins Satisf	ied (NUREG-0588, Cat	I)	·
					,
					DESIGNATION:
NRC QUA	ALIFICATION	CATEGORY	•		X = CATEGORY
I.a		Qualified	•		
I.b			ending Modification		X
II.a		Qualification No	ot Established		
II.b		Not Qualified			
II.c			equirements Except (Qualified Li	ife
		ement Schedule J		* * *	
III.a		Exempt From Qua			
III.b			e of the Qualificati	on Review	
IV	Documenta	tion Not Made Av	ailable		

Page 3a

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

THE GOALINGATION TIEVIEW OF EGON WENT TEM NO. 13

LICENSEE RESPONSE TO NRC SER

3. Endevco - Acoustical Monitoring Accelerometer

Plant ID No.	<u>Model</u>	Worksheet Page No.
YE-VMS-100A-1	2273AM20	10.3-9
YE-VMS-100A-2	2273AM20	10.3-10
YE-VMS-100B-1	2273AM20	70.3-71
YE-VMS-100B-2	2273AM20	10.3-12
YE-VMS-100C-1	2273AM20	10.3-13
YE-VMS-100C-2	2273AM20	10.3-14
YE-VMS-101A-1	2273AM20	10.3-15
YE-VMS-103A-2	2273AM20	10.3-16
YE-VMS-101B-1	2273AM20	10.3-17
YE-VMS-101B-2	2273AM20	10.3-18

The monitoring equipment is currently in the process of being qualified to the requirements of IEEE 323-1974. The information on the worksheets is the levels to which the equipment will tested.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

EQUIPMENT ITEM NO. 110

HARDLINE COAXIAL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

ENDEVCO MODEL 3075M6

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 110

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALVE POSITION INDICATION SIGNAL TRANSMISSION (LOW NOISE

CABLE)

LICENSEE SUBMITTAL: SCEW(S): T-19 [3]

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
nstalled TMI Lessons Learned Implementation Equipment Summary	-6a, 6b

Maintenance and Replacement Schedule Summary 7a,

II.b Not Qualified

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 48 Z

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 11

SUMM	ARY OF LICENSEE RESPONSES TO THE NR	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 informatoutstanding qualification deficience	
	The Licensee (has/ has net) 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.
	X Corrective action specified by	the Licensee:
	Equipment replacement with Equipment modification Equipment relocation above	submergence level
	Relocate or shield equipment Verify qualification by add	
	Equipment relocation to a m	
	<pre>Qualification testing of eq Other (</pre>	uipment in progress
	-	information for this equipment item s for justification for interim
		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.
	GNATION OF RESULTANT NRC QUALIFICAT RCLED ITEM ONLY: (See Section 3 of	TION EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
	Qualified	II.c Qualified Life Deficiency
	Modification Qualification Not Established	III.a Exempt III.b Not in Scope
a	. Ardititediton wor parabitaned	TITON MOUTH SCORE

IV

Documentation Not Available



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SOMEAN	CI POICE
NRC REQUIREMENTS	DESIGNATION: X = DEFICIENCY
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	i)
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	X
II.a Equipment Qualification Not Established	
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	

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

4. Endevco Supplied Cable - Acoustical Monitoring Equipment

Plant ID No.

Model

Worksheet Page No.

Low Noise Cable

3075M6

10.3-19

The cable is currently in the process of being qualified to the requirements of IEEE 323-1974. The information on the worksheet reflects the levels to which the equipment will be tested.

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FRC Task No. 482

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

EQUIPMENT ITEM NO. 111

CHARGE PREAMPLIFIER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

UNHOLTZ-DICKIE MODEL 22CA-2TR

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 111

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER PORV AND SAFETY VALVE POSITION INDICATION

(YY-VMS-100A-1, -2; B-1, -2; C-1, -2; -101A-1, -2; B-1,

-2)

LICENSEE SUBMITTAL: SCEW(S): T-20 THROUGH T-29 [3]

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) New tem

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
nstalled TMI Lessons Learned Implementation Equipment Summary	-6a, 6b
Maintenance and Replacement Schedule Summary	Ja, 7b, ?c−

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FRC Assignment No. 13
FRC Task No. 482

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APP	LICABLE
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.	
X The Licensee (has/massed) proposed a corrective action for this equi item whose qualification has not been fully established.	pment
Justification for interim operation (has/has not) been provided be Licensee for this equipment item.	y the
X 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 X Qualification testing of equipment in progress Other (·)
The Licensee has provided other information for this equipment it that can be construed as a basis for justification for interim operation.	em
The Licensee (nas/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.	ation
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON F-CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend)	EVIEW
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	

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FOR	RM
NRC REQUIREMENTS	DESIGNATION: 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 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 I 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	

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

LICENSEE RESPONSE TO NRC SER

2. Unholtz-Dickie - Acoustical Monitoring Preamplifier

Plant ID No.	Model Model	Worksheet Page No.
YY-VMS-100A-1	22CA-2TR	10.3-20
YY-VMS-100A-2	22CA-2TR	10.3-21
YY-VMS-100B-1	22CA-2TR	70.3-22
YY-VMS-100B-2	22CA-2TR	10.3-23
YY-VMS-100C-7	22CA-2TR	70.3-24
YY-VMS-100C-2	22CA-2TR	70.3-25
YY-VMS-101A-1	22CA-2TR	70.3-26
YY-VMS-101A-2	22CA-2TR	10.3-27
YY-VMS-101B-1	22CA-2TR	70.3-28
YY-VMS-101B-2	22CA-2TR	10.3-29

The monitoring equipment is currently in the process of being qualified to the requirements of IEEE 323-1974. The information on the worksheets is the levels to which the equipment will be tested.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1/2

EQUIPMENT ITEM NO. 112

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

VALCOR MODEL V526

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 112

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): POST-ACCIDENT SAMPLING (HCV-SS-100A, -100B)

LICENSEE SUBMITTAL: SCEW(S): 10.3-38, -39 [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) New Fem

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	5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 51, 5j
Installed TMI Lessons Learned Implementation Equipment Summary	6a , 6b

Maintenance and Replacement Schedule Summary

7a, 7b, ?c

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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.
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 (nas/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 III.a Qualification Not Established III.b Not in Scope II.b Not Qualified IV Documentation Not Available



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FRC Assignment No. 13
FRC Task No. 482

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	EQUIPMENT ENVIRONMENTAL QUALIFICATION BONEMAXI TOX	=
		DESIGNATION:
NRC REQU	UIREMENTS	X = DEFICIENCY
Document	ted Evidence of Qualification Adequate	
	e Similarity Between Equipment and Test Specimen Establi	
Aging De	egradation Evaluated Adequately	<u> </u>
	ed Life or Replacement Schedule Established (If Required	·
	Established to Identify Aging Degradation a Regarding Aging Simulation Satisfied (If Required)	
	a Regarding Aging Simulation Satisfied (if Required) a Regarding Temperature/Pressure Exposure:	
	Regarding Temperature/Fressure Exposure: Peak Temperature Adequate	
	Peak Pressure 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	
Criteri	a Regarding Instrument Accuracy Satisfied	
	ration Margin (1 hour + Function Time) Satisfied	
Criteri	a Regarding Margins Satisfied (NUREG-0588, Cat. I)	-
		DESIGNATION:
NRC QUA	LIFICATION CATEGORY	X = CATEGORY
I.a	Equipment Qualified	Х
I.a I.b	Equipment Qualification Pending Modification	
II.a	Equipment Qualification Not Established	
II.a	Equipment Not Qualified	
II.c	Equipment Satisfies All Requirements Except Qualified I	ife
	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. 112

LICENSEE RESPONSE TO NRC SER

Valcor - Solenoid Operated Valves

Plant ID No.	<u>Model</u>	Worksheet Page No
		40.0.00
TV-SS+102A	V526-5683-19	10.3-32
TV-SS-102B	V526 - 5683 -1 9	10.3-33
TV-SS-106A	V526-5683-19	10.3-34
TV-SS-106B	V526-5683-19	70.3-35
HCV-SS-107D	V526-5683-19	10.3-36
HCV-SS-102A	7526-5683- 1 9	10.3-37
HCV-SS-100A	V526-5683-19	10_3-38
HCV-SS-100B	V526-5683-19	30.3- 39
TV-SS-103A	₩526 - 568 3-1 9	10.3-40
TV-SS-103B	V526-5683-19	70.3-41
S1-XCV-1401A	V526-5683-19	10.3-62
S1-XCV-1401B	V526-5683-19	10.3-63
S1-XCV-1422A	V526-5683-19	70.3-64
S1-XCV-1422B	Y526-5683-19	10.3-65
TV-GW-100	V526-5695-31	10.3-76
TV-GW-101	V526-5695-31	10.3-77
TV-GW-102	V526-5695-31	10.3-78
-		10.3-79
	V526-5695-31	10.3-80
	V526-5695-31	10.3-81
TV-GW-106	V526-5695-31	10.3-82
TV-GW-107	V526-5695-31	10.3 - 83
TV-GW-101 TV-GW-102 TV-GW-103 TV-GW-104 TV-GW-105 TV-GW-106	V526-5695-31 V526-5695-31 V526-5695-31 V526-5695-31 V526-5695-31 V526-5695-31	10.3-77 10.3-78 10.3-79 10.3-80 10.3-81 10.3-82

The vendor has been contacted for qualification test data.

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FRC Task No. 482

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FOUT DATENIE ENTIT DO MENICAL OUAL TELCATION DEVITED				
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW				
Criteria: DOR Guidelines; NUREG-0588, Cat. IX; NUREG-0588, Cat. II				
NRC REQUIREMENTS DEFICIENCY				
WITH SECTION REFERENCE	LICENSEE	QUALIFICATION (X (DOCUMENTATION NOTE		
(DOR/0588-I/0588-II)	SUBMITTAL	DOCOMENTATION NOTE	110.7	
EQUIPMENT DESCRIPTION	Solenoid	!		
Equipment Type	Yalve	Solenoid Valve		
Manufacturer's Name	: !Valcor	77-1 77		
(5.2.2/-/-)	! Engineering	Valcor Engineering		
	:	1 2 2 2		
Model Number (5.2.2/-/-)	!V526-	V52600 - 5291-2		
Serial Number	: 5683-19 : 3nd	i ,		
Sellal Number	V526- 5295-31	1		
Features/Mounting	5295-31	!		
(5.2.6/-/-)		<u> </u>		
Connections/Interforce				
Connections/Interfaces (5.2.6/-/-)	1			
(3:2:0, , ,	Containment			
Location/Elevation	! and .	·		
!Aux. Bldg.!			•	
Equipment ID No.	45 Lion2			
QUALIFICATION REPORT	į.	!	•	
(8.0/5.0/5.0)	1	!		
Report ID Number	not cited	QR-52600-5940-2		
Report Date	1	05-July-1979		
	\$:		
Issued by	•	Valcor Engineering Corp.		
Dramauad for	:			
Prepared for	1	Isomedix Inc.		
Referenced Reports		IFR-V877-01		
	:			
Qualification Method	:	Type Test		
(5.1, 5.3/2.1, 2.4/2.1, 2.4)				
QUALIFICATION TEST PROGRAM	!			
Functional Test Description	:	Insulation Resistance		
(5.2.5/2.2.9/2.2.9)		Tests		
Operating Conditions	•	108 VAC		
(-/2.2.10/2.2.10)	:	44 psig N ₂		
Load/Cycles/Voltage/	!	:		
Current/Freq. ! !				

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NRC REQUIREMENTS WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	DEFICIENCY (X OR
(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE NO.)
	!	Pass Functional Tests,	1
Acceptance Criteria		Demonstrate Satisfactory	:
(5.2.5/2.2.1/2.2.1)	:	Operability	:
Accuracy (5.2.5/-/-)	1	ND .	:
Number of Specimens	1	1	1
Test Instruments Calibrated	•	Yes	1
	Active;	• •	•
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	Cont.		1
Test Duration (5.2.1/-/-)	Post Accident Sampling	31 Days	:
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	sys tem	t • 9	: :
Required Function Time	IZO days	• • •	1
Test Sequence (General)	•	1	
(5.2.3/2.3.1/2.3.1)	!		
Test Sequence (NUREG-0588,	:	: ! TA/OPER/RAD/SEIS/STM+CHS	P!
Cat. I) (-/2.3.1/-)	•	1	1 • •
1. Representative Sample	!	1	9
2. Baseline Data	, e		•
3. Performance Extremes		9	é I
4. Thermal Aging		•	•
5. Radiation Aging 6. Wear Aging	•	ō 1	į
7. Vibration/Seismic	•	•	1
8. DBE Exposure	1	•	
9. Post-DBE Exposure	1		!
10. Inspection	:	:	:
Aging	:	: 318 deg.F, 172 Hr. To	1
(5.2.4, 7.0/4.0/4.0)		: Simulate	:
Thermal Aging/Basis	8	40 Yrs. @ 120 deg.F	1 0 1
Material Aging	:	MR52600-515-2	1
Evaluation (7.0/-/-)	!	Additional 442 Hr.@318°F to age polyimide to 40 Y	
Materials Susceptible	1		•
(Thermal) (5.2.4, 7.0/-/-)		! Coil Materials	! 6
	i	•	•

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

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	! !	! ! ! 50 x 10 ⁶	: :
Radiation Aging, Dose Rate	1	. 0.75 Mrd/h	i ·
Radiation Aging, Method	1	Test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	1	!	:
Operational Aging (-/4.2/-)	1	7500 cycles 44psig N ₂	
Other Age Conditioning (-/4.2/-)	!	Seismic Simulation	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	none	: 40 Yr./40 Yr. :	:
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	• • • • • • • • • • • • • • • • • • •		:
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	1	! !	! ! !
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 (not required)	! ! !	:	:
4. Time (+10%, +1 hour + function time minimum)	:	!	:

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NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
¥ ≥	: :		
ACCIDENT CONDITIONS	1 1		!
	1		<u>.</u>
LOCA/MSLB/HELB/Uncontrolled	!		ļ
(4.1, 4.2, 4.3.1, 4.3.3/		•	•
1.1, 1.2, 1.5/1.1, 1.2, 1.5)			:
Padiation Tuno	i i	GAMMA	ė I
Radiation Type	•	GAMMA .	e E
Radiation Dose (rd)	13.7x 107rd	150 x 10 ⁶	•
(4.1.2/1.4/1.4)	134/X 10 10	150 X 10	1
	1		1
Radiation Dose Rate (rd/hr)	1 1	0.75 x 10 ⁶ . Test	:
Radiation Qual. Method	1		!
(5.3.1/-/-)	: :	<i>5</i>	!
1	!		!
Proximity to Concentrated	!		1
Radiation	1	•	
(4.1.2/1.4.6/1.4.6)			9
			•
Equipment Susceptible to	:		1
Beta Radiation (4.1.2/-/-)			ē D
Radiation Dose (Normal +	· · · · · · · · · · · · · · · · · · ·	200×10^6 rad	•
Accident) (4.1.2/-/-)	3.7x10 rd.	200 % 10 1ad	1
, ,, , ,	1		•
Plateout Dose Considered	!	NA	
(-/1.48/1.48)	1 1		1
	:		9
Gamma + Beta Dose (rd)	!	NA	1 0
(4.1.2/1.4.7/1.4.7)	!		↑ .

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1	[2]			
1	NRC REQUIREMENTS			DEFICIENCY
	WITH SECTION REFERENCE	LICENSEE	QUALIFICATION	(X OR
1	(DOR/0588-I/0588-II)	SUBMITTAL	DOCUMENTATION	NOTE No.)
١		: .	•	:
1	ENVIRONMENTAL PROFILE	!		<u> </u>
1	OF ACCIDENT CONDITIONS	:		:
ļ			•	•
	Rate of Temp./Press.	.	Not Stated But Within	•
1	Increase	:	3 - 5 Min.	
	Peak: °F/psig/RH/Time	275/45/-/301711	346/113/100/3h	1
1	reak: r/ps/g/kh/lime	land of	346/113/100/3h	•
1	Decrease To: °F/psig/RH/Time	*4/3/43//	₹	•
۱	Decrease 10: r/psig/Rh/11me	150/1,0/-/30min.	335/113/100/3h	•
١	Decrease To: °F/psig/RH/Time	150	: 215/60/100//	!
1	beerease to. Typoly, lan lime	150 1.0/-/47hr.	315/69/100/4h	
ı	Decrease To: °F/psig/RH/Time		1272/20/100//1	1
1	20010020 101 1, F013, 1113, 111111	150/1.0/-/120days	272/28/100/4h	!
İ	Equipment Surface Tempera-	!	245/13/100/27.5d	!
١	ture (MSLB) (-/1.2.5.C,	!	243/13/100/27.30	!
İ	2.2.6/1.2.5.C, 2.2.6)	!	!	!
		!	1	:
T	Spray Qualification Method	!	Test (Simultaneous)	!
۱	(5.3.2/1.3, 2.2.8/1.3,	!		!
١	2.2.8)		!	!
ł		: 'Y- & ^-	:	: 1
ł	Spray Composition	!H3 BO3	2200 ppm Boron	•
ı	(4.1.4/1.3, 2.2.8/	(2000 - 2200 pm)	нзвоз	•
ļ	1.3, 2.2.8)		0.064m Na ₂ S ₂ O ₃ NaOH, ph=1	0 🕻 5
l	Spray Density (gpm/ft ²)	NaOH! busser	•	•
1	spray bensity (gpm/rt-)		0.15 gpm/ft ²	•
1	Spray Duration	PK 8.5-11	1	
l	- F-11/ 2-11 -1-11	1 4 hr.	44,640 min.	!
ı	Submergence Duration	1.	:	1
l	(4.1.3/2.2.5/2.2.5)	. NA	!	!
		1	!	1
ĺ	In-Leakage Considered	!	!	!
	(5.2.6, 5.3.2/-/-)	!	•	:
		!	1.	!
	Time to Submergence	! NA	!	
1		!	!	!
1	Dust Environment			
1	(-/2.2.11/2.2.11)	:	•	:
1				

)1 14. NRC Contract No. NRC-03-79-118
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•	It was determined by analysis that polyimide would require additional
	
—	thermal aging of 442 hr. @ 318°F to simulate 40 yrs @ 120°F. All other
	coil materials were subsequently overaged during the additional thermal
	aging.
_	
	· · · · · · · · · · · · · · · · · · ·
	· · · · · · · · · · · · · · · · · · ·
_	
	<u></u>

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

EQUIPMENT ITEM NO. 113

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL

VALCOR MODEL V526

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 113

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLING VALVE (TV-SS-102A.

-106A, -103A; HCV-SS-101D, -102A)

LICENSEE SUBMITTAL: SCEW(S): 10.3-32, -34, -40, -36, -37 [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 New item

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

nstalled TMI Lessons Learned Implementation 6a, 6b

Equipment Summary

Maintenance and Replacement Schedule Summary 7a, 7b, 3c

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FRC Assignment No. 13
FRC Task No. 482

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SUMMARY OF LICENSEE RESPONSES TO THE NRC SER - ONLY CHECKED ITEMS ARE APPLICAB
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 (nas/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. 113

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 Priteria 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: X = CATEGORYNRC 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 Review ΙV Documentation Not Made Available

See equipment item no. 112 for evaluation.

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

113

No.

LICENSEE RESPONSE TO NRC SER

6. Valcor - Solenoid Operated Valves

Plant ID No.	<u>Model</u>	Worksheet Page
TV-SS-102A	V526 <i>-</i> 5683-19	10.3-32
TV-SS-102B	V526-5683-19	10.3-33
TV-SS-106A	V526-5683-19	10.3-34
TV-SS-106B	V526-5683-19	10.3 - 35
HCV-SS-10 1D	V526 - 5683-19	10.3-36
HCV-SS-102A	V526-5683-19	10.3-37
HCV-SS-100A	V526-5683-19	10_3-38
HCV-SS-100B	V526-5683-19	10.3-39
TV-SS-103A	V526-5683-19	10.3-40
TV-SS-103B	V526 - 5683-19	70.3-41
S1-XCV-1401A	V526-5683-19	10.3 -6 2
S1-XCV-1401B	V526-5683-19	10.3-63
S1-XCV-1422A	V526-5683-19	10.3-64
S1-XCV-1422B	V526-5683-19	10.3-65
TV-GW-100	V526-5695-31	10.3-76
TV-GW-101	V526-569 5-31	10 . 3 -7 7
TV-GW-102	V526-5695-31	10.3-78
TV-GW-103	V526-5695-31	10.3-79
TV-GW-104	V526-5695-31	10.3-80
TV-GW-105	V526-5695-31	10.3-81
TV-GW-106	V526-5695-31	70.3-82
TV-GW-107	V526-5695-31	10.3- 83

The vendor has been contacted for qualification test data.

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ITEM NO. 114

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING

VALCOR MODEL V526

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 114

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): HYDROGEN ANALYZER CONTAINMENT ISOLATION (TV-GW-100

THROUGH -107; TV-SS-102B, -103B, -106B; S1-XCV-1401A, B;

-1422A, B

LICENSEE SUBMITTAL: SCEW(S): 10.3-76 THROUGH -83; 10.3-33, -35, -41, -62,

-63, -64, -65 [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 New Len

Maintenance and Replacement Schedule 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, 5e, 5d, 5e, 5f, 5g, 5h, 51, 5j
stalled TMI Lessons Learned Implementation Equipment Summary	6a, 6D
Equipment Environmental Qualification Summary Forms Licensee Response to NRC SER System Consideration Review Equipment Environmental Qualification Review Astalled TMI Lessons Learned Implementation	2 3a, 3b, 3c, 3d 4a, 4b, 4c, 4d, 4e, 5a, 5b, 5e, 5d, 5e,

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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 equipmentem 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 Other (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.			
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 equipme 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 — .)	SUMMA	ARY OF LICENSEE RESPONSES TO THE NR	C 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 equipme 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 — .)			
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.	т	The Licensee (has/has not) provided	a response to the SER concerns.
outstanding qualification deficiencies. The Licensee (has/has not) proposed a corrective action for this equipme item whose qualification has not been fully established.	q	qualified and/or will function when	
item whose qualification has not been fully established.		-	
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.			
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.	-	-	
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	_	Corrective action specified by	the Licensee:
that can be construed as a basis for justification for interim operation. The Licensee (nas/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.		Equipment modification Equipment relocation above Relocate or shield equipmen Verify qualification by add Equipment relocation to a m Qualification testing of eq	submergence level t from radiation source itional (testing/analysis) ild environment
corrective action. (Schedule for accomplishing the corrective action) The Licensee states that the equipment item does not require qualification.		that can be construed as a basi	
	<u>-</u>	corrective action. (Schedule f	or accomplishing the corrective
DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVI - 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	I.b II.a	Modification Qualification Not Established	III.a Exempt III.b Not in Scope



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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

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 Equipment Exempt From Qualification III.a III.b Equipment Not in the Scope of the Qualification Review IV Documentation Not Made Available See equipment item no. 112 for evaluation

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

LICENSEE RESPONSE TO NRC SER

Valcor - Solenoid Operated Valves

Plant ID No.	<u>Model</u>	Worksheet Page No.
TV-SS-102A	V526-5683-19	10.3-32
TV-SS-102B	V526-5683-19	10.3-33
TV-SS-106A	V526-5683-19	10.3-34
TV-SS-106B	V526-5683-19	10.3-35
HCV-SS-101D	V526-5683-19	10.3-36
HCV-SS-102A	7526-5683-19	10.3 - 37
HCV-SS-100A	V526-5683-19	10.3-38
HCV-SS-100B	V526-5683-19	10.3- 39
TV-SS-103A	₩526 - 568 3-1 9	10.3-4 0
TV-SS-103B	V526-5683-19	70.3-41
S1-XCV-1401A	V526-5683-19	10.3-62
S1-XCV-1401B	V526-5683-19	10.3-63
S1-XCV-1422A	V526-5683-19	10.3-64
S1-XCV-1422B	7526-5683 -1 9	10.3-65
TV-GW-100	V526 - 5695 -31	70.3-76
TV-GW-101	V526-5695-31	10.3 - 77
TV-GW-102	V526-5695-31	10.3-78
TV-GW-103	V526-5695-31	10.3-79
TV-GW-104	V526-5695-31	10.3- 80
TV-GW-105	V526-5695-37	10.3-81
TV-GW-106	V526-5695-31	10.3- 82
TV-GW-107	V526-5695-31	10.3- 83

The vendor has been contacted for qualification test data.



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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

EQUIPMENT ITEM NO. 115

LIMIT SWITCH LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

GORDOS MODEL MR8901

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 115

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): RHR SYSTEM OUTLET POST-ACCIDENT SAMPLING VALVE

(ZS-SS-100A-1, -2; -100B-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 10.3-54, -55, -56, -57 [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) New item

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	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
nstalled TMI Lessons Learned Implementation Equipment Summary	-6a, 6b-

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

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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) specifica qualified and/or will function when environmental service conditions.	
	The Licensee has presented informatioutstanding 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/has not) been provided by the
-	Corrective action specified by t	he Licensee:
	Equipment replacement with on Equipment modification Equipment relocation above s	
	Relocate or shield equipment	from radiation source
	Verify qualification by addi Equipment relocation to a mi	
	Qualification testing of equalification testing equalification e	
	The Licensee has provided other that can be construed as a basis operation.	information for this equipment item for justification for interim
-	The Licensee (nas/has not) provice 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.
	GNATION OF RESULTANT NRC QUALIFICAT RCLED ITEM ONLY: (See Section 3 of	ON EVALUATION CATEGORY BASED ON REVIEW this TER for Legend)
I.a	Qualified	II.c Qualified Life Deficiency
	Modification	III.a Exempt
	Qualification Not Established Not Qualified	III.b Not in Scope IV Documentation Not Available
	- · · · · · · · · · · · · · · · · · · ·	



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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
Documented Evidence of Qualification Adequate	<u>_X</u>
Adequate Similarity Between Equipment and Test	Specimen Established
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Establi	shed (If Required)
Program Established to Identify Aging Degradat	_
Criteria Regarding Aging Simulation Satisfied	
Criteria Regarding Temperature/Pressure Exposu	
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 And	omalies
(If Any) Satisfied	· .
Criteria Regarding Functional Testing Satisfie	
Criteria Regarding Instrument Accuracy Satisfi	.ed
Test Duration Margin (1 hour + Function Time)	
Criteria Regarding Margins Satisfied (NUREG-05	88, Cat. I)
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
I.a Equipment Qualified	
I.b Equipment Qualification Pending Modifi	cation
II.a Equipment Qualification Not Establishe	ed X
II.b Equipment Not Qualified	:
II.c Equipment Satisfies All Requirements E	Except 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	· ·

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FRC Project No. C5257
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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 15

LICENSEE RESPONSE TO NRC SER

7. Gordos - Limit Switches

Plant ID No.	Model	Worksheet Page No.
ZS-SS-102A-1	MR8907	70.3-42
ZS-SS-102A-2	MR8907	70.3-43
ZS-SS-102B-1	MR8901	70.3-43
ZS-SS-102B-2	MR8901	70 -3-45
ZS-SS-106A-7	MR8903	70 -3 - 46
ZS-SS-106A-2	MR8901	10 L3 - 40
ZS-SS-106B-7	MR8901	70_3-48
ZS-SS-106B-2	MR8907	70 . 3 - 49
ZS-SS-101D-7	MR8901	10 - 3 - 50
ZS-SS-101D-2	MR8901	10.3-51
ZS-SS-102A-3	MR8907	70.3-52
ZS-SS-102A-4	MR8907	70.3-52 70.3-53
ZS-SS-100A-1	MR8901	10.3-54
ZS-SS-100A-2	MR8901	10.3-55
ZS-SS-100B-1	MR890 7	70.3-56
ZS-SS-100B-2	MR890 1	10.3-57
ZS-SS-103A-1	MR8907	10.3-5 8
ZS-SS-103A-2	MR8901	10.3-59
ZS-SS-103B-1	MR8901	70.3-60
ZS-SS-103B-2	MR8907.	70.3-67
ZS-XCV-1401A-1	MR8901	10.3-66
ZS-XCV-1401A-2	MR8901	10.3-67
ZS-XCV-1401B-1	MR8901	70.3-68
ZS-XCV-1401B-2 ZS-XCV-1422A-1	MR8901	10.3-69
2S-XCV-1422A-2	MR8907	10.3-70
2S-XCV-7422B-7	MR8901	10.3-71
ZS-XCV-1422B-2	MR8901	10.3-72
ZS-GW-100-1	MR8907	10.3-73
ZS-GW-100-2	MR890 1 MR890 1	10.3-84
ZS-GW-101-1	MR8901	10.3-85
ZS-GW-101-2	MR8901	70.3-86
ZS-GW-102-1	MR8901	10.3-87
ZS-GW-102-2	MR8901	10.3-88
2S-GW-103-1	MR8901	10 _3-89
2S-GW-103-2	MR8907	10.3- 90 10.3- 91
ZS-GW-104-7	MR8901	70.3-91
ZS-GW-104-2	MR8907	70.3-93
ZS-GW-105-7	MR8907	10.3-9 4
ZS-GW-105-2	MR8901	10.3-95
2S-GW-106-1	MR8901	70 . 3-96
ZS-GW-106-2	MR8901	10.3-97
ZS-GW-107-1	MR8901	10.3-98
ZS-GW-107-2	MR8901	10.3-99

The vendor has been contacted for qualification test data.



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

Page la

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

EQUIPMENT ITEM NO. 116

LIMIT SWITCH LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL

GORDOS MODEL MR8901

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 116

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLING VALVE (ZS-SS-102A-1,

-2; -106A-1, -2; -101D-1, -2; 102A-3, -4; 103A-1, -2) LICENSEE SBUMITTAL: SCEW(S): 10.3-42, -43, -46, -47, -50, -51, -52, -53,

-58, -59 [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,

New item Not stated, (Not applicable

Maintenance and Replacement Schedule 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, 4c, 4d, 4c, 4£
Equipment Environmental Qualification Review	5 a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
stalled TMI Lessons Learned Implementation Equipment Summary	6ar 6b-

NRC Contract No. NRC-03-79-118-FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482

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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. 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 (•
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item whose qualification has not been fully established.		
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.a Qualified Life Deficiency III.a Exempt III.a Exempt III.a Exempt III.b Not in Scope		,
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Equipment relocation to a mild environmentQualification testing of equipment in progressOther (Relocate or shield equipment from radiation source
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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	-	corrective action. (Schedule for accomplishing the corrective
- 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		
I.b Modification III.a Exempt II.a Qualification Not Established III.b Not in Scope		
II.a Qualification Not Established III.b Not in Scope		
		-



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PUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

·	DESIGNATION: X = DEFICIENCY
NRC REQUIREMENTS	A - DEFICIENCI
Documented Evidence of Qualification Adequate	· X
Adequate Similarity Between Equipment and Test Specimen Establi	.shed
Aging Degradation Evaluated Adequately	
Qualified Life or Replacement Schedule Established (If Required	1)
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	<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	
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)	<u> </u>
	P=07011 ==011
	DESIGNATION:
NRC QUALIFICATION CATEGORY	X = CATEGORY
T - Designant Ouglisies	
I.a Equipment Qualified I.b Equipment Qualification Pending Modification	
	X _
II.a Equipment Qualification Not Established II.b Equipment Not Oualified	
<pre>II.b Equipment Not Qualified II.c Equipment Satisfies All Requirements Except Qualified I</pre>	ife
or Replacement Schedule Justified	
III.a Equipment Exempt From Qualification	enterproprietation to the second
III.b Equipment Not in the Scope of the Qualification Review	
IV Documentation Not Made Available	
27 Doddaenederon not made mydrause	

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FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

7. Gordos - Limit Switches

		•
Plant ID No.	Model	Worksheet Page No.
ZS-SS-102A-1	MR8907	40.2.40
ZS-SS-102A-2	MR8907	10_3-42
ZS-SS-102B-1	MR8901	70.3-43
ZS-SS-102B-2	MR8907	70 _3-44
ZS-SS-106A-1	MR8901	70 - 3 - 45
ZS-SS-106A-2	MR8901	70_3-46
2S-SS-106B-1	MR8901	70.3-47
ZS-SS-106B-2	MR8907	70_3-48
ZS-SS-101D-1	MR8901	70_3-49
ZS-SS-101D-2	MR8901	10.3-50
ZS-SS-102A-3	MR8907	10.3-51
ZS-SS-102A-4	MR8907	70.3-52
ZS-SS-100A-1	MR8901	70.3-53
ZS-SS-100A-2	MR8901	70 - 3 - 54 -
ZS-SS-100B-1	MR3907	10.3-55
ZS-SS-100B-2	MR8903	70_3-56
ZS-SS-103A-1	MR8907	70.3-57
ZS-SS-103A-2	MR8901	70.3-58
ZS-SS-103B-1	MR8901	10.3-59
ZS-SS-103B-2	MR8907	70.3-60 70.3-61
ZS-XCV-1407A-1	MR8901	10.3-66
ZS-XCV-1407A-2	MR8901	10.3-67
ZS-XCV-1407B-7	MR8901	70.3-68
ZS-XCV-1401B-2	MR8901	10.3 - 69
ZS-XCV-1422A-1	MR8901	70.3 - 70
ZS-XCV-1422A-2	MR3907	10.3-71
ZS-XCV-1422B-1	MR8907	70.3-72
ZS-XCV-1422B-2	MR8907	10.3-72 10.3-73
ZS-GW-100-1	MR8907	70.3-84
ZS-GW-100-2	MR8901	10.3-85
ZS-GW-101-7	MR8901	70.3 - 86
ZS-GW-101-2	MR8901	10.3-87
ZS-GW-102-7	MR8907	70.3-88
ZS-GW-102-2	MR8901	70.3-89
ZS-GW-103-1	MR890 1	70.3-90
2S-GW-103-2	MR8907	70.3-91
ZS-GW-104-1	MR8901	70.3-92
ZS-GW-104-2	MR8907	70.3-93
ZS-GW-105-7	MR8901	70.3-94
ZS-GW-105-2	MR8901	10.3-95
2S-GW-106-1	MR8901	10.3-96
ZS-GW-106-2	MR8901	10.3-97
ZS-GW-107-1	MR8901	10 .3-9 8
ZS-GW-107-2	MR8901	70.3- 99
	•	

The vendor has been contacted for qualification test data.

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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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

EQUIPMENT ITEM NO. 117

LIMIT SWITCH LOCATED IN THE AUXILIARY BUILDING

GORDOS MODEL MR8901

REQUIRED OPERATING TIME: 120 DAYS LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLING VALVE (ZS-SS-102B-2,

-1; -106B-1, -2; 103B-1, -2; ZS-XCV-1401A-1, -2;

-1401B-1, -2; 1422A-1, -2; -1422B-1, -2; ZS-GW-100-1, -2;

-101-1, -2; -102-1, -2; -103-1, -2; -104-1, -2; -105-1,

-2; -106-1, -2; -107-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 10.3-45, -44, -48, -49, -60, -61, -66 THROUGH

-69, -70 THROUGH -73, -84 THROUGH -99 [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) New item

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
stalled TMI Lessons Learned Implementation Equipment Summary	6 a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7c

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
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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.	
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 (nas/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	£



NRC Contract No. NRC-03-79-118
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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

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 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 d.III Equipment Not in the Scope of the Qualification Review VI Documentation Not Made Available

NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482

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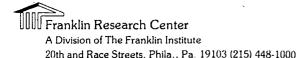
EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

LICENSEE RESPONSE TO NRC SER

7. Gordos - Limit Switches

			•
	Plant ID No.	<u>Model</u>	Worksheet Page No.
	ZS-SS-102A-1	MR8901	
	ZS-SS-102A-2	MR8901	10 - 3 - 42
	ZS-SS-102B-1	MR8901	70 - 3 - 43
	ZS-SS-102B-2	MR8907	70_3-44
	ZS-SS-106A-1	MR8901	70_3-45
	ZS-SS-106A-2	MR8901	70_3-46
	ZS-SS-106B-1	MR8901	70.3-47
	ZS-SS-106B-2	MR8907	70_3_48
	ZS-SS-101D-1	MR8901	70.3-49
	ZS-SS-101D-2	MR8907	10.3-50 10.3-51
	ZS-SS-102A-3	MR8907	·
	ZS-SS-102A-4	MR3907	10.3-52 10.3-53
	ZS-SS-100A-1	MR8901	10 - 3-53
	ZS-SS-100A-2	MR8901	70.3-54
	ZS-SS-100B-1	MR3901	70 - 3 - 5 6
	ZS-SS-100B-2	MR8907	70.3-57
	ZS-SS-103A-1	MR8907	10.3-58
'	ZS-SS-103A-2	MR8907	70.3-59
	ZS-SS-103B-1	MR8901	70.3-60
	ZS-SS-103B-2	MR8907	10.3-61
	ZS-XCV-1401A-1	MR8901	10.3-66
93.2	ZS-XCV-1401A-2	MR8901	10.3-67
•	ZS-XCV-1407B-1	MR8901	70.3-68
	ZS-XCV-140 1B-2	MR8907	70.3-69
	ZS-XCV-1422A-1 ZS-XCV-1422A-2	MR8907	70.3-70
	ZS-XCV-1422A-2 ZS-XCV-1422B-1	MR3907	10.3-77
	ZS-XCV-1422B-2	MR8907	10.3-72
	2S-GW-100-1	MR8901	10.3-73
	2S-GW-100-7	MR8901	70.3-84
	ZS-GW-101-1	MR8901 MR8903	10.3-85
	ZS-GW-101-2	MR8901	70.3 - 86
	ZS-GW-102-7	MR8901	10.3-87
	ZS-GW-102-2	MR8901	10.3-88
	2S-GW-103-7	MR8901	70.3-89 70.3-90
	ZS-GW-103-2	MR8901	10.3-91
	ZS-GW-104-7	MR8901	70.3 - 92
	ZS-GW-104-2	MR8907	10.3-93
	ZS-GW-105-7	MR8901	10.3-94
	ZS-GW-105-2	MR8901	10.3-95
	ZS-GW-106-7	MR8901	10_3-96
	2S-GW-106-2	MR890 1	10.3-97
	ZS-GW-107-1	MR890 1	10 _3- 98
Ì	ZS-GW-107-2	MR8901	10.3-99
l			

The vendor has been contacted for qualification test data.



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FRC Task No. 483

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UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 418

EQUIPMENT ITEM NO. 118

HYDROGEN ANALYZER LOCATED IN THE AUXILIARY BUILDING

COMSIP-DELPHI MODEL K-III

REQUIRED OPERATING TIME: 120 DAYS LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT HYDROGEN ANALYZER (H2A-GW-101-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 10.3-74, -75 [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, 4f
Equipment Environmental Qualification Review	5a, 5b, 5c, 5d, 5e, 5f, 5 g, 5h, 5i, 5j
nstalled TMI Lessons Learned Implementation Equipment Summary	6a, 6b
Maintenance and Replacement Schedule Summary	7a, 7b, 7s

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NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482

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The Licensee (has/aas_not) provided a response to the SER concerns. The Licensee (has/aas_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 of shield equipment from radiation source Verify qualification 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.b Not in Scope DOCUMENTATION ON Available		·
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	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. _ 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		
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.	The	Licensee (has/has not) provided a response 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. 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 JII.b Modification Not Established III.b Not in Scope	qua	lified and/or will function when exposed to the applicable DBE
item whose qualification has not been fully established.		_
Licensee for this equipment item. Corrective action specified by the Licensee: Equipment replacement with qualified equipment Equipment modification Equipment relocation above submergence level Relocate of 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.d Qualification Not Established III.b Not in Scope		7 7
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 I.4 Qualification Not Established III.b Not in Scope		•
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 (Corrective action specified by the Licensee:
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 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
corrective action. (Schedule for accomplishing the corrective action		that can be construed as a basis for justification for interim
and/or should be exempted from environmental qualification. DESIGNATION OF RESULTANT NRC QUALIFICATION EVALUATION CATEGORY BASED ON REVIEW - CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend) I.a Qualified II.c Qualified Life Deficiency I.b Modification III.a Exempt I.a Qualification Not Established III.b Not in Scope		corrective action. (Schedule for accomplishing the corrective
- CIRCLED ITEM ONLY: (See Section 3 of this TER for Legend) I.a Qualified II.c Qualified Life Deficiency I.b Modification III.a Exempt I.a Qualification Not Established III.b Not in Scope		
I.b Modification III.a Exempt I.a Qualification Not Established III.b Not in Scope		
	I.b Ma II.a Qu	odification III.a Exempt ualification Not Established III.b Not in Scope



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DUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

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 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: 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 d.III

Documentation Not Made Available

ΙV



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

LICENSEE RESPONSE TO NRC SER

8. Comsip Delphi - Hydrogen Analyzer

Plant ID No.	<u>Model</u>	Worksheet Page No.
H2A-GW-101-7 H2A-GW-101-2	K-III	10.3-74 10.3-75

The vendor is retesting and evaluating component test. We have contacted the supplier for the qualification test data.

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 rensee's response to the NRC SER, it is appropriate to highlight for the censee and the NRC certain conclusions reached as a result of the review which require special attention. These are summarized below.

In general, the Licensee's effort to establish similarity between a device tested and that installed in the plant was well done. The program used to determine the level of qualification of the Limitorque motorized valve actuators was very effective. Proving similarity of cable from tested to installed was the main exception. Some of the arguments were weak or inconclusive.

When a lack of qualification was found, the Licensee has generally chosen to replace the device.

As with all reviews to date, problems were noted with many aging evaluations and programs.

On February 1, 1982, the Licensee provided the following response concerning TMI Action Plan equipment [14]:

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: AUXILIARY FEEDWATER

Plant Identification Number Generic Name Worksheet Page No. FT-FW-100A Note 1 Flow Transmitter FT-FW-100B Note 1 Flow Transmitter FT-FW-100C Note 1 Flow Transmitter		Outside Containment
FT-FW-100A Note 1 Flow Transmitter FT-FW-100B Note 1 Flow Transmitter	x x	
FT-FW-100B Note 1 Flow Transmitter	x x	
	х	
FT-FW-100C Note 1 Flow Transmitter		
		1
f f		
TINE		
HECKED VIRGINIA ELECTRIC AND POW. DORRECT SURRY UNIT 1 EVISIONS (2) (3) (4)	er company	

Note 1: Refer to IE Bulletin 79-01B, Pages 6-84, 6-85, and 6-86 of the 90-Day Review.

FIGURE SUPPLIED BY THE LICENSEE



STONE & WEBSTER ENGINEERING CORPORATION

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: LEAKAGE MONITORING

Location					
lant Identification		Generic Name	Inside Containment	Outside Containment	
	Worksheet Page No.				
PT-LM-101A	10.3-1	Pressure Transmitter		х	
PT-LM-101B	10.3-2	Pressure Transmitter		x	
PT-LM-100A	Note 1	Pressure Transmitter		ж	
PT-LM-100B	Note 1	Pressure Transmitter		х	
PT-LM-100C	Note 1	Pressure Transmitter		x	
PT-LM-100D	Note 1	Pressure Transmitter		х	
**************************************				· · · · · · · · · · · · · · · · · · ·	
HECKED ORRECT PPROVED	TITLE VIRGINIA	ELECTRIC AND POWER COM SURRY UNIT 1	PANY		
EVISIONS (2) (3 (4) n 79-01B, pages 6-116,	(5)		

Note 1: Refer to IE Bulletin 79-01B, pages 6-116, 6-117, 6-118, 6-119 of the 90-Day Review.

FIGURE SUPPLIED BY THE LICENSEE



10.2-3

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: PRIMARY PLANT VENT AND DRAINS

				
Plant Identificat	den Wumber	Conomia Nama	Loca	
riant identificat		Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
SOV-DA-103A	10.3-3	Solenoid Operated Valve		x
SOV-DA-103B	10.3-4	Solenoid Operated Valve		X
LT-DA-110A	10.3-5	Level Transmitter	ж	
LT-DA-110B	10.3-6	Level Transmitter	x	
ZS-DA-103A for TV-DA-103A	10.3-7	Limit Switch	·	x
ZS-DA-103B for TV-DA-103B	10.3-8	Limit Switch	·	×
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		The said of the second Control of the same agent with the state of the said of		
CHECKED CORRECT	TITLE VIRGINIA	ELECTRIC AND POWER COM	PANY	
APPROVED (3	(E)	



MASTER LIST

Class IE Electrical Equipment Required to Function Under Postulated Accident Conditions

SYSTEM: REACTOR COOLANT

			Loca	tion
Plant Identification Number		Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
YE-VMS-100A-1	10.3-9	Accelerometer	x	
YE-VMS-100A-2	10.3-10	Accelerometer	х	
YE-VMS-100B-1	10.3-11	Accelerometer	х	
YE-VMS-100B-2	10.3-12	Accelerometer	х	
YE-VMS-100C-1	10.3-13	Accelerometer	x	
YE-VMS-100C-2	10.3-14	Accelerometer	x	
YE-VMS-101A-1	10.3-15	Accelerometer	ж	
YE-VMS-101A-2	10.3-16	Accelerometer	x	
YE-VMS-101B-1	10.3-17	Accelerometer	x	
YE-VMS-101B-2	10.3-18	Accelerometer	х	
Low Noise Cable	10.3-19	Hardline Co-Axial Cable	x	
CHECKED CORRECT	TITLE VIRGINIA	ELECTRIC AND POWER COMP	ANY	
REVISIONS (2)		3) (4)	(E)	



MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: REACTOR COOLANT

•	,		Loca	tion
Plant Identificati	on Number	Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
YY-VMS-100A-1	10.3-20	Remote Charge Preamplifier	х	
YY-VMS-100A-2	10.3-21	Remote Charge Preamplifier	x	
YY-VMS-100B-1	10.3-22	Remote Charge Preamplifier	х	
YY-VMS-100B-2	10.3-23	Remote Charge Preamplifier	x	
YY-VMS-100C-1	10.3-24	Remote Charge Preamplifier	х	/ 33 10 13 40 21 10 10 10 10 10 10 10 10 10 10 10 10 10
YY-VMS-100C-2	10.3-25	Remote Charge Preamplifier	x	Distributed for the first of the same of the same and the
YY-VMS-101A-1	10.3-26	Remote Charge Preamplifier	x	
YY-VMS-101A-2	10.3-27	Remote Charge Preamplifier	x	·
YY-VMS-101B-1	10.3-28	Remote Charge Preamplifier	ж	
YY-VMS-101B-2	10.3-29	Remote Charge Preamplifier	x	
		-		
CHECKED	ITLE			and the second s
CORRECT VIRGINIA ELECTRIC AND POWER COMPANY APPROVED SURRY UNIT 1				
REVISIONS (2)	1	3 (4)	(6)	



MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: RECIRCULATING SPRAY

•				Location	
Plant Identification Number		Generic Name		Inside Outside Containment Containment	
	Worksheet Page No.				
LT-RS-151A	10.3-30	Level Transmitter		x	
LT-RS-151B	10.3-31	Level Transmitter		х	
	,	:	t t		
				·	
				```	· · · ·
gant for a filling					
<del></del>					
HECKED CORRECT	TITLE VIRGINIA	ELECTRIC AND POWER C	OMPA	NY ,	



### MASTER LIST

### Class IE Electrical Equipment Required to Function

### Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

Plant Identification Number			Loca	ation
		Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
TV-SS-102A	10.3-32	Solenoid Operated	x	
TV-SS-102B	10.3-33	Solenoid Operated Valve		x
TV-SS-106A	10.3-34	Solenoid Operated Valve	ж	
TV-SS-106B	10.3-35	Solenoid Operated Valve		x
HCV-SS-101D	10.3-36	Solenoid Operated Valve	X.	
HCV-SS-102A	10.3-37		· x	
HCV-SS-100A	10.3-38	Solenoid Operated Valve	x	
HCV-SS-100B	10.3-39	Solenoid Operated Valve	x	
TV-SS-103A	10.3-40	Solenoid Operated Valve	×	
TV-SS-103B	10.3-41	Solenoid Operated Valve		x
ZS-SS-102A-1	10.3-42	Open Position Limit Switch for TV-SS-102A	X .	
HEGKED ORRECT APPROVED	TITLE VIRGINIA	ELECTRIC AND POWER ( SURRY UNIT 1	COMPANY	
	2) [	3) (4)	(5)	

Supplement 3 February 1, 1981



### MASTER LIST

### Class IE Electrical Equipment Required to Function

### Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

			Loca	t <u>i</u> on
Plant Identificat	tion Number	Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
ZS-SS-102A-2	10.3-43	Closed Position Limit Switch for TV-SS-102A	x	
ZS-SS-102B-1	10.3-44	Open Position	·	. x
ZS-SS-102B-2	10.3-45	Closed Position Limit Switch for TV-SS-102B		х
ZS-SS-106A-1	10.3-46	Open Position Limit Switch for TV-SS-106A	x	
ZS-SS-106A-2	10.3-47	Closed Position Limit Switch for TV-SS-106A	×	
ZS-SS-106B-1	10.3-48	Open Position Limit Switch for TV-SS-106R		x
ZS-SS-106B-2	10.3-49	Closed Position Limit Switch for TV-SS-106B		x
ZS-SS-101D-1	10.3-50	Open Position Limit Switch for HCV-SS-101D	х	
ZS-SS-101D-2	10.3-51	Closed Position Limit Switch for HCV-SS-101D	x	
ZS-SS-102A-3	10.3-52	Open Position Limit Switch for HCV-SS-102A	ж	
ZS-SS-102A-4		Closed Position Limit Switch for HCV-SS-102A	ж	<del>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</del>
HECKED ORRECT	TITLE VIRGINIA	ELECTRIC AND POWER CON	MPANY	
	2) (	3 (4)	(5)	

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### MASTER LIST

### Class IE Electrical Equipment Required to Function

### Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

			Loca	tion
Plant Identification Number		Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
ZS-SS-100A-1	10.3-54	Open Position Limit Switch for HCV-SS-100A	x	
ZS-SS-100A-2	10.3-55	Closed Position Limit Switch for HCV-SS-1004	×	·
ZS-SS-100B-1	10.3-56	Open Position	ж	
ZS-SS-100B-2	10.3-57	Closed Position Limit Switch for HCV-SS-100B	x	·
ZS-SS-103A-1	10.3-58	Open Position Limit Switch for TV-SS-103A	**	
ZS-SS-103A-2	10.3-59	Closed Position Limit Switch for TV-SS-103A	х	·
ZS-SS-103B-1	10.3-60	Open Position LImit Switch for TV-SS-103B		×
ZS-SS-103B-2	10.3-61	Closed Position Limit Switch for TV-SS-103B		x
S1-XCV-1401A	10.3-62	Solenoid Operated Valve		ж
S1-XCV-1401B	10.3-63	Solenoid Operated Valve		x
S1-XCV-1422A	10.3-64	Solenoid Operated Valve		x
	TITLE			
CHECKED CORRECT	VIRGINIA	ELECTRIC AND POWER COL	MPANY	
APPROVED REVISIONS (	2) (	3 4	(5)	

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FRC Assignment No. 13
FRC Task No. 482

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JIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

	•		
SUMMARY OF LICENSEE RESPONSE	S TO THE NRC SER - C	NLY CHECKED ITEMS	ARE APPLICABLE
X The Licensee (has/has no		•	
qualified and/or will fu environmental service co	nction when exposed		
The Licensee has present outstanding qualification		shows there are	no
The Licensee (has/has no item whose qualification			his equipment
Justification for in Licensee for this eq		/has not) been pr	ovided by the
Corrective action sp	ecified by the Licen	see:	
Equipment modification  Equipment relocation  Relocate or shiely  Verify qualification  Equipment relocation	ement with qualified cation tion above submergen ld equipment from ration by additional (tion to a mild envirsting of equipment i	ce level diation source testing/analysis) onment	)
The Licensee has protein that can be construe operation.			=
The Licensee (has/ha corrective action. action	<del>-</del>	_	_
The Licensee states that and/or should be exempte			qualification
DESIGNATION OF RESULTANT NRC - CIRCLED ITEM ONLY: (See S			SED ON REVIEW
I.a Qualified I.b Modification II.a Qualification Not Estable b Not Qualified	III.a Ex	alified Life Defi empt t in Scope cumentation Not A	-

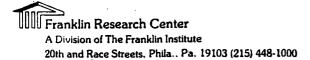


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FRC Assignment No. 13
FRC Task No. 482

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# EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 2

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FO	<u>KM</u>
	DESIGNATION:
NRC REQUIREMENTS	X = DEFICIENCY
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 Program Established to Identify Aging Degradation	
Criteria Regarding Aging Simulation Satisfied (If Required)	: 
Criteria Regarding Temperature/Pressure Exposure:	- <del></del>
o Peak Temperature Adequate	
o Peak Pressure Adequate	
o Duration Adequate	
o Required Profile Enveloped Adequately	e <u>ran</u> cilica microsita
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	X
IV Documentation Not Made Available	



NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 482/483

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# HIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

LICENSEE RESPONSE TO NRC SER

cated	present status of each component listed in Appendix B is indiding the resolution column of Table 3. Each component has placed into one of the following four categories:
(1)	COMPONENTS DELETED FROM THE MASTER LIST

(1) COMPONENTS DELETED FROM THE MASTER LIST

(2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION

(3) COMPONENTS DETERMINED TO BE QUALIFIED

(4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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

# EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94



# LICENSEE RESPONSE TO NRC SER (Continued)

# 7.3.15 Solenoid Operated Valves (Safety Injection)

SOV-SI-102A1 SOV-SI-102A2 SOV-SI-102B1 SOV-SI-102B2

These valves serve to cross-connect the LHSI suction line from the Refueling Water Storage Tank (RWSI) in Unit 2, to supply the LHSI pump suctions for Unit 1. If an HELB occurs in the MSVH for Unit 1 (Location of LHSI line from the RWST of (Unit 1), these valves can be operated to put the RWST of Unit 2 on service. Due to the location of thse valves, thse valves will not see the effects of an HELB in Unit one's main steam valve house. Thus, these valves have been deleted.

### MASTER LIST

### Class IE Electrical Equipment Required to Function

### Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

Plant Identification Number			Locat	ion
		Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
S1-XCV-1422B	10.3-65	Solenoid Operated Valve	·	ж
ZS-XCV-1401A-1	10.3-66	Open Position Limit Switch for S1-XCV-1401A		х
ZS-XCV-1401A-2	10.3-67	Closed Position Limit Switch for S1-XCV-1401A		x
ZS-XCV-1401B-1	10.3-68	Open Position Limit Switch for S1-XCV-1401B		x
ZS-XCV-1401B-2	10.3-69	Closed Position Limit Switch for S1-XCV-1401B		х
ZS-XCV-1422A-1	10.3-70	Open Position Limit Switch for S1-XCV-1422A		x
ZS-XCV-1422A-2	10.3-71	Closed Position Limit Switch for S1-XCV-1422A		X
ZS-XCV-1422B-1	10.3-72	Open Position Limit Switch for S1-XCV-1422B		х
ZS-XCV-1422B-2	10.3-73	Closed Position Limit Switch for S1-XCV-1422B		x
	·			
CHECKED TO TO THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CONTROL OF THE CON	ITLE VIRGINIA	ELECTRIC AND POWER COM	PANY	
REVISIONS (2)	1	3 (4)	(5)	

Supplement 3 February 1, 1981



### MASTER LIST

# Class IE Electrical Equipment Required to Function

# Under Postulated Accident Conditions

SYSTEM:

HYDROGEN ANALYZER

			Loca	tion
Plant Identification Number		Generic Name	Inside Containment	Outside Containment
	Worksheet Page No.			
H2A-GW-101-1	10.3-74	Hydrogen Analyzer		x
H2A-GW-101-2	10.3-75	Analyzer Remote Control Module	·	х
TV-GW-100	10.3-76	Solenoid Operated Valve		x
TV-GW-101	10.3-77	Solenoid Operated Valve		x
TV-GW-102	10.3-78	Solenoid Operated Valve		x
TV-GW-103	10.3-79	Solenoid Operated Valve		x
TV-GW-104	10.3-80	Solenoid Operated Valve		x
TV~GW-105	10.3-81	Solenoid Operated Valve		ж
TV-GW-106	10.3-82	Solenoid Operated Valve		x
TV-GW-107	10.3-83	Solenoid Operated Valve		X
ZS-GW-100-1	10.3-84	Open Position Limit switch for TV-HC-100		X
CHECKED CORRECT APPROVED	TITLE VIRGINIA	ELECTRIC AND POWER COM SURRY UNIT 1	PANY	
REVISIONS	(2)	3) (4)	(6)	

Supplement 3 February 1, 1981



### MASTER LIST

### Class IE Electrical Equipment Required to Function

### Under Postulated Accident Conditions

SYSTEM: HYDROGEN ANALYZER

•			Loca	Location	
Plant Identification Number		Generic Name	Inside Containment	Outside Containment	
	Worksheet Page No.				
ZS-GW-100-2	10.3-85	Closed Position Limit Switch for TV-HC-100		x	
ZS-GW-101-1	10.3-86	TV-HC-101		<b>x</b>	
ZS-GW-101-2	10.3-87	Closed Position Limit Switch for TV-HC-101		x	
ZS-GW-102-1	10.3-88	Open Position Limit Switch for TV-HC-102		x	
ZS-GW-102-2	10.3-89	Closed Position Limit Switch for TV-HC-102		x	
ZS-GW-103-1	10.3-90	Open Position Limit Switch for TV-RC-103		х	
ZS-GW-103-2	10.3-91	Closed Position Limit Switch for TV-HC-103		x	
ZS-GW-104-1	10.3-92	Open Position Limit Switch for TV-HC-104	,	x	
ZS-GW-104-2	10.3-93	Closed Position Limit Switch for TV-HC-104	·	x	
ZS-GW-105-1	10.3-94	Open Position Limit Switch for TV-HC-105		x	
ZS-GW-105-2	10.3-95	Closed Position Limit Switch for TV-HC-105		x	
HECKED CORRECT	TITLE VIRGINIA	ELECTRIC AND POWER CON SURRY UNIT 1	MPANY		
	(2)	3) (4)	(\$)		

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### MASTER LIST

# Class IE Electrical Equipment Required to Function

# Under Postulated Accident Conditions

SYSTEM: HYDROGEN ANALYZER

, .				Location			
Plant Identifi	entification Number		Generic Name	Inside Containment	Outside Containment		
		Worksheet Page No.	A _ 0470.				
ZS-GW-106-1		10.3-96	Open Position Limit Switch for TV-HC-106		x		
ZS-GW-106-2		10.3-97	Closed Position Limit Switch for TV-HC-106		×		
ZS-GW-107-1		10.3-98	Open Position Limit Switch for TV-HC-107		×		
ZS-GW-107-2		10.3-99	Closed Position Limit Switch for TV-HC-107	:	×		
			The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon				
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CHECKED	''' 	VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 1					
APPROVED REVISIONS	िक्य	10	3 (4)	(5)			
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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 ports 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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- 90. C. H. Stallings
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#### APPENDIX A - ENVIRONMENTAL SERVICE CONDITIONS

The specific environmental service conditions corresponding to different plant locations that were used in this technical evaluation are stated in this appendix, based upon the information presented in the Licensee's submittal [17, 19].

## Accident Conditions Inside Primary Containment

For PWR plants, the DOR Guidelines state that the environmental service conditions inside containment for the loss-of-coolant accident (LOCA) should be established by the Licensee based on the FSAR analysis. In addition, for plants equipped with automatic containment spray systems not subject to single component failure or delayed initiation, the Guidelines state that equipment qualified for the LOCA environment is also considered qualified for the stulated main-steam-line break accident (MSLB). The design of this plant satisfies these criteria. The Licensee has stated that equipment qualified for a LOCA environment can be considered qualified for a MSLB accident environment.

The temperature and pressure profiles contained herein form the basis for the temperature and pressure noted by the Licensee in the "Environment Required" column on the Licensee's Equipment Qualification Report Evaluation sheets.

This appendix contains the following environmental information [19]:

Figure A-1. Auxiliary Building Penetration Area, Elev. 2'0"

Figure A-2. Auxiliary Building Charging Pump Cubicles, Elev. 2'0"

Figure A-3. Auxiliary Building, General, Elev. 13'0"

Figure A-4. Auxiliary Building Cable Vault, Elev. 13'0"

Figure A-5. Auxiliary Building, General, Elev. 27'6" (excluding cont. vacuum pump cubicles)



Figure A-6. Auxiliary Building, General, Elev. 45'10"

Figure A-7. Containment Spray Pump House, Elev. 11'6"

Figure A-8. Containment Spray Pump House, Elev. 27'6"

Figure A-9. Main Steam Valve House, General, Elev. 11'6"

Figure A-10. Main Steam Valve House, General, Elev. 27'6"

Figure A-11. Containment Inside Cranewall, Elev. (-)3'6"

Figure A-12. Containment Outside Cranewall, Elev. (-)3'6"

Figure A-13. Containment Outside Cranewall, Elev. 18'4"

Figure A-14. Containment, General, Elev. (-)27'7"

Figure A-15. Containment, Elev. (-)27'7" Submerged (Below (-)21'11")

Figure A-16. Containment Inside Cranewall, Elev. 47'4"

Figure A-17. Containment Outside Cranewall, Elev. 47'4"

Figure A-18. Mechanical Equipment Room 3

Figure A-19. Safeguards Area

Figure A-20. Turbine Building, General, Elev. 9'6"

Figure A-21. Turbine Building, Mezzanine Level

Figure A-22. Environmental Qualification of Electrical Equipment Zone Key Plan.

Based on these considerations, each equipment item was evaluated with respect to the environmental service conditions presented in this appendix.

The Licensee's methodology for the development of environmental service conditions was stated in Reference 19 as follows:

"The Environmental Zone Description (EZD) documents the specification of parameters for environmentally harsh areas of the Surry Power Station Units 1 & 2 which contain safety-related equipment (IE Bulletin 79-01B). These areas have been ascribed environmental zones which possess more or less uniform environments relating to temperature, pressure, relative humidity, chemical spray, radiation, and submergence. As applicable for each environmental zone, the environmental parameters are specified for normal operation as well as LOCA, MSLB, and HELB conditions.



In certain instances, it was desirable to determine for specific plant components and environmental parameters a specification for an area contained within an environmental zone (i.e., temperature stratification and radiation zones).

Each environmental zone is described on a zone sheet (EZD pages 3 through 23). Reference numbers appearing on the zone sheets are identified by the reference list (EZD pages 24 through 25). The reference list also identifies secondary references which support/supplement the primary references. A copy of each of both types of references is provided in the succeeding volumes of the EZD.

Primary references have numerical tabs which correspond to their respective reference numbers, whereas secondary references have alphabetical tabs. Immediately preceding each primary reference is one or more pages of the user's guide; the user's guide identifies the specific pages of each primary reference where information from the zone sheet can be located."

With respect to primary containment service conditions, the Licensee stated [17]:

"A description of the containment spray systems at Surry is provided in Section 6.3.1.4 of the Surry FSAR. This system contains redundant 100% capacity trains which are not subjected to a disabling single-component failure."

The Licensee also provided the following response with respect to temperature margins applied to the primary containment accident profile [17]:

"Stratification would only be present for a short time period (since the containment spray system becomes effective within 100 seconds) following a LOCA or MSLB. The spray delivery to the upper regions of the containment would quickly cool the stratified region.

No safety-related electrical equipment is located in the upper third of the containment volume. This precludes any equipment from being exposed to a higher-than-average temperature due to stratification in the upper regions of the containment following a LOCA or MSLB.

Even if safety related electrical equipment were located in the upper third of the containment volume, the computer codes and models used to calculate the maximum containment average temperature of 278°F for LOCA contain significant conservatisms such that the calculated temperature is an overprediction of the expected average temperature. These conservatisms include:

- (1) the blowdown model, which maximizes release rates to the containment
- (2) overprediction of the energy available for release to the containment



- (3) underprediction of the containment heat sinks and containment volume
- (4) assuming the most severe containment initial conditions
- (5) minimizing containment spray heat removal
- (6) the modeling of the behavior of the break effluent to maximize the containment pressure and temperature.

The combination of all these factors results in calculated containment pressure and temperature transients which are substantially greater than expected values. Therefore, there is sufficient margin in the calculated temperature to account for stratified regions of higher-than-average temperatures for an MSLB.

Stratification of steam in the upper regions of the containment is not expected to occur after a LOCA. The location of the break is below the operating floor in the lower portion of the containment. The high, subcooled liquid blowdown rates will result in a high degree of mixing which will prevent the accumulation of stratified steam.

A sample of the methodology used to determine the inside containment LOCA profiles can be found in the Environmental Zone Descriptions for Surry Power Station behind Reference Tab #2.1

¹A copy of the Environmental Zone Descriptions (EZD) Surry Power Stations Units 1 and 2 are provided with the SER response."

With regard to submergence inside containment, the Licensee stated [17]:

### "1. Inside Reactor Containment Building

The methodology used to determine the submergence level inside containment is provided for your review in the Environmental Zone Descriptions for Surry Power Station behind Reference Tab #6. This methodology is in accordance with the requirements of I.E. Bulletin 79-01B.

The maximum fluid level in the calculation is elevation -21'11".to which all components were reviewed. The 6 motor operated valves (MOV 1865 A, B, C and MOV 2865 A, B, C) are below the submergence level.

These motor operated valves have been removed from the master list. The valves serve to isolate the safety injection accumulator tanks during refueling. They are administratively locked open whenever the reactor is critical by locking out the breakers that supply power to the valves. The valves will then remain in their locked open position and available to mitigate the consequences of a LOCA



or MSLB. No power is supplied to these motor operated valves during critical operation; therefore, there can be no adverse effects to the electrical bus which normally supplies power to the valves. There is no position indication on these valves, thus the operator cannot be misled due to the submergence of the valves. Since the valves are locked open, the question of operating time across the spectrum of events in relation to submergence need not be addressed."

With regard to submergence outside containment, the Licensee stated [17]:

## "2. Outside Reactor Containment Building

Submergence outside of containment was not specifically addressed during the I.E. Bulletin 79-01B 90 Day Review. The effects of piping system breaks outside of containment was analyzed in Appendix D of the Surry FSAR. This review takes into account the effects of discharging fluids that may result in failure of equipment important to safety.

A detailed review of the effects of flooding on equipment important to safety is provided in the North Anna FSAR Appendix C, Effects of Piping System Breaks Outside Containment. The Auxiliary Building was the only area affected by the postulated high-energy line breaks with regard to submergence. The maximum water level in the Auxiliary Building is 1 inch above the floor. All equipment important to safety was found to be at least 15 inches above the floor.

A similar review of the effects of flooding was not done for Surry. We can determine for Surry, however, that no equipment outside of containment important to safety will become submerged due to the postulated pipe breaks because of the similarity in design of the piping systems, the Auxiliary Building layout, and equipment location for North Anna and Surry.

Since we have determined that there is no equipment outside containment that would be subjected to submergence due to a LOCA or HELB, the submergence column on the Component Evaluation Sheet has been marked Not Required (NR)."

With regard to chemical spray, the Licensee stated [17]:

"The component evaluation sheets have been revised to show consistent units for chemical spray concentration. Each component on the master list which is subjected to chemical sprays has been reviewed to ensure that the chemical spray environment in the test report envelops the specified chemical spray environment. The results of the review are indicated on the worksheets included in Revision 4 of the IE Bulletin 79-01B 90 Day Review. Specific chemical spray deficiencies which were identified in Appendix B have also been reviewed and resolutions to these deficiencies are indicated on the Revision 4 component evaluation worksheets.



Details of the qualification review for chemical spray can be found in the qualification review packages contained in the central file."

With respect to radiation values inside primary containment, the Licensee stated [17]:

"The calculated total integrated gamma radiation doses inside containment range from 7.4 x  $10^6$  to 3.8 x  $10^7$  rads, depending on the location of the dose points. They are shown in Table 2. The radiation doses were calculated based on power level of 2546 MW thermal and containment free volume of 1.8 x  $10^6$  ft³. The shielding credit of crane wall and operating floor was taken into consideration. A sample calculation is provided in the Environmental Zone Descriptions for Surry Power Station behind Reference Tab #3.

40-year normal plus LOCA gamma dose inside containment

TABLE 2

Location		Dose (rads)
el. 47'4"	- Inside crane wall	$3.7 \times 10^7$
el. 47'4"	- Outside crane wall	7.4 x 10 ⁶
e1. 18'4"	- Outside crane wall	$7.4 \times 10^6$
el. (-) 3'6"	- Inside crane wall	$3.7 \times 10^{7}$
el. (-) 3'6"	- Outside crane wall	$7.4 \times 10^6$
el. (-)27'7"	- Above sump water	$3.5 \times 10^{7}$
el. (-)27'7"	- Submerged in sump water	3.8 x 10 ⁷ "



Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: AB-2B

DESCRIPTION: Auxiliary Building Penetration Area, Elev. 200

	NORMAL		LOCA		MSLB		HELB	
PARAMETER	<u>ENVIRONMENT</u>	REFERENCE	ENVIRONMENT	reference	BNVIRONMENT	REFERENCE	ENVIRONMENT	REFERENCE
Temperature (°F)	Occupied spaces, 100F Normally un- occupied machinery spaces, 120F	14	NA		NA		120-205F, 0-30 secs 205F, 30-40 sec 205-190F, 40-1000 secs 190-145F, 1000-2000 secs 145-120F, 2000 secs-1 hr	
PRESSURE (psia)	na.		NA	<del></del>	NA .		15.2, 0-1 min 14.9, 1-60 min	4
RELATIVE HUMIDITY (%)	NC	·	NA	<del> </del>	NA		100	4
CHEMICAL SPRAY	NA		NA	<del></del> .	NA		NA	
RADIATION (rads)	2_5 x 10*	7	2.5 x 10*	7	NA		NA	<del></del>
SUBMERGENCE (elev)	NA		NA		NA		Note	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

NOTE: Not applicable. No safety-related electrical equipment will be affected by the submergence level at the 200 elevation of the Auxiliary Building.

Figure A-1. Auxiliary Building Penetration Area, Elev. 2'0"

Facility: VEPCO, SURRY Units: 9 and 2 Dockets: 50-280 and 50-289

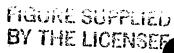
ZONE: AB-2C DESCRIPTION: Auxiliary Building Charging Pump Cubicles, Elev.  $2\,^{\circ}0^{\circ}$ 

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	loca <u>Rnvironment</u>	Refrence	mslb <u>environment</u>	REFERENCE	HELB <u>BNVIRONME</u> NT	REPERENCE
Temperature (°F)	Normally un- occupied machinery spaces, 1207	94	na	<del></del>	<b>NA</b>		120-140F, 0-30 secs 140F, 30- 1000 secs 140-125F, 1000-2000 secs 125-120F, 2000 secs-1 hr	
PRESSURE (psia)	NA	<del></del>	NA		NA	·	15.2, 0-1 min 14.9, 1-60 min	•
relative Humidity (%)	RC ·	the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	NA .		NA		100	4
CHEMICAL SPRAY	<b>NA</b>		NA.		NA		MA .	
RADIATION (rads)	2.8 x 106	P	8.0 x 10*	7	NA	<del></del>	NA	
SUBMERGENCE (elev)	NA.		NA		NA	<del></del>	NOTE	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

NOTE: Not applicable. No safety related electrical equipment will be affected by the submergence level at the 2°0° elevation of the Auxiliary Building.

Figure A-2. Auxiliary Building Charging Pump Cubicles, Elev. 2'0"



Facility: VEPCO, SURRY

Units: 1 and 2

Dockets: 50-280 and 50-281

ZONE: AB-13A

DESCRIPTION: Auxiliary Building, General, Elev. 13.0"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Occupied spaces, 100P Normally un- occupied machinery spaces, 120F	<b>34</b>	<b>NA</b>		NA		120-205F, 0-30 secs 205F, 30-40 sec 205-190F, 40-1000 secs 190-145F, 1000-2000 secs 145-120F, 2000 secs-1hr	ų es
PRESSURE (psia)	NA -		NA		NA		15.2, 0-1 min 14.9, 1-60 min	4
RELATIVE HUMIDITY (%)	MC .	<del> </del>	IUA	<del></del>	NA	<del></del>	100	u
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	NOTE	10	9.3 x 10°	10	NA	<del></del>	NA	
Submergence (elev)	NA		NA	<del></del> .	NA		N/A	<del></del>

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

NOTE: The radiation dose of 2.66x107 for the 40-yr normal operation in zone AB-13A is caused by the primary drain tank and gas stripper located in radiation zone Q (Units 1 & 2). The radiation dose is calculated to be 4.87x103 in radiation zones O (Unit 1) and N (Unit 2) and 1.40x105 in radiation zones T (Unit 1) and S (Unit 2).

Figure A-3. Auxiliary Building, General, Elev. 13'0"

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: AB-13B

DESCRIPTION: Auxiliary Building Cable Vault, Elev. 13.00

Parameter	Normal Environment	<u>reference</u>	LOCA ENVIRONMENT	<u>reference</u>	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
Temperature (°F)	Mormally un- occupied machinery spaces, 120F	74 _	NA .		NA		NA	
Pressure (psia)	NA		NA	<del></del>	АЯ	<del></del>	NA .	
RELATIVE HUMIDITY (3)	ИС		MA	<del></del>	NA .	<del></del>	MA	
CHEMICAL SPRAY	AA		na.		NA.		NA ·	
RADIATION (rads)	1-96 x 10*	10	3.2 x 10°	10	NA		AM	
SUBMERGENCE (elev)	NA		NA ·	<del></del>	NA		NA	<del></del>

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-4. Auxiliary Building Cable Vault, Elev. 13'0" FIGURE SUPPLIED BY THE LICENSEE

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: AB-27

DESCRIPTION: Auxiliary Building, General Elev. 27.6% [excluding cont. vacuum pump cubicles]

<u>PARAMETER</u>	Normal Environment	REFERENCE	LOCA ENVIRONMENT	REPERENCE	MSLB <u>ENVIRONMENT</u>	keperance	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Occupied spaces, 100F Normally un- occupied machinery spaces, 120F	14	NA		NA .		120-205F, 0- 30 secs 205F, 30-40 secs 205-190F, 40-1000 secs 190-145F, 1000-2000 secs 145-120F, 2000 secs-1 hr	
PRESSURE (psia)	NA	·	NA	•	NA		15.2, 0-1 min 14.9, 1-60 min	4
RELATIVE HUMIDITY (5)	NC		NA		NA		100	4
CHEMICAL SPRAY	NA		NA		NA		NA .	
RADIATION (rads)	1.3 x 10*	10	6.8 x 102	10	NA		NA	
SUBMERGENCE (elev)	NA		NA		NA		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-5. Auxiliary Building, General, Elev. 27'6" (excluding cont. vacuum pump cubicles)

PAGERIE SUPPLIED BY THE LICENSEE Facility: VEPCO, SURRY Units: 1 and 2

Dockets: 50-280 and 50-281

ZONE: AB-45

DESCRIPTION: Auxiliary Building, General, Elev. 45°10°

PARAMETER	Normal <u>Environment</u>	REFERENCE	Loca Environment	<u>REFERENCE</u>	mslb <u>Environment</u>	REFERENCE	HELB ENVIRONMENT	REFERENCE
Temperature (°P)	Occupied spaces, 100F Normally un- occupied machinery spaces, 120F	<b>7</b> 9	'NA		NA		120-125F, 0-300 secs 125-122F, 300-2000 secs 122-120F, 2000 secs-1 hr	4,
OPRESSURE (psia)	NA.		NA		NA ,		15.2, 0-1 min 14.9, 1-60 min	4
RELATIVE HUMIDITY (%)	nc		NA		NA		100	4
CHEMICAL SPRAY	na		NA		NA .		NA .	
RADIATION (rads)	8.9 x 305	10	2.7 x 105	10	NA .		NA	
SUBMÉRGENCE (elev)	NA		NA.		NA.		NA .	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-6. Auxiliary Building; General, Elev. 45'10" FIGURE SUPPLIED BY THE LICENSEE

# ER-C5257-482

#### ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: CSPH-11

DESCRIPTION: Containment Spray Pump House, Elev. 11.6.

PARAMETER	NORMAL ENVIRONMENT	RLFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB BNVIRONMENT	REFERENCE	Helb Environment	REFERENCE
Temperature (°F)	Occupied spaces, 100F Normally un-occupied machinery spaces, 120F	14	NA		NA		NA	
PRESSURE (psia)	NA		NA		NA .		NA.	
RELATIVE HUMIDITY (%)	NC		NA		NA		аи	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	8-8 x 102	11	5.9 x 10*	11	NA		NA	•
SUBMERGENCE (elev)	NA		NA		NA		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-7. Containment Spray Pump House, Elev. 11'6"

Facility: VEPCO, SURRY Units: 1 and 2

Dockets: 50-280 and 50-281

ZONE: CSPH-27

DESCRIPTION: Containment Spray Pump House, Elev. 27.60

PARAMETER	Normal Environment	REFERENCE	LOCA ENVIRONMENT	<u>reference</u>	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
Temperature (°F)	Occupied spaces, 100F Normally un- occupied machinery spaces, 120F	94	NA		NA		NA .	
Pressure (psia)	NA		NA		NA		NA ·	
RELATIVE HUMIDITY (5)	ЖC		AK		NA		NA	
CHEMICAL SPRAY	AA		NA		NA		AK	
RADIATION (rads)	8.9 x 102	80	5.3 x 10°	11	MA .		NA	
SUBMERGENCE (elev)	NA		NA		NA		NA .	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section. Figure A-8. Containment Spray Pump House, Elev. 27'6"

> e figure supplied BY THE LICENSEE

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

DESCRIPTION: Main Steam Valve House, General, Elev. 11.6*

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LUCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB BNVIRONMENT	REFERENCE
Temperature (°F)	Normally un- occupied machinery spaces, 120F	14	NA		NA		NA .	
PRESSURE (psia)	; <b>NA</b>		NA		NA		NA	· .
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA .		NA	. ·	NA		NA.	
RADIATION (rads)	8.8 x 102	11	5.9 x 10*	18	NA		NA .	
SUBMERGENCE (elev)	NA.		NA		NA		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-9. Main Steam Valve House, General, Elev. 11'6"

FROM RE SUPPLIED BY THE LICENSEE

#### environmental zone description sheet

Facility: VEPCO, SURRY

Units: 1 and 2

Dockets: 50-280 and 50-281

ZONE: MSVH-27

DESCRIPTION: Main Steam Valve House, General, Elev. 27060

PARAMETER	Normal Environment	REFERENCE	Loca <u>Environment</u>	<u>reference</u>	mslb <u>environment</u>	REFERENCE	HELB ENVIRONMENT	REFERENCE
Temperature (°F)	Normally un- occupied machinery spaces, 120F	1846	NA		na		Note	12
PRESSURE (psia)	NA		NA		NA		16.5, 0-10 sec 16.2, 10 sec- 1 hr	
RELATIVE HUMIDITY (%)	ЖС		ra		МА		100	12
CHEMICAL SPRAY	NA		MA		NA		NA	
RADIATION (rads)	8.8 x 908	<b>19</b> 19	7.7 x 10 °	<b>1</b> 1	<b>XA</b>		NA ,	
SUBMERGENCE (elev)	NA		NA		AM		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

NOTE: The HELB temperature of 300°F (0-7 hr) was calculated for environmental zone MSVR-27 which extends from elevation 27°6° to the roof. The HELB temperature for equipment located between elevations 27°6° and 38°0° is calculated to be 250°F (0-7 hr).

Figure A-10. Main Steam Valve House, General, Elev. 27'6"

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: RC-3A DESCRIPTION: Containment Inside Cranewall, Elev. (-)3°6°

PARAMETER	NORMAL ENVIRONMENT	<u>keference</u>	Loca Environment	REFERENCE	MSLB <u>BNVIRONMENT</u>	REFERENCE	HELB <u>ENVIRONMENT</u>	REFERENCE
TEMPERATURE (°F)	Design, 105F Maximum, 125F	15 1	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		NA	
PRESSURE (psia)	9.0-11.1	1	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		NA	
RELATIVE HUMIDITY (%)	NC	•	100, 0-120 days	<b>3 2</b>	100, 0-120 days	2	AN	
CHEMICAL SPRAY	NA .		Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaOH to pl of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	H hr	Solution of 2000-2200 ppm H ₃ BO ₃ puffered with MaOH to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	NA	
RADIATION (rads)	1.3 x 107	3	≤2.4 x 107	3	<2.4 x 107	3,5	NA	
Submergence (elev)	NA	·	NA .		NA .		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-11. Containment Inside Cranewall, Elev. (-)3'6"

Facility: VEPCO, SURRY

Units: 1 and 2

Dockets: 50-280 and 50-281

ZONE: RC-3B

DESCRIPTION: Containment Outside Cranewall, Elev. (-) 3 6 m

PARAMETER	normal Environment	REFERENCE	Loca Environment	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB BNVIRONMENT	REFERENCE
· Temperature (°P)	Design, 105F Maximum, 125F	ช5 ช	280F, 0-30 min 280-150F, 30-60 min 150-720F, 1-48 hr 120F, 2-120 day		280F, 0-30 min 280-750F, 30-60 min 150-720F, 1-48 hr 120F, 2-720 day		NA .	
fressure (psia)	9.0-11.1		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		59.7, 0-30 min 59.7-14.7, 30-60 min 94.7-12.7, 1-48 hr 12.7, 2-820 day		AM	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	3 2	100, 0-120 days	3 2	NA ·	
CHEMICAL SPRAY	MA		Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaOH to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	Solution of 2000-2200 ppm H,BO, buffered with NaOH to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	NA `	
RADIATION (rads)	3.5 x 10°	3	7.4 x 104	3	<7.4 x 106	3,5	NA	
SUBMERGENCE (elev)	NA		na		NA		NA .	

NA = Not applicable. AC = Not calculated. Numbers appearing in Reterence columns are identified at the end of this section.

Figure A-12. Containment Outside Cranewall, Elev. (-)3'6" FIGURE SUPPLIED BY THE LICENSEE

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: RC-18B

DESCRIPTION: Containment Outside Cranewall, Elev. 1894*

<u>Parameter</u>	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCL	MSLB ENVIRONMENT	REFERENCE	HELB <u>BNVIRONMENT</u>	REFERENCE
Temperature (°P)	Design, 105F Maximum, 125F	15 1	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		NA	
PRESSURE (psia)	9.0-11.1		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	3 2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaOH to pF of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	Solution of 2000-2200 ppm B ₃ BO ₃ buffered with NaOH to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	NA	
RADIATION (rads)	3.5 x 10*	3 ·	7_4 x 10*	3	<7.4 x 10*	3,5	NA	
SUBMERGENCE (elev)	NA		NA .		NA .		NA	
NA = Not app	licable. NC = N	ot calculated	. Numbers appea	aring in Refe	rence columns ar	e identified	lat the end of i	his section.

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-13. Containment Outside Cranewall, Elev. 18'4"

Facility: VEPCO, SURRY Units: 9 and 2

Dockets: 50-280 and 50-281

20NE: RC-27A

DESCRIPTION: Containment General, Elev. (-)27°7*

PARAMETER	NORMAL ENVIRONMENT	Reference	LOCA ENVIRONMENT	REFERENCE	mslb <u>environment</u>	REFERENCE	HELB	REFERENCE
TEMPERATURE (°F)	Design, 105F Maximum, 125F	95 1	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day	•	NA	
PRESSURE (psia)	9.0-11.1		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		NA	
RELATIVE HUMIDITY (%)	nc		100, 0-120 days	<b>. 2</b>	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA .		Solution of 2000-2200 ppm M ₃ BO ₃ buffered with NaOH to pH of 8.5-11, 0-4 Same solution with pH of between 0 and 9.5, 4 hr-120 days	hx	Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaUH to pH of 8.5-11, 0-4 1 Same solution with pH of betwee 8.0 and 9.5, 4 hr-120 days		NA	
RADIATION (rads)	3.5 x 10°	3	3.5 x 10°	<b>3</b>	<3.5 x 10"	3,5	NA	,
SUBMERGENCE (elev)	NA		NA		NA		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reservence columns are identified at the end of this section.

Figure A-14. Containment, General, Elev. (-)27'7"

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: RC-27B*

DESCRIPTION: Containment, Elev. (-) 27°7" Submerged (Below (-) 21°11")

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA <u>ENVIRONMENT</u>	REFERENCE	MSLB <u>ENVIRONMENT</u>	REFERENCE	HELB BNVIRONMENT	REPERENCE
Temperature (°P)	Design, 105F Maximum, 125F	15 1	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		na	
PRESSURE (psia)	9.0-11.1	9	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		NA	
RELATIVE HUMIDITY (3)	NC		100, 0-120 days	3 2	100, 0-120 days	s <b>2</b>	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm HyBO, buffered with NaOH to pl of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	H hr	Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaOi to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	NA	
RADIATION (rads)	3.5 x 104	3	3.8 x 107	3	<3.8 x 107	3,5	NA	
SUBMERGENCE (elev)	na	•	(-) 21*11*	6	(-) 23*11*	6	NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-15. Containment, Elev. (-)27'7" Submerged (Below (-)21'11")

STATES SUPPLIES

1-21

^{*} No safety-related electrical equipment is contained in environmental zone RC-27B.

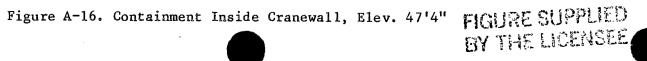
Facility: VEPCO, SURRY Units: % and 2 Dockets: 50-280 and 50-28%

ZONE: RC-47A

DESCRIPTION: Containment Inside Cranewall, Elev. 47.4%

PARAMETER	normal <u>Environment</u>	REFERENCE	LOCA <u>ENVIRONMENT</u>	REFERENCE	MSLB <u>Envikonment</u>	REFERENCE	Helb <u>Environment</u>	REFERENCE
Temperature (°F)	Design, 105F Maximum, 125F	85 8	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		NA.	
Messure (psia)	9.0-11.1	1	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-920 day		59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-720 day		NA	
RELATIVE HUMIDITY (5)	NC		100, 0-120 days	3 2	100, 0-120 days	: <b>2</b>	NA ,	
CHEMICAL SPRAY	NA .		Solution of 2000-2200 ppm B,BO, buffered with NaOH to pH of 8.5-11, 0-8 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	Solution of 2000-2200 ppm H ₂ BO ₃ buffered with NaOH to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	NA	
radiation (rads)	<1.3 x 10°	3	2.4 × 10°	3	<2.4 x 10°	3,5	NA .	
Submergence (elev)	<b>NA</b>		NA		AM		AM	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.



Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: RC-47B
DESCRIPTION: Containment Outside Cranewall, Elev. 47°4°

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	<u>REFERENCE</u>	MSLB <u>Eņvironment</u>	REFERENCE	HELB BNVIRONMENT	REFERENCE
temperature (°F)	Design, 105F Maximum, 125F	15 1	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day	•	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 day		NA .	
PRESSURE (psia)	9.0-11.1	8	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day	·	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 day		NA .	
relative Humidity (%)	NC		100, 0-120 days	s 2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA	·	Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaOH to pl of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	H hr	Solution of 2000-2200 ppm H ₃ BO ₃ buffered with NaOH to pH of 8.5-11, 0-4 Same solution with pH of betw 8.0 and 9.5, 4 hr-120 days	hr	AA	
RADIATION (rads)	3.5 x 10*	3	7.4 x 10*	3	<7.4 x 10*	3,5	NA	
Submergence (elev)	KA .	·	NA .		NA.		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-17. Containment Outside Cranewall, Elev. 47'4"

Pacility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: 88-98

DESCRIPTION: Mechanical Equipment Room 3

PARAMETER	normal <u>Environment</u>	rbfbrence	LOCA ENVIRONMENT	<u>reference</u>	MSLB <u>Environment</u>	REPERENCE	HELB Environment	REPERENCE
temperaturs (°F)	Occupied spaces, 100F Normally un- occupied machinery spaces, 120F	16	NA.		MA	,	310F, 0-30 min 310-130F, 30-60 min	
Fresure (psia)	817		SIA		BCA "		15.0	•
relative Humidity (8)	<b>39C</b>		AN.	÷	STĀ.		100	8
Chemicae Spray	ra		828		NA		MA	
RADIATION (rads)	<2500	88	<2500	13	NA.		NA.	·
Submergence (elev)	<b>NA</b>		NA.		NA		MA	

WA = Not applicable. MC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-18. Mechanical Equipment Room 3

Facility: VEPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

ZONE: SFGD-1

DESCRIPTION: Safeguards Area

				•				
<u>PARAMETER</u>	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
Température (°F)	Occupied spaces, 100F Normally un- occupied machinery spaces, 120F	14	NA .		<b>A</b> II		NA	
PRESSURE (psia)	NA.		NA		NA	,	NA	
RELATIVE HUMIDITY (%)	NC		АК		NA.		NA	
CHEMICAL SPRAY	na 		NA .		NA		NA	
RADIATION (rads)	8.8 x 10ª	7	8.0 x 10*	9	NA		NA	
SUBMERGENCE (elev)	NA.		NA		NA ·		NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-19. Safeguards Area

TER-C5257-482

#### ENVIRONMENTAL ZUNE DESCRIPTION SHEET

Facility: VEPCO, SURRY Units: 9 and 2 Dockets: 50-280 and 50-281

ZONE: TB-9 DESCRIPTION: Turbine Building, General, Elev. 9068

PARAMETER	normal Environment	REFERENCE	LOCA ENVIRONMENT	REPRESENCE	mslb Snyllanarht	REFERENCE	HELB ENVIRONMENT	REFERENCE
Temperature (°F)	Occupied spaces, 100F Mormally un- occupied machinery spaces, 120F	74	MA.		MA.		310F, 0-30 min 310-130F, 30-60 min	
iressure (psia)	MA		NA		MA		15.0	•
relative Humidity (3)	NC		NA		NA		100	u
Chemical Spray	NJA.	٠.	848.	•	83A		na.	
RADIATION (rads)	<2500	<b>9</b> 9	<2500	13	NA.		AA	-
Submergence (elev)	NA		MA		NA.		NA.	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

Figure A-20. Turbine Building, General, Elev. 9'6"

## ER-C5257-482

#### ENVIRONMENTAL SONE DESCRIPTION SHEET

Facility: VSPCO, SURRY Units: 1 and 2 Dockets: 50-280 and 50-281

NOME: TB-35 DESCRIPTION: Turbine Building, Messanine Level

PARAMETER	normal Environment .	BALERANCE	Loca Environment	REFERENCE	MSLB BHYIROMBENT	REFERENCE	HELB ERVIRONIENT	REPERENCE
Temperature (°F)	Occupied spaces, %00F Sormelly un- occupied machinery spaces, %20F	90		****	866	***************************************	310F, 0-30 min 380-830F, 30-60 min	•
Pressure (psia)	SIA		NA.		BGA.		15.0	•
PELATIVE HUMIDITY (5)	ИС	<del></del>	8GA	**************************************	<b>167</b>	-	100	•
CHEMICAL SPRAY	NA.		KOA ,		<b>50</b> A		MA	
RADIATION (rads)	<2500	11	<2500	13	MA		BIA.	
Submergence (elev)	SEA.	<del></del>	KA.	**************************************	ж		NA.	

NA = Not applicable. NC = Not calculated. Rumbers appearing in Reference columns are identified at the end of this section.

Figure A-21. Turbine Building, Mezzanine Level

Figure A-22. Environmental Qualification of Electrical Equipment Zone Key Plan



#### APPENDIX B - LISTING OF SAFETY-RELATED ELECTRICAL EQUIPMENT

The following table lists the groupings of safety-related electrical equipment items for Surry Power Station 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 [14, 17].

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 in a plant area exposed to the same environmental service conditions (e.g., Flow Transmitter, Fischer & Porter, Model 10B2496, located within containment). This analysis resulted in a reduced listing of equipment (equipment items) that formed the basis for the review. This appendix contains the tabulation of the equipment items, locations, function, plant identification numbers, required operating time, and applicable qualification documentation references.



EQUIPMENT ITEM NO. 1

PRESSURE TRANSMITTER LOCATED IN THE AUXILIARY BUILDING (AB-13A)

FISCHER AND PORTER MODEL 50EN1071BCXA

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 1

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): REACTOR CONTAINMENT PRESSURE (PT-LM-100A, B, C, D)

LICENSEE SUBMITTAL: SCEW(S): 6-116 TO -119

EQUIPMENT ITEM NO. 2

PRESSURE TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL

FISCHER AND PORTER MODEL 10B2496 QBXA NS

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 2

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): PRESSURIZER PRESSURE INDICATION AND HIGH/LOW PROTECTION,

(PT-1455, -1456, -1457)

LICENSEE SUBMITTAL: SCEW(S): 6-174 TO -176

EQUIPMENT ITEM NO. 3

PRESSURE TRANSMITTER LOCATED IN THE SAFEGUARDS AREA

FISCHER AND PORTER MODEL 50EP10.31BCXA

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 3

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): OUTSIDE R.S. PUMP DISCHARGE (PT-RS-156A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-272, -273

EQUIPMENT ITEM NO. 4

PRESSURE TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ROSEMOUNT MODEL 1153AGD9 XM 54854

REQUIRED OPERATING TIME: NOT SPECIFIED

TER CHECKSHEET NO. 4

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): RCS WIDE RANGE (PT-RC-1402-1; PT-1402)

LICENSEE SUBMITTAL: SCEW(S): 6-268, -267

EQUIPMENT ITEM NO. 5

PRESSURE TRANSMITTER LOCATED IN THE TURBINE BUILDING (TB-35)

FISCHER AND PORTER MODEL 50EP1041BCXANS

REOUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 5

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): STEAM HEADER PRESSURE (PT-1464; -1466, -1468)

LICENSEE SUBMITTAL: SCEW(S): 6-136 TO -138



ZQUIPMENT ITEM NO. 6

PRESSURE TRANSMITTER LOCATED IN THE MAIN STEAM VALVE HOUSE

FISCHER AND PORTER MODEL 50EP1041BCXANS

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 6

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): STEAM GENERATOR STEAM PRESSURE (PT-1474 TO -1476, -1484

TO -1486, -1494 TO -1496)

LICENSEE SUBMITTAL: SCEW(S): 6-139 TO -147

EQUIPMENT ITEM NO. 7

PENETRATION LOCATED IN THE RC-18B INSIDE AND OUTSIDE CONTAINMENT, OUTSIDE CRANEWALL

CONAX, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 7

LICENSEE REFERENCE(S): 1049, 60

FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEM (SPEC. NO. NAS-21,

NA-313/1313)

LICENSEE SUBMITTAL: SCEW(S): 6-27 TO -31

UIPMENT ITEM NO. 8

ECTRICAL PENETRATION LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)

AMPHENOL MODEL TYPE 1A

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 8

LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 5286, 3190, 81

FUNCTION (PLANT ID): ELECTRICAL PENETRATION (SPEC. NO. NUS-41, 65/1065)

LICENSEE SUBMITTAL: SCEW(S): 6-43 TO -45

EQUIPMENT ITEM NO. 9

ELECTRICAL PENETRATION LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)

AMPHENOL MODEL TYPE III

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 9

LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 5286, 3190, 81

FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEM (SPEC. NO. NUS-41,

65/1065)

LICENSEE SUBMITTAL: SCEW(S): 6-46



EOUIPMENT ITEM NO. 10

ELECTRICAL PENETRATION LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)

AMPHENOL MODEL TYPE IV

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 10

LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 5286, 3190, 81

FUNCTION (PLANT ID): SUPPLIES POWER TO SUPPLY SYSTEM (SPEC. NO. NUS-41,

65/1065)

LICENSEE SUBMITTAL: SCEW(S): 6-47

EOUIPMENT ITEM NO. 11

FLOW TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)

FISCHER AND PORTER MODEL 10B2496PBNS

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 11

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): SG1A AUXILIARY FEEDWATER FLOW (FT-FW-100C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-84 TO -86

EQUIPMENT ITEM NO. 12

FLOW TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)

FISCHER AND PORTER MODEL 10B2496QB

REOUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 12

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): STEAM-FLOW TRANSMITTER (FT-1485, -1484, -1475, -1474,

-1495, -1494)

LICENSEE SUBMITTAL: SCEW(S): 6-130 TO -135

EQUIPMENT ITEM NO. 13

FLOW TRANSMITTER LOCATED IN THE SAFEGUARDS AREA (SFGD-1)

ROSEMOUNT MODEL 1152DP5

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 13

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): LOW HEAD INJECTION HEADER FLOW (FT-1945, -1946)

LICENSEE SUBMITTAL: SCEW(S): 6-277, -278

EQUIPMENT ITEM NO. 14

FIOW TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-27B)

BARTON MODEL 386

REQUIRED OPERATING TIME: NOT SPECIFIED

TER CHECKSHEET NO. 14

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): COLD LEG SAFETY INJECTION FLOW (FT-1963, -1962, -1961)

LICENSEE SUBMITTAL: SCEW(S): 6-274 TO -276



EQUIPMENT ITEM NO. 15

FLOW TRANSMITTER LOCATED IN THE AUXILIARY BUILDING

FISCHER AND PORTER MODEL 10B2496QB REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 15

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): CHARGING FLOW/MINIMUM BORATION (FT-1122)

LICENSEE SUBMITTAL: SCEW(S): 6-11

EQUIPMENT ITEM NO. 16

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B, RC-18B)

ROSEMOUNT MODEL 1153 SERIES A

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 16

LICENSEE REFERENCE(S): 1764

FUNCTION (PLANT ID): STEAM GENERATOR NARROW RANGE LEVEL (LT-1494 TO -1496,

-1484 TO -1486, -1476, -1475)

LICENSEE SUBMITTAL: SCEW(S): 6-89 TO -95

EQUIPMENT ITEM NO. 17

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)

SEMOUNT MODEL 1153DA4

UIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 17

LICENSEE REFERENCE(S): 1764

FUNCTION (PLANT ID): STEAM GENERATOR 1 NARROW RANGE LEVEL (LT-1474)

LICENSEE SUBMITTAL: SCEW(S): 6-87

EQUIPMENT ITEM NO. 18

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-27B)

ROSEMOUNT MODEL 1153ADP5 XM54854

REQUIRED OPERATING TIME: NOT SPECIFIED

TER CHECKSHEET NO. 18

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): STEAM GENERATOR WIDE RANGE (LT-1477, -1487, -1497)

LICENSEE SUBMITTAL: SCEW(S): 6-269 TO -271

EQUIPMENT ITEM NO. 19

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)

BARTON MODEL 386

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 19

LICENSEE REFERENCE(S): 3836

FUNCTION (PLANT ID): PRESSURIZER LEVEL INDICATION CONTROL AND PROTECTION

(LT-1459 TO -1461)

ENSEE SUBMITTAL: SCEW(S): 6-171 TO -173



LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-27B)

GEMS MODELS XM54853, XM54854

REQUIRED OPERATING TIME: NOT SPECIFIED

TER CHECKSHEET NO. 20

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT SUMP LEVEL (LT-RS-151B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-266, -265

EQUIPMENT ITEM NO. 21

TERMINAL BLOCK LOCATED INSIDE CONTAINMENT (RC-3A)

BURNDY, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 21

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL

LICENSEE SUBMITTAL: SCEW(S): 6-264

EQUIPMENT ITEM NO. 22

TERMINAL BLOCK LOCATED INSIDE CONTAINMENT (RC-3A)

BUCHANAN, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 22

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL

LICENSEE SUBMITTAL: SCEW(S): 6-263

EQUIPMENT ITEM NO. 23

TERMINAL BLOCK LOCATED INSIDE CONTAINMENT (RC-3A)

GENERAL ELECTRIC, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 23

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALVE POSITION INDICATOR AND CONTROL

LICENSEE SUBMITTAL: SCEW(S): 6-261

EQUIPMENT ITEM NO. 24

HYDROGEN ANALYZER LOCATED IN THE AUXILIARY BUILDING, 13'0" LEVEL (AB-13A)

BENDIX MODEL THERMATRON T3

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 24

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): RADIOACTIVE WASTE GAS/POST-ACCIDENT MONITORING

(1-GW-H2A-103)



LIMIT SWITCH LOCATED INSIDE CONTAINMENT (RC-3A)

MANUFACTURER AND MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 25

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL

LICENSEE SUBMITTAL: SCEW(S): 6-260

EQUIPMENT ITEM NO. 26

ELECTRICAL CABLE SPLICE LOCATED INSIDE CONTAINMENT (RC-3A)

MANUFACTURER AND MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 26

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALE POSITION INDICATION AND CONTROL

LICENSEE SUBMITTAL: SCEW(S): 6-262

EQUIPMENT ITEM NO. 27

HYDROGEN RECOMBINER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)

WESTINGHOUSE, MODEL NOT STATED

OUIRED OPERATING TIME: 120 DAYS

R CHECKSHEET NO. 27

LICENSEE REFERENCE(S): 1571 TO 1578, 37, 38, 45

FUNCTION (PLANT ID): HYDROGEN RECOMBINER (1-GW-HC-2A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-102, -103

EQUIPMENT ITEM NO. 28

DAMPER LOCATED IN THE AUXILIARY BUILDING VENTILATION (AB-45)

BUFFALO FORGE MODEL TYPE BL

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 28

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): DAMPER FOR CHARCOAL FILTRATION SYSTEM (DAMPER 3A, B (2))

LICENSEE SUBMITTAL: SCEW(S): 6-109, -110

EQUIPMENT ITEM NO. 29

DISTRIBUTION PANEL LOCATED IN THE AUXILIARY BUILDING CABLE VAULT (AB-13B)

WESTINGHOUSE MODEL A

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 29

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): SUPPLY POWER H2 RECOMBINER UNITS (POWER SUPPLY FOR

1-GW-HC-2A)



DISTRIBUTION PANEL LOCATED IN THE AUXILIARY BUILDING CABLE VAULT (AB-13B)

WESTINGHOUSE MODEL A

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 30

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): SUPPLY POWER H2 RECOMBINER UNITS (POWER SUPPLY FOR

1-GW-HC-2B)

LICENSEE SUBMITTAL: SCEW(S): 6-106

EOUIPMENT ITEM NO. 31

TEMPERATURE ELEMENT LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

ROSEMOUNT MODEL 176KS

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 31

LICENSEE REFERENCE(S): 687

FUNCTION (PLANT ID): RCS TEMPERATURE ELEMENT HOT LEG LOOPS (TE-1433, -1413,

-1423)

LICENSEE SUBMITTAL: SCEW(S): 6-188, -180, -184

FUNCTION (PLANT ID): RC DELTA T/TAVG PROTECTION SYSTEM LOOPS (TE-1432D, B:

1422D, B; -1412B, D)

LICENSEE SUBMITTAL: SCEW(S): 6-187, -186, -183, -182, -178, -179

FUNCTION (PLANT ID): RCS TEMPERATURE ELEMENT COLD LEG LOOPS (TE-1430, -1420)

LICENSEE SUBMITTAL: SCEW(S): 6-185, -181

FUNCTION (PLANT ID): RCS TEMPERATURE ELEMENT (WIDE-RANGE) (TE-1410)

LICENSEE SUBMITTAL: SCEW(S): 6-177

EQUIPMENT ITEM NO. 32

ELECTRICAL CONTROL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

CERRO WIRE AND CABLE MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 32

LICENSEE REFERENCE(S): 676, 70, 71, 69

FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEMS (SPEC NO. NAS-120,

NA-312/1312; NAS-3187, NA-3187/4187)

LICENSEE SUBMITTAL: SCEW(S): 6-32, -33

EQUIPMENT ITEM NO. 33

ELECTRICAL INSTRUMENT CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

(RC-JA)

BOSTON INSULATED WIRE MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 33

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): SUPPLIES SIGNAL (SPEC. NO. NAS-128, NA-265/1265)



ELECTRICAL INSTRUMENT CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

CERRO WIRE AND CABLE MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 34

LICENSEE REFERENCE(S): 1110, 74

FUNCTION (PLANT ID): SUPPLY SIGNAL (SPEC. NO. NAS-430, NA-392/1392)

LICENSEE SUBMITTAL: SCEW(S): 6-35

EQUIPMENT ITEM NO. 35

ELECTRICAL INSTRUMENT CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

RAYCHEM MODEL FLAMTROL

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 35

LICENSEE REFERENCE(S): 1831, 1832, 75

FUNCTION (PLANT ID): 300V INSTRUMENT CABLE (SPEC. NO. NAS-3190, 3190/4190)

LICENSEE SUBMITTAL: SCEW(S): 6-36

EQUIPMENT ITEM NO. 36

ECTRICAL CONTROL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

RRO WIRE AND CABLE MODEL PYROTROL III

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 36

LICENSEE REFERENCE(S): 676, 70, 71, 76

FUNCTION (PLANT ID): 1000V CONTROL CABLE (SPEC. NOS. NUS-325, SN-246;

NUS-381C, SN-446; NUS-381E, SN-1447/1246; NUS-362,

SN-1246)

LICENSEE SUBMITTAL: SCEW(S): 6-37 TO -39, 6-42A

EQUIPMENT ITEM NO. 37

ELECTRICAL CONTROL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

GENERAL ELECTRIC MODEL XPLE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 37

LICENSEE REFERENCE(S): 3582

FUNCTION (PLANT ID): 1000V CONTROL CABLE (SPEC. NO. NUS-381, SN-398)

ELECTRICAL CONTROL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

CONTINENTAL WIRE MODEL XPLE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 38

LICENSEE REFERENCE(S): 3582

FUNCTION (PLANT ID): 1000V CONTROL CABLE (SPEC. NO. NUS-420, SN-1463)

LICENSEE SUBMITTAL: SCEW(S): 6-42

EQUIPMENT ITEM NO. 39

ELECTRICAL CONTROL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

OKONITE MODEL ETHYLENE PROPYLENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 39

LICENSEE REFERENCE(S): 1339, 58, 59

FUNCTION (PLANT ID): 1000V CONTROL CABLE (SPEC. NO. NUS-381B, SN-440/1440;

NUS-410, SIN-1446)

LICENSEE SUBMITTAL: SCEW(S): 6-42B, -41

EQUIPMENT ITEM NO. 40

ELECTRICAL POWER CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

KAISER MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 40

LICENSEE REFERENCE(S): 3582

FUNCTION (PLANT ID): 600V POWER CABLE (SPEC. NO. NUS-225, SN-251; NUS-365A,

SN-1251)

LICENSEE SUBMITTAL: SCEW(S): 6-48, -49

EQUIPMENT ITEM NO. 41

ELECTRICAL POWER CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

OKONITE MODEL XPLE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 41

LICENSEE REFERENCE(S): 1340, 77

FUNCTION (PLANT ID): 600V POWER CABLE (SPEC. NO. NUS-365B, SN-1380; NUS-365C,

SN-1392; NUS-365D, SN-1417)

LICENSEE SUBMITTAL: SCEW(S): 6-50 TO 6-52

FUNCTION (PLANT ID): 600V ALUMINUM POWER CABLE (SPEC. NO. NUS-374, SN-375)



ELECTRICAL POWER CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

COLLYER INSULATED WIRE MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 42

LICENSEE REFERENCE(S): 4019

FUNCTION (PLANT ID): 600V POWER CABLE (SPEC. NO. NUS-365E, SN-457)

LICENSEE SUBMITTAL: SCEW(S): 6-54

EQUIPMENT ITEM NO. 43

ELECTRICAL POWER CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

ANACONDA WIRE AND CABLE MODEL EPR/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 43

LICENSEE REFERENCE(S): 1347, 95, 97, 94

FUNCTION (PLANT ID): 600V POWER CABLE (SPEC. NO. NUS-365F, SN-462)

LICENSEE SUBMITTAL: SCEW(S): 6-55

EQUIPMENT ITEM NO. 44

ELECTRICAL POWER CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

OKONITE MODEL EP/NEOPRENE

EQUIRED OPERATING TIME: 120 DAYS

R CHECKSHEET NO. 44

ZICENSEE REFERENCE(S): 2103, 1339, 98

FUNCTION (PLANT ID): SUPPLY POWER TO SAFETY SYSTEMS (SPEC. NO. NAS-116A,

NA-128/1128)

LICENSEE SUBMITTAL: SCEW(S): 6-56

FUNCTION (PLANT ID): 600V POWER CABLE (SPEC. NO. NAS-3185, 3185/4185)

LICENSEE SUBMITTAL: SCEW(S): 6-57

EQUIPMENT ITEM NO. 45

ELECTRICAL INSTRUMENT CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

(RC-3A)

CONTINENTAL WIRE MODEL XLPE/HYPALON

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 45

LICENSEE REFERENCE(S): 1207, 89, 83

FUNCTION (PLANT ID): 600V POWER CABLE (SPEC. NO. NUS-341, SN-285/1285)

LICENSEE SUBMITTAL: SCEW(S): 6-58

FUNCTION (PLANT ID): 600V INSTRUMENT CABLE (SPEC. NO. NUS-411, SN-1458;

NUS-341A, SN-1439)

LICENSEE SUBMITTAL: SCEW(S): 6-59, 6-59A



ELECTRICAL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

CONTINENTAL WIRE MODEL SILICONE RUBBER

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 46

LICENSEE REFERENCE(S): 2818

FUNCTION (PLANT ID): SUPPLY POWER TO SAFETY SYSTEM (SPEC. NO. NUS-326, NO.

330)

LICENSEE SUBMITTAL: SCEW(S): 6-60

EQUIPMENT ITEM NO. 47

ELECTRICAL POWER CABLE LOCATED OUTSIDE CONTAINMENT (AB-27)

COLLYER INSULATED WIRE MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 47

LICENSEE REFERENCE(S): 4019

FUNCTION (PLANT ID): 5000V POWER CABLE (SPEC. NO. NUS-364, SN-1250)

LICENSEE SUBMITTAL: SCEW(S): 6-60A

EOUIPMENT ITEM NO. 48

ELECTRICAL POWER CABLE LOCATED OUTSIDE CONTAINMENT (AB-27)

OKONITE MODEL OKOGUARD

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 48

LICENSEE REFERENCE(S): 2103, 58, 59

FUNCTION (PLANT ID): 5 KV POWER CABLE (SPEC. NO. 364A, SN-1443)

LICENSEE SUBMITTAL: SCEW(S): NUS-364A

EQUIPMENT ITEM NO. 49

ELECTRICAL POWER CABLE LOCATED OUTSIDE CONTAINMENT

KAISER MODEL XLPE/NEOPRENE

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 49

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): 5000V POWER CABLE (SPEC. NO. NUS-217, SN-250)

LICENSEE SUBMITTAL: SCEW(S): 6-60B

EQUIPMENT ITEM NO. 50

ELECTRIC MOTOR LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-3A)

GENERAL ELECTRIC MODEL 5K6319XJ1B

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 50

LICENSEE REFERENCE(S): 42, 41

FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP MOTOR (1-RS-P-1A, B)



ELECTRIC MOTOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

WESTINGHOUSE MODEL ABDP

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 51

LICENSEE REFERENCE(S): 604, 606, 51

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP MOTOR (1-SI-P-1B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-199, -198

EQUIPMENT ITEM NO. 52

ELECTRIC MOTOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

GENERAL ELECTRIC MODEL 5K6287XH41A

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 52

LICENSEE REFERENCE(S): 42, 48

FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP MOTOR (1-RS-P-2B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-157, -156

EQUIPMENT ITEM NO. 53

ELECTRIC MOTOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-1)

GENERAL ELECTRIC MODEL 5KC37JG770X

QUIRED OPERATING TIME: 120 DAYS

R CHECKSHEET NO. 53

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): SERVICE WATER RETURN FROM RECIRCULATION SPRAY HEAT

EXCHANGER RADIATION MONITOR (1-SW-P-5A, -5B, -5C, -5D)

LICENSEE SUBMITTAL: SCEW(S): 6-250 TO -253

EQUIPMENT ITEM NO. 54

ELECTRIC MOTOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)

MANUFACTURER AND MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 54

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): AUXILIARY FEEDWATER PUMP (1-FW-P-3B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-101B, A

EQUIPMENT ITEM NO. 55

MOTOR CONTROL CENTER LOCATED IN THE AUXILIARY BUILDING CABLE VAULT (AB-13B)

CUTLER HAMMER MODEL UNITROL

REQUIRED-OPERATING-TIME: -120-DAYS

TER CHECKSHEET NO. 55

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): SUPPLY POWER TO SAFETY SYSTEM (1-H1-2 NORTH, SOUTH;

1-J1-2 WEST, EAST)

ENSEE SUBMITTAL: SCEW(S): 6-23 TO -26



ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING VENTILATION (AB-45)

SIEMENS-ALLIS MODEL 444TS

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 56

LICENSEE REFERENCE(S): 5213

FUNCTION (PLANT ID): AUXILIARY BUILDING CONTROL AREA EXHAUST FAN MOTOR

(1-VS-F-58B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-108, -107

EQUIPMENT ITEM NO. 57

ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE

WESTINGHOUSE MODEL 68659

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 57

LICENSEE REFERENCE(S): 604, 606, 32

FUNCTION (PLANT ID): HIGH HEAD SAFETY INJECTION/NORMAL CHARGING (1-CH-P-1A,

B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-7 TO 6-9

EQUIPMENT ITEM NO. 58

ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

GENERAL ELECTRIC, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 58

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CHARGING PUMP COOLING (1-CC-P-2A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-61, -62

EQUIPMENT ITEM NO. 59

ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING

MANUFACTURER AND MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 59

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP MOTOR (1-CV-P-1B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-79, -78

EQUIPMENT ITEM NO. 60

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

LIMITORQUE MODEL SMBO WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 60

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): BORIC ACID INJECTION TANK OUTLET VALVE (MOV-1842)



MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

LIMITORQUE MODEL SMB WITH CLASS B INSULATION; SIZES 00, 000 WITH MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 61

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM REFUELING WATER STORAGE TANK

(MOV-1115D)

LICENSEE SUBMITTAL: SCEW(S): 6-15

FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM VOLUME CONTROL TANK

(MOV-1115B)

LICENSEE SUBMITTAL: SCEW(S): 6-13

EQUIPMENT ITEM NO. 62

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB1 WITH MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 62

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE VALVE (MOV-1864B, A)

CENSEE SUBMITTAL: SCEW(S): 6-229, -228

EQUIPMENT ITEM NO. 63

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB2 WITH CLASS B INSULATION; MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 63

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION STOP VALVE (MOV-1890A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-215 TO -217

EQUIPMENT ITEM NO. 64

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

LIMITORQUE MODEL WITH PEERLESS MOTOR CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 64

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHARGING PUMP RECIRCULATION TO REFUELING WATER STORAGE

TANK (MOV-127-5A)



MOTORIZED VALVE ACTUATOR LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL, SUBMERGED (RC-3A)

LIMITORQUE, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 65

LICENSEE REFERENCE(S): 43

FUNCTION (PLANT ID): ACCUMULATOR ISOLATION (MOV-1865A TO 1865C)

LICENSEE SUBMITTAL: SCEW(S): 6-207 TO -209

EQUIPMENT ITEM NO. 66

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMBOO WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 66

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION (MOV-1862B)

LICENSEE SUBMITTAL: SCEW(S): 6-204

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION FROM REFUELING WATER

STORAGE TANK (MOV-1862A)

LICENSEE SUBMITTAL: SCEW(S): 6-203

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-1885A,

B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-230C, B, A

FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP SUCTION (MOV-RS-156A, B; -155A,

B)

LICENSEE SUBMITTAL: SCEW(S): 6-158 TO -161

EQUIPMENT ITEM NO. 67

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

LIMITOROUE MODEL SMB00

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 67

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): BORON INJECTION TANK BYPASS (MOV-1869B)

LICENSEE SUBMITTAL: SCEW(S): 6-230

FUNCTION (PLANT ID): SAFETY INJECTION TO REACTOR HOT LEG ISOLATION (MOV-1869A)

LICENSEE SUBMITTAL: SCEW(S): 6-214

FUNCTION (PLANT ID): BORON INJECTION TANK OUTLET ISOLATION (MOV-1867D)

LICENSEE SUBMITTAL: SCEW(S): 6-213

FUNCTION (PLANT ID): BORIC ACID INJECTION TANK OUTLET VALVE (MOV-1867C)

LICENSEE SUBMITTAL: SCEW(S): 6-212

FUNCTION (PLANT ID): BORIC ACID INJECTION TANK VALVE (MOV-1867A)

LICENSEE SUBMITTAL: SCEW(S): 6-210

FUNCTION (PLANT ID): CHARGING TO REGENERATIVE HEAT EXCHANGER STOP VALVE

(MOV-1289A)



EQUIPMENT ITEM NO. 67 (CONTINUED)

LICENSEE SUBMITTAL: SCEW(S): 6-17

FUNCTION (PLANT ID): CHARGING HEADER PENETRATION AREA (MOV-1289B)

LICENSEE SUBMITTAL: SCEW(S): 6-18

FUNCTION (PLANT ID): CHARGING PUMP RECIRCULATION TO REFUELING WATER STORAGE

TANK HEADER ISOLATION (MOV-1373)

LICENSEE SUBMITTAL: SCEW(S): 6-5

EQUIPMENT ITEM NO. 68

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING (AB-13A) LIMITORQUE MODEL SMB00 WITH CLASS B INSULATION; MOTOR-BRAKE ASSEMBLY

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 68

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE (MOV-1863A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-205, -206

EQUIPMENT ITEM NO. 69

MOTORIZED VALVE ACTUATOR LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-47A)

LIMITORQUE MODEL SMB000

REQUIRED OPERATING TIME: 120 DAYS

R CHECKSHEET NO. 69

CENSEE REFERENCE(S): 659, 706, 43

FUNCTION (PLANT ID): PRESSURIZER RELIEF BLOCK VALVE (MOV-1535, -1536)

LICENSEE SUBMITTAL: SCEW(S): 6-196, -197

EQUIPMENT ITEM NO. 70

MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

LIMITORQUE MODEL SMB WITH CLASS B INSULATION; SIZES 00, 000

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 70

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM VOLUME CONTROL TANK

(MOV-1115C, E)

LICENSEE SUBMITTAL: SCEW(S): 6-14, -16

FUNCTION (PLANT ID): CHARGING PUMP RECIRCULATION TO REFUELING WATER STORAGE

TANK (MOV-1275B, C)

MOTORIZED VALVE ACTUATOR LOCATED IN THE CONTAINMENT SPRAY PUMP HOUSE (CSPH-11) BELOW ELEV. 27'6"

LIMITORQUE MODEL SMBOO WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 71

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): CHEMICAL ADDITION TANK ISOLATION (MOV-CS-102B)

LICENSEE SUBMITTAL: SCEW(S): 6-77

FUNCTION (PLANT ID): CHEMICAL ADDITION (MOV-CS-102A)

LICENSEE SUBMITTAL: SCEW(S): 6-76

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (MOV-CS-101D)

LICENSEE SUBMITTAL: SCEW(S): 6-75

FUNCTION (PLANT ID): SPRAY PUMP DISCHARGE ISOLATION (MOV-CS-101C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-74, -73, -72

EQUIPMENT ITEM NO. 72

MOTORIZED VALVE ACTUATOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)

LIMITORQUE MODEL SMBOO WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER (MOV-SW-105D, C)

LICENSEE SUBMITTAL: SCEW(S): 6-249, -248

FUNCTION (PLANT ID): SERVICE WATER OUTLET RECIRCULATION SPRAY HEAT EXCHANGER

(MOV-SW-105B)

LICENSEE SUBMITTAL: SCEW(S): 6-247

FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER RETURN

(MOV-SW-105A, -104D)

LICENSEE SUBMITTAL: SCEW(S): 6-246, -245

FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY

(MOV-SW-104C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-244, -243, -242

EQUIPMENT ITEM NO. 73

MOTORIZED VALVE ACTUATOR LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)

LIMITOROUE MODEL SMB00

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 73

LICENSEE REFERENCE(S): 659, 706, 43

FUNCTION (PLANT ID): AUXILIARY FEEDWATER/HELB MITIGATION (MOV-FW-151A TO F)

LICENSEE SUBMITTAL: SCEW(S): 6-96 TO -101



MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-29)

LIMITORQUE MODEL SMB000 WITH CLASS B INSULATION

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 74

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): BORIC ACID INJECTION TANK INLET VALVE (MOV-1867B)

LICENSEE SUBMITTAL: SCEW(S): 6-211

FUNCTION (PLANT ID): REACTOR COOLING PUMP SEAL WATER RETURN (MOV-1381)

LICENSEE SUBMITTAL: SCEW(S): 6-6

EQUIPMENT ITEM NO. 75

MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)

LIMITORQUE MODEL SMB000 WITH CLASS B INSULATION

REOUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 75

LICENSEE REFERENCE(S): 662, 659, 27

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION RECIRCULATION VALVE (MOV-1860A)

LICENSEE SUBMITTAL: SCEW(S): 6-201

FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-1885D)

LICENSEE SUBMITTAL: SCEW(S): 6-230D

NCTION (PLANT ID): LOW HEAD SAFETY INJECTION RECIRCULATION WATER (MOV-1860B)

CENSEE SUBMITTAL: SCEW(S): 6-202

EQUIPMENT ITEM NO. 76

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL LB831654E

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 76

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): BORON INJECTION TANK RECIRCULATION (SOV-1884C, B, A)

LICENSEE SUBMITTAL: SCEW(S): 6-227, -226, -225

EQUIPMENT ITEM NO. 77

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

ASCO MODEL LB831654

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 77

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER AUXILIARY SPRAY ISOLATION/MINIMUM BORATION

(SOV-1311)___



SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL HBX8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 78

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-150C. A)

LICENSEE SUBMITTAL: SCEW(S): 6-82, -80

FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-100C)

LICENSEE SUBMITTAL: SCEW(S): 6-169

FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-109A)

LICENSEE SUBMITTAL: SCEW(S): 6-166

FUNCTION (PLANT ID): NITROGEN SUPPLY LINE (SOV-DG-108A)

LICENSEE SUBMITTAL: SCEW(S): 6-164

EQUIPMENT ITEM NO. 79

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL HBX8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 79

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR CONTAINMENT SUMP PUMP DISCHARGE (SOV-DA-100B)

LICENSEE SUBMITTAL: SCEW(S): 6-163

FUNCTION (PLANT ID): COMPONENT COOLING RETURN FROM CONTAINMENT COOLERS

ISOLATION (SOV-CC-110A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-69 TO -71

EQUIPMENT ITEM NO. 80

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL HBX832081RF

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 80

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLING HOT LEG SAMPLE (SOV-SS-106A)

LICENSEE SUBMITTAL: SCEW(S): 6-240

FUNCTION (PLANT ID): PRESSURE RELIEF TANK SAMPLE (SOV-SS-104A)

LICENSEE SUBMITTAL: SCEW(S): 6-238

EQUIPMENT ITEM NO. 81

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-47A)

LAWRENCE MODEL 3300WA742DC

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 81

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF VALVE ACTUATION/LOCA

AND MSLB MITIGATION (SOV-1456-3, SOV-1455C-3)



SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL HT8316C47E

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 82

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-101AA, AB, BA, BB, CA, CB)

LICENSEE SUBMITTAL: SCEW(S): 6-148 TO -153

EQUIPMENT ITEM NO. 83

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

ASCO, MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 83

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REFUELING WATER STORAGE TANK CROSS CONNECT

(SOV-SI-102B2, A2)

LICENSEE SUBMITTAL: SCEW(S): 6-224, -222

EQUIPMENT ITEM NO. 84

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ANUFACTURER AND MODEL NOT STATED

QUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 84.

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-100A)

LICENSEE SUBMITTAL: SCEW(S): 6-170

FUNCTION (PLANT ID): PRIMARY GRADE WATER TO PRESSURIZER RELIEF TANK

(SOV-1519A)

LICENSEE SUBMITTAL: SCEW(S): 6-189

EQUIPMENT ITEM NO. 85

SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)

ASCO, MODEL NOT STATED

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 85

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): MAIN STEAM LINE DRAINS TO CONDENSER (SOV-MS-110)

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL (RC-47A)

ASCO MODEL NP831654E

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 86

LICENSEE REFERENCE(S): 2850

FUNCTION (PLANT ID): CHEMICAL VOLUME CONTROL SYSTEM ISOLATION VALVE FOR

LETDOWN (SOV-1200A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-20, -21, -22

FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF (SOV-1456-2, -1;

-1455C-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 6-190 TO -194

EQUIPMENT ITEM NO. 87

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 830281RF

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 87

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER PUMP/CONTAINMENT ISOLATION VALVE

OPERATOR (SOV-DG-108B)

LICENSEE SUBMITTAL: SCEW(S): 6-165

FUNCTION (PLANT ID): PRIMARY COOLANT HOT LEG SAMPLE (SOV-SS-106B)

LICENSEE SUBMITTAL: SCEW(S): 6-241

FUNCTION (PLANT ID): PRESSURE RELIEF TANK SAMPLE (SOV-SS-104B)

LICENSEE SUBMITTAL: SCEW(S): 6-239

FUNCTION (PLANT ID): RESIDUAL HEAT REMOVAL SAMPLE (SOV-SS-103)

LICENSEE SUBMITTAL: SCEW(S): 6-237

FUNCTION (PLANT ID): PRESSURE VAPOR SPACE (SOV-SS-101B1)

LICENSEE SUBMITTAL: SCEW(S): 6-234

FUNCTION (PLANT ID): PRESSURE LIQUID SPACE SAMPLE (SOV-SS-100B1)

LICENSEE SUBMITTAL: SCEW(S): 6-232

EQUIPMENT ITEM NO. 88

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL 8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 88

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR CONTAINMENT PUMP DISCHARGE (SOV-DA-100A)

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING (AB-13A)

ASCO MODEL 8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 89

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-101B)

LICENSEE SUBMITTAL: SCEW(S): 6-129

EQUIPMENT ITEM NO. 90

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 8320A12

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 90

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-101B)

LICENSEE SUBMITTAL: SCEW(S): 6-220

FUNCTION (PLANT ID): NITROGEN SUPPLY (SOV-SI-100)

LICENSEE SUBMITTAL: SCEW(S): 6-218

FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-100B)

LICENSEE SUBMITTAL: SCEW(S): 6-168

FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-109B)

CENSEE SUBMITTAL: SCEW(S): 6-167

NCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-150D)

LICENSEE SUBMITTAL: SCEW(S): 6-83

FUNCTION (PLANT ID): REACTOR CONTAINMENT PUMP COOLANT WATER ISOLATION

(SOV-CC-105A, B, C)

LICENSEE SUBMITTAL: SCEW(S): 6-63 TO -65

EQUIPMENT ITEM NO. 90 (CONTINUED)

FUNCTION (PLANT ID): REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION

(SOV-CC-107)

LICENSEE SUBMITTAL: SCEW(S): 6-66

FUNCTION (PLANT ID): COOLING WATER RETURN FROM RESIDUAL HEAT EXCHANGER

ISOLATION (SOV-CC-109A, B)

LICENSEE SUBMITTAL: SCEW(S): 6-67, -68

FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-150B)

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL NP8320A173B

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 91

LICENSEE REFERENCE(S): 2850

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENTATION AIR COMPRESSOR SUCTION

(SOV-BD-100E)

LICENSEE SUBMITTAL: SCEW(S): 6-258

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-100C)

LICENSEE SUBMITTAL: SCEW(S): 6-256

FUNCTION (PLANT ID): OUTSIDE BLOWDOWN TRIP VALVE (SOV-BD-100A)

LICENSEE SUBMITTAL: SCEW(S): 6-254

EQUIPMENT ITEM NO. 92

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)

ASCO MODEL 830282G

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 92

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG (SOV-SI-102B1, A1)

LICENSEE SUBMITTAL: SCEW(S): 6-223, -221

EQUIPMENT ITEM NO. 93

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 8320A102

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 93

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-100D, B)

LICENSEE SUBMITTAL: SCEW(S): 6-257, -255

EQUIPMENT ITEM NO. 94

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING (AB-13A)

ASCO MODEL 8320A102

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 94

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-100A TO G)

LICENSEE SUBMITTAL: SCEW(S): 6-120 TO -126

FUNCTION (PLANT ID): CONTAINMENT PRESSURE (SOV-LM-100H)

LICENSEE SUBMITTAL: SCEW(S): 6-127

FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-101A)

LICENSEE SUBMITTAL: SCEW(S): 6-128

FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-100F)



SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)

ASCO MODEL 80174

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 95

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): MAIN STEAM LINE DRAINS TO CONDENSER (SOV-MS-109)

LICENSEE SUBMITTAL: SCEW(S): 6-154

EQUIPMENT ITEM NO. 96

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL NP8320175E

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 96

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-101A)

LICENSEE SUBMITTAL: SCEW(S): 6-219

EQUIPMENT ITEM NO. 97

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 831654

QUIRED OPERATING TIME: 60 SECONDS

R CHECKSHEET NO. 97

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): LETDOWN INLET NON-REGENERATIVE HEAT EXCHANGER (SOV-1204)

LICENSEE SUBMITTAL: SCEW(S): 6-19

EQUIPMENT ITEM NO. 98

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL 830281R

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 98

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-102B1)

LICENSEE SUBMITTAL: SCEW(S): 6-236

EQUIPMENT ITEM NO. 99

SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)

ASCO MODEL HBX8320A26

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 99

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): AIR REMOVAL TO CONTAINMENT (SOV-SV-102)



SOLENOID VALVE LOCATED INSIDE CONTAINMENT (RC-3B)

ASCO MODEL HBX8320A26

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 100

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION

(SOV-IA-101A)

LICENSEE SUBMITTAL: SCEW(S): 6-114

EOUIPMENT ITEM NO. 101

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)

ASCO MODEL 830281R

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 101

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-102A1)

LICENSEE SUBMITTAL: SCEW(S): 6-235

FUNCTION (PLANT ID): PRESSURE LIQUID SPACE SAMPLE (SOV-SS-101A1, -100A1)

LICENSEE SUBMITTAL: SCEW(S): 6-233, -231

EOUIPMENT ITEM NO. 102

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)

ASCO MODEL HBX8320A26

REQUIRED OPERATING TIME: 60 SECONDS

TER CHECKSHEET NO. 102

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION

(SOV-IA-101B)

LICENSEE SUBMITTAL: SCEW(S): 6-115

FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR DISCHARGE

(SOV-IA-100)

LICENSEE SUBMITTAL: SCEW(S): 6-113

EQUIPMENT ITEM NO. 103

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING

MANUFACTURER AND MODEL NOT STATED

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 103

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CHARGING FLOW CONTROL/MINIMUM BORATION (FCV-1122)



PRESSURE TRANSMITTER LOCATED IN THE AUXILIARY BUILDING

ROSEMOUNT MODEL 1152AP7A22PB

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 104

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT PRESSURE POST-ACCIDENT MONITORING

(PT-LM-101A, -101B)

LICENSEE SUBMITTAL: SCEW(S): T-1, T-2 [3]

EQUIPMENT ITEM NO. 105

SOLENOID VALVE LOCATED IN THE SAFEGUARDS AREA

ASCO MODEL NP831654E

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 105

LICENSEE REFERENCE(S): 649

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (SOV-DA-103A, B)

LICENSEE SUBMITTAL: SCEW(S): T-3, T-4 [3]

EQIUPMENT ITEM NO. 106

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

MS MODELS XM-54854 AND XM-54853

QUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 106

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR COOLANT WATER LEVEL (WIDE RANGE) (LT-RS-151A, B)

LICENSEE SUBMITTAL: SCEW(S): T-30, T-31 [3]

EQUIPMENT ITEM NO. 107

LEVEL TRANSMITTER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

GEMS MODEL XM-54854

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 107

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): REACTOR COOLANT SUMP WATER LEVEL, NARROW RANGE

(LT-DA-110A, B)

LICENSEE SUBMITTAL: SCEW(S): T-5, T-6 [3]

EQUIPMENT ITEM NO. 108

LIMIT SWITCH LOCATED IN THE SAFEGUARDS AREA

NAMCO MODEL EA180-31302

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 108

LICENSEE REFERENCE(S): 4447

FUNCTION (PLANT ID): CONTAINMENT ISOLATION AUXILIARY BUILDING SUMP

(ZS-DA-103A, B)

CENSEE SUBMITTAL: SCEW(S): T-7, T-8 [3]



ACCELEROMETER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

ENDEVCO MODEL 2273AM20

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 109

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER SAFETY AND PORV VALVE POSITION INDICATOR

(YE-100A-1, -2; -100B-1, -2; -100C-1, -2; -101A-1, -2;

101B-1, -2)

LICENSEE SUBMITTAL: SCEW(S): T-9 THROUGH T-18 [3]

EQUIPMENT ITEM NO. 110

HARDLINE COAXIAL CABLE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

ENDEVCO MODEL 3075M6

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 110

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): VALVE POSITION INDICATION SIGNAL TRANSMISSION (LOW NOISE

CABLE)

LICENSEE SUBMITTAL: SCEW(S): T-19 [3]

EQUIPMENT ITEM NO. 111

CHARGE PREAMPLIFIER LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

UNHOLTZ-DICKIE MODEL 22CA-2TR

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 111

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRESSURIZER PORV AND SAFETY VALVE POSITION INDICATION

(YY-VMS-100A-1, -2; B-1, -2; C-1, -2; -101A-1, -2; B-1,

-2)

LICENSEE SUBMITTAL: SCEW(S): T-20 THROUGH T-29 [3]

EQUIPMENT ITEM NO. 112

SOLENOID VALVE LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

VALCOR MODEL V526

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 112

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): POST-ACCIDENT SAMPLING (HCV-SS-100A, -100B)

LICENSEE SUBMITTAL: SCEW(S): 10.3-38, -39 [14]



SOLENOID VALVE LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL

VALCOR MODEL V526

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 113

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLING VALVE (TV-SS-102A,

-106A, -103A; HCV-SS-101D, -102A)

LICENSEE SUBMITTAL: SCEW(S): 10.3-32, -34, -40, -36, -37 [14]

EQUIPMENT ITEM NO. 114

SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING

VALCOR MODEL V526

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 114

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): HYDROGEN ANALYZER CONTAINMENT ISOLATION (TV-GW-100

THROUGH -107; TV-SS-102B, -103B, -106B; S1-XCV-1401A, B;

-1422A, B)

LICENSEE SUBMITTAL: SCEW(S): 10.3-76 THROUGH -83; 10.3-33, -35, -41, -62,

-63, -64, -65 [14]

UIPMENT ITEM NO. 115

LIMIT SWITCH LOCATED INSIDE CONTAINMENT, INSIDE CRANEWALL

GORDOS MODEL MR8901

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 115

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): RHR SYSTEM OUTLET POST-ACCIDENT SAMPLING VALVE

(ZS-SS-100A-1, -2; -100B-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 10.3-54, -55, -56, -57 [14]

EQUIPMENT ITEM NO. 116

LIMIT SWITCH LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL

GORDOS MODEL MR8901

REQUIRED OPERATING TIME: 120 DAYS

TER CHECKSHEET NO. 116

LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLING VALVE (ZS-SS-102A-1,

-2; -106A-1, -2; -101D-1, -2; 102A-3, -4; 103A-1, -2)

LICENSEE SBUMITTAL: SCEW(S): 10.3-42, -43, -46, -47, -50, -51, -52, -53,

**-58**, **-59** [14]



LIMIT SWITCH LOCATED IN THE AUXILIARY BUILDING

GORDOS MODEL MR8901

REQUIRED OPERATING TIME: 120 DAYS LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLING VALVE (ZS-SS-102B-2,

-1; -106B-1, -2; 103B-1, -2; ZS-XCV-1401A-1, -2;

-1401B-1, -2; 1422A-1, -2; -1422B-1, -2; ZS-GW-100-1, -2; -101-1, -2; -102-1, -2; -103-1, -2; -104-1, -2; -105-1,

-2; -106-1, -2; -107-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 10.3-45, -44, -48, -49, -60, -61, -66 THROUGH

-69, -70 THROUGH -73, -84 THROUGH -99 [14]

EQUIPMENT ITEM NO. 118

HYDROGEN ANALYZER LOCATED IN THE AUXILIARY BUILDING

COMSIP-DELPHI MODEL K-III

REQUIRED OPERATING TIME: 120 DAYS LICENSEE REFERENCE(S): NOT CITED

FUNCTION (PLANT ID): CONTAINMENT HYDROGEN ANALYZER (H2A-GW-101-1, -2)

LICENSEE SUBMITTAL: SCEW(S): 10.3-74, -75 [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 the 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 as follows:



#### Function

#### System¹

Emergency Reactor Shutdown

Reactor Coolant
Reactor Protection
Safeguards Actuation
Chemical and Volume Control

Containment Isolation

Containment Isolation

Reactor Core Cooling

High Pressure Injection Low Pressure Injection

Accumulators

Containment Heat Removal

Containment Spray
Containment Ventilation

Containment Sump Recirculation

Core Residual Heat

Residual Heat Removal Pressurizer Spray

Power Operated Relief Valves

Main Feedwater Auxiliary Feedwater

Main Steam Steam Dump

Component Cooling Water

Service Water

Prevention of Significant Release of Radioactive Material to Environment Containment Spray (Iodine Removal)

Containment Air Purification

Containment Gas Control

Containment Radiation Monitoring Containment Radiation Sampling

Supporting Systems

Emergency Power

Control Room and Safety Equipment

Area Ventilation

^{1.} 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 function of the system(s) with the responsible IE regional reviewer and/or the licensee.

#### SAFETY-RELATED INSTRUMENTATION

In Section 3.1 of the NRC SER dated May 21, 1981 [16], 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 17, the Licensee provided the following response:

"A list of display instrumentation referenced in the Emergency Procedures is provided in Table 1 [Table C-1 of this TER]. The equipment in Table 1 has been divided into three categories.

- Category A Display instrumentation which has been previously included on the master list of the I.E. Bulletin 79-01B 90 Day Review, Revision 3. The appropriate worksheet page number for each item in this category can be found in Table 1.
- Category B Display instrumentation which is in a harsh environment but not previously listed on the master list of I.E. Bulletin 79-01B 90 Day Review, Revision 3. Equipment in this category has been added to the master list of I.E. Bulletin 79-01B 90 Day Review, Revision 4, as a result of our review of the Emergency Procedures. The appropriate worksheet page number for the equipment in this category can be found in Table 1.

The qualification status and proposed corrective action of equipment in Category B is as follows:

#### LT-RS251A, B

#### Containment Sump Level

This equipment is being replaced as part of the TMI Lessons-Learned modifications. The transmitters were included on the master list for the



TMI Review Supplement 3 response submitted February 1, 1981.

PT-2402

RCS Wide Range Pressure

PT-RC2401-1

RCS Wide Range Pressure

LT-2477, 87, 97

Steam Generator Wide Range Pressure

PT-RS256A, B

Outside Recirculation Spray Pump Discharge

Pressure

FT-2961, 62, 63

Cold Leg. SI Flow

FT-2945, 46

Low Head Injection Header Flow

The sensor, cable and terminations of the indication listed above will be reviewed for qualification. Those portions of the instrumentation loop that are exposed to a harsh environment will be upgraded with qualified equipment. This will ensure that the operator will not be provided with erroneous indication due to the effects of a harsh environment on this equipment in the event of a LOCA or MSLB.

The majority of the display instrumentation in the Surry control room is supplied directly from protection channels. However, to ensure the integrity of the trip function, an isolation device is provided to supply the indicator so that faults at the indicator will not be reflected into the safety trip portion of the circuit. Therefore, the cables that run from the safety trip circuit to the indicator are not treated as Class IE cables with respect to cable separation. This approach allows for redundant indicators to be positioned side-by-side for comparison of readings.

Qualification of Post Accident Monitoring equipment referenced in the Emergency Procedures is a new requirement. Vepco will review the qualification status of this equipment and advise the NRC of the schedule for implementation of any required corrective action by June 30, 1982.

Category C - Display instrumentation which is not exposed to a harsh environment. These components will be included on the master list for equipment which is in a mild environment and will be reviewed as such. At present there is no requirement to provide Component Evaluation sheets for equipment in a mild environment."

#### Evaluation

In view of the Licensee's response, this item is considered resolved.

## Table C-1. Display Instrumentation Referenced in the Emergency Procedures [17]

Surry 1 and 2 August 24, 1981

#### TABLE 1

#### CATEGORY A

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
TE-2413	RCS Temperature Element (Wide Range)	χ	· <b>x</b>	191	<del></del> .
TE-2423	RCS Temperature Element (Wide Range)	. X	<b>x</b>	195	·
TE-2433	RCS Temperature Element (Wide Range)	X	. <b>x</b>	199	
PT-LM200A	Containment Pressure (Narrow Range)	X	<b>x</b> .	128	
PT-LM200B	Containment Pressure (Narrow Range)	X	x	129	
PT-LM200C	Containment Pressure (Narrow Range)	<b>X</b> .	x	130	· · · ·
PT-LM200D	Containment Pressure (Narrow Range)	х	x	131	<u>. 55</u> %
LT-2459	Pressurizer Level Protection	X	х .	182	
`LT-2460	Pressurizer Level Protection	X	X	183	<b></b>
LT-2461	Pressurizer Level Protection	X	x	184	
LT-2474	Steam Generator Narrow Range Protection	. <b>X</b>	x	. 90	
LT-2484	Steam Generator Narrow Range Protection	X	<b>X</b>	93	· 
NOTE:	Surry Unit Two mark num	bers are provided. Tal	ble 1 also applies to Sur	ry Unit 1 equipmen	

FIGURE SUPPLIED BY THE LICENSEE

Surry 1 and 2 August 24, 1981

#### TABLE 1

#### CATEGORY A - (Continued)

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONME	ENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
LT-2494	Steam Generator Narrow Range Protection	X کو	•	X	96	
LT-2475	Steam Generator Narrow Range Protection	х .	•	X	91	<b></b>
LT-2485	Steam Generator Narrow Range Protection	X		X	94	
LT-2495	Steam Generator Narrow Range Protection	X		X	97	·
LT-2476	Steam Generator Narrow Range Protection	Х		<b>X</b>	92	
LT-2486	Steam Generator Narrow Range Protection	X	•	<b>X</b>	95	
LT-2496	Steam Generator Narrow Range Protection	X		<b>. X</b>	98	 ,
PT-2474	Steam Generator 1 Pressure	X	•	X	151	
PT-2475	Steam Generator 1 Pressure	X		X	152	
PT-2476	Steam Generator 1 Pressure	, <b>x</b>	•	X	153	
PT-2484	Steam Generator 2 Pressure	X		· X	154	
PT-2485	Steam Generator 2 Pressure	<b>X</b> :		X	155	<b></b> -
					FIGURE BY THE	SUPPLIED LICENSEE

FER-C5257-482

#### Table C-1 (Cont.)

#### TABLE 1

#### CATEGORY A - (Continued)

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
PT-2486	Steam Generator 2 Pressure	<u>.</u> X	X	156	<b></b> .
PT-2494	Steam Generator 3 Pressure	X	x	157	
PT-2495	Steam Generator 3 Pressure	X	X	158	
PT-2496	Steam Generator 3 Pressure	X	X	159	
FT-FW200A	Aux Steam Generator Feed Pump Flow	x	X	87	· 
FT-FW200B	Aux Steam Generator Feed Pump Flow	<b>X</b> .	X .	88	
FT-FW200C	Aux Steam Generator Feed Pump Flow	<b>x</b> .	<b>x</b> ,	89	

# FIGURE SUPPLIED BY THE LICENSEE

Surry 1 and 2 August 24, 1981

Surry and 2 August 24, 1981

### TABLE 1

#### CATEGORY B

					• •
MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
LT-RS251A	Containment Sump Level	<b>X</b>		10.3-30	TMI Reveiw Supplement 3
LT-RS251B	Containment Sump Level	. ε  Χ		10.3-31	TMI Reveiw Supplement 3
PT-2402	RCS Wide Range Pressure	X		6-273	- <del>-</del>
PT-RC2402-1	RCS Wide Range Pressure	X		6-274	
LT-2477	Steam Generator Wide Ran Level	ge X		6-275	
LT-2487	Steam Generator Wide Ran Level	ge X		6-276	~-
LT-2497	Steam Generator Wide Ran Level	ge X	•	6-277	
PT-RS256A	Outside Recirculation Sp Pump Discharge Pressure	ray X		6-278	
PT-RS256B	Outside Recirculation Sp Pump Discharge Pressure	ray X		6-279	
FT-2961	Clod Leg Safety Injectio Flow	n X		6-280	
FT-2962	Clod Leg Safety Injectio Flow	n X ·		6-281	
FT-2963	Clod Leg Safety Injection	n X		6-282	
FT-2945	Low Head Injection Heade Flow	r X		6-283	
FT-2946	Low Head Injection Header	r X	•	6-284	
	1 10#				SUPPLIED LICENSEE

#### Table C-1 (Cont.)

Surry 1 and 2 August 24, 1981

#### TABLE 1

#### CATEGORY C

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	ON MASTER LIST	WORKSHEET	COMMENT
LT-CS200A	Refueling Water Storage Tank Level	c		NA	**
LT-CS200B	Refueling Water Storage Tank Level			NA	
LT-CN200	Consensate Storage Tank	Level	•	· NA	
LT-CS200C	Consensate Storage Tank	Level		NA	
LT-CS200D	Consensate Storage Tank	Level		NA	

# FIGURE SUPPLIED BY THE LICENSEE.

### 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 (EEQ) states [16]:

"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 censing 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 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
Licensees' Responses to NRC EEQ SER Concerning Justification for Interim
Operation
FRC, 25-Jan-82

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 valuations were performed, the licensees determined that, although full alification 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: Virginia Electric and Power Company Plant Name: Surry Unit 1 NRC Docket No. 50-280 NRC TAC No. 42-468 NRC Contract No. NRC-03-79-118 FRC Project No. C5257 FRC Assignment No. 13 FRC Task No. 482

### References:

- a. R. H. Leasburg
  Letter to H. R. Denton and S. A. Varga, NRC.
  Subject: Response to Safety Evaluation Report for
  Environmental Qualification ... IE Bulletin 79-01B 90-Day Review;
  Surry Units 1 and 2
  Virginia Electric & Power Co., 24-Aug-81
  Serial No. 329
- b. Office of Nuclear Reactor Regulation Safety Evaluation Report for Surry Unit 1 Environmental Qualification of Safety-Related Electrical Equipment NRC, 21-May-81



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]. 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; with the following exceptions:

Equipment Item	Equipment Description/ Function	SCEW Sheet	Status Code	Basis for Deficiency
Terminal blocks and splices	Various safety-related circuits	Para. 7.1.11 [a]	2	Note 1
ASCO solenoid valve operators	Various systems inside and outside containment	Para. 7.2.2 [a]	2	Note 2
Pumps	Charging pump component cooling water pumps	Para. 7.2.7 [a], 6-61, 6-62	2	Note 3

In general, with the exception of the items noted above, 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.

# JUSTIFICATION FOR INTERIM OPERATION (JIO) STATUS CODE:

- No justification for interim operation provided.
- *2. Justification for interim operation submitted but technically deficient.
- 3. Justification for interim operation submitted and requires further evaluation:
  - a. Systems response
  - b. Non-systems response.
- 4. Licensee states the item is or should be exempted from qualification:
  - *a. Basis for exemption technically deficient, both as an exemption request and as a justification for interim operation.
    - b. Basis for exemption requires further evaluation as a justification for interim operation:
      - (1) System response
      - (2) Non-systems response.



^{*}Basis for deficiency is provided in Notes 1 through 3.



The Licensee states:

# '7.1.11 Terminal Blocks and Splices

Terminal blocks and splices of several manufacturers have been utilized in safety related circuits for Surry Units 1 and 2. Documentation to support qualification of all types of terminal blocks and splices has not been assembled.

# 7.1.11.1 Modification/Replacement Status

VEPCO has undertaken a program (special test 104) to verify model and serial numbers of all safety-related equipment on the master list. As a result of the special test effort, many of the terminal blocks and splices have been identified. Information we can gather generically on various manufacturers/types of terminal blocks indicate that most of all types of terminal blocks are qualifiable to meet the DOR guidelines.

Upon completion of our review of the information gathered in the field verification program, qualification packages for all types of installed terminal blocks and splices will be assembled. Where documentation deficiencies cannot be corrected in a cost effective manner, the terminal blocks or splices will be replaced by qualified terminal blocks or splices.

As part of the field verification program, all terminal blocks in safety related circuits located inside containment were replaced with qualified Raychem Splices (WCSF-N).

# 7.1.11.2 Modification/Replacement Schedule

The field inspection of installed terminal blocks and splices will be finalized to provide specific identification of the installed terminal blocks and splices. This inspection will be completed by the first quarter of 1982. Upon completion of this inspection, the data will be reviewed to identify any unqualified terminal blocks and splices. A schedule for replacement of any unqualified terminal blocks or splices will be developed by the end of the second quarter of 1982.

# 7.1.11.3 <u>Justification for Continued Operation</u>

The terminal blocks and splices that exist in the plant have been specified and installed in strict accordance with the established power industry practices. These terminal blocks and splices have a history of reliability and satisfactory performance under similar operating conditions.



On the basis of the above, it is reasonable to conclude that these terminal blocks and splices will perform their intended safety function when exposed to harsh environments. Therefore, continued operation of the Surry Units with this equiment, albeit incomplete qualification documentation, will have little or no impact on plant safety.'

### FRC EVALUATION

FRC assumes that the remaining splices and terminal blocks that require field verification are located outside containment in HELB areas. FRC concludes that for unverified components (terminal blocks and splices) which are required to operate under DBE HELB conditions, the Licensee's contention that industry specifications and practices are adequate is not a suitable justification for interim operation unless it has been verified that those practices and specifications envelope the DBE conditions.

### NOTE 2

The Licensee states:

'7.2.2 ASCO (Solenoid Operators)

# 7.2.2.1 Modification/Replacement Status

We are in the process of replacing all solenoids which lack complete qualification documentation with qualified components. We will replace them with ASCO NP-Series SOVs.

# 7.2.2.2 Modification/Replacement Schedule

Replacement SOVs have been placed on order. Based on current projections for material delivery and the present outage schedule, replacements are scheduled to start during the first quarter of 1982.

## 7.2.2.3 Justification For Continued Operation

The solenoid valves that exist in the plant have been specified, installed, and maintained thus far in strict accordance with established power industry practices. These valves have Class B insulation coils rated at 266 F (130C) for continuous operation. The existing solenoid valves are NEMA type 4 construction, which is a watertight and dust tight construction. Their enclosures are intended to protect enclosed components against splashing water, seepage of water, and several external environments. They are heat resistant. They are Underwriter's



Laboratory (UL) listed, and Factory Manual certified, which are based on type tests. Material analysis of the existing solenoid components (i.e., insulation, plastic parts such as bobbin, o-rings and seals) indicate that they have a radiation resistance of 10E6 rads or better.

On the basis of the above, it is reasonable to conclude that these solenoid valves will perform their intended safety function when exposed to harsh environments. Therfore, continued operation of Surry Units with this equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.'

### FRC EVALUATION

Although the Licensee has provided a material analysis which he maintains is reasonable assurance of operability, FRC concludes that the justification for interim operation is not adequate to provide assurance for solenoids which are required to operate after the DBE at various time intervals. The Licensee's analysis should address the specific safety function and failure modes of the solenoid valves and the effect on system operation."



The Licensee states:

# '7.2.7 General Electric Corporation (Charging Pump Component Cooling Water Pumps)

PLANT ID NO.

WORKSHEET PAGE NO.

1-CC-P-2A 1-CC-P-2B 6-61

6-62

# 7.2.7.1 Modification/Replacement Status

We will replace the charging pump component cooling water pump motors with qualified replacement units.

# 7.2.7.2 Modification/Replacement Schedule

Based on current projections for purchase order placement, material delivery and our present outage schedule, replacement is scheduled to start during the last quarter of 1982.



# 7.2.7.3 Justification For Continued Operation

The charging pump component cooling water pumps provide seal and cooling water for the mechanical seals of the charging pumps during their operation. In the event of a cooling water pump failure, the manufacturer has determined that the water reservoir surrounding the charging pump mechanical seals should provide a sufficient buffer to extend the operation of the pumps for approximately one (1) hour. Further, since during the use of charging pumps in its safety injection mode, it is handling cold water from the refueling water storage tank, which will minimize the heat load for the charging cooling system.

On the basis of the above, it is concluded that the component cooling water pumps will perform their intended safety function, and will have no impact on plant safety.'

### FRC EVALUATION

FRC concludes that no assurance of operability beyond 1 hour after failure of cooling water pumps has been provided by the Licensee. The Licensee should assess the availability of alternate systems to provide the essential safety function."



# 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

Virginia Electric and Power Company Surry Unit 1

NRC Docket No. 50-280

NRC TAC No. 42468

November 30, 1981

Rev. 1, April 7, 1982 Rev. 2, June 4, 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 February 1, 1981 [1] and December 1, 1980 [2].* FRC previously requested TMI Action Plan information by a telephone memorandum dated August 12, 1981 [3].

In response, VEPCO transmitted the following information on September 10, 1481 [4].

- a. Comsip-Delphi Engineering Analysis and Test Report 1035-1 on the containment hydrogen analyzers providing IEEE test results for Model KIII and KIV analyzers
- b. Environmental Zone Description Volumes 1-4 for Surry Power Station.

On February 8, 1982, VEPCO transmitted a response to the FRC request for information which stated that submitting their EEQ documentation to FRC would be in violation of their Technical Specifications. The Licensee extended an invitation to FRC to audit the EEQ files at VEPCO's corporate headquarters in Richmond, Virginia [8].

By letter dated May 18, 1982, VEPCO submitted information regarding documentation referenced in their EEQ submittal; specifically, a list of



^{*}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.

references requested and the status of these references was provided. Licensee stated that the QDR packages requested would be forwarded under separate cover by NUS Corporation. (2)

By letter dated May 21, 1982 [10], NUS Corporation transmitted a complete set of the qualification documentation review packages along with additional status information regarding certain references requested. (2)

On May 26, 1982, FRC received the equipment qualification master lists [11] for Surry Units 1 and 2. (2)

FRC REVIEW OF THE LICENSEE'S 90-DAY RESPONSE TO THE NRC EEQ SER INFORMATION REQUESTED

DATE RECEIVED BY FRC***

In reference to the Licensee's 90-day response [5] to the NRC SER [6], a legible single copy of each of the following qualification documents is requested in order that the FRC evaluation may proceed:

(The numbers in parentheses after the letter correspond to the numbers in Section 8 of Reference 5.)

- a(2). Environmental Qualification of Reactor Coolant Temperature Detectors and Containment Pressure Transmitters, VEPCO submittal No. 855, November 1, 1979.
- b(3). Qualification of Resistance Temperature Detectors, VEPCO submittal No. 855A, for North Anna Power Station Units 1 and 2, November 1, 1979.
- c(5). Learn, J. R., Boston Insulated Wire and Cable Company, to Wright, R. D., Stone & Webster Engineering Corporation, 300 V Instrument Cables and 600 V Control Cables, January 17, 1972.

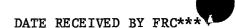
^{***}This column will be completed by FRC as the requested information is receive



- d(6). Limitorque Corporation, Nuclear Qualification Data for Safety Related Service, NQDS, November 1, 1979.
- e(7). Anderson, T. M., Westinghouse Electric Corporation, to Stolz, J. F., Nuclear Regulatory Commission, NS-TMA-1950, September 29, 1978. Possible attachments include: Vota, J. L., Westinghouse Electric Corporation, to Proffitt, W. L., Virginia Electric Power Company, October 19, 1978, Eicheldinger, C., Westinghouse Electric Corporation, to Stolz, J. F., Nuclear Regulatory Commission, March 23, 1977, Westinghouse Sensor Qualification Program, IEEE 323-1971 Demonstration Program, Final Test for Barton/ITT Modified Pressure Transmitter (Proprietary Class 2).
- Received 3/4/82 for Tasks 497/498(1)

- f(9). Anderson, T. M., Westinghouse Electric Corporation, to Stolz, J. F.,
  Nuclear Regulatory Commission,
  NS-TMA-2120, September 14, 1979,
  Revision A, September 30, 1979.
  Possible attachments include:
  Westinghouse Supplemental
  Qualification Testing of Barton Lot
  1 Pressure and Differential Pressure
  Transmitters (Proprietary Class 2).
- g(12). Chapman, L., Stone, J., Tests of Electric Cables After Simulated Post-Accident Reactor Containment Service, Cerro Wire and Cable Technical Report NP-04, March 1971.

Received 2/12/82 for Task 495(1)



- h(13). Alm, C. A., Marth J. R., Qualification of Firewall III Class IE Electric Cables, Rockbestos Company, Rockbestos Report 13-10407-E058-13-2, June 22, 1978, Updated August 22, 1978.
- i(18). D. G. O'Brien Incorporated, Environmental Test Report, DGO Report No. C19QAO61, February 28, 1972.

5/24/82 [10](2)

k(23). Sheets M. W., Topical Report on General Electric Vertical Induction Motors, Inside Containment Recirculation Spray Pump Motors — Surry Power Station — Second Addendum to Cover Heat Aging, Radiation Exposure, Vibration, and Steam/Chemical Spray Exposure Qualification Tests, NRC Docket Nos. 50-280 and 50-281, June 12, 1973 and July 23, 1973.

Received 2/11/82 for Task 490(1)

1(24). Sheets, M. W., Topical Report on General Electric Vertical Induction Motors, Inside Containment Recirculation Spray Pumps for the Surry and North Anna Stations of Virginia Electric and Power Company, Third Addition to Cover Rebuilding Motors Using New Bearings, Docket Nos. 50-280 and 50-281, Report No. 491HA689, July 23, 1979.

5/24/82 [10](2)

m(37). Cerro Wire and Cable Company,
Qualification of Firewall III Class IE
Electrical Cables, May 1976.
Attachments include: Patterson, W. J.,
Cerro Wire and Cable Company, to
Maguire, T. A., Stone & Webster
Engineering Corporation, subject:
Identification of cable supplied under
this P.O. as Firewall III, June 9,
1976.

Received 3/4/82 for Tasks 497/498(1)

n(38). Schwencer, A., Nuclear Regulatory
Commission, to Proffitt, W. L.,
Virginia Electric and Power Company,
subject: Environmental Qualification
Testing of Continental Instrumentation
Cable, July 25, 1979.

5/24/82 [10](2)

o(40). Lasky, J. S., Okonite Company, to Bonner, J., Stone & Webster Engineering Corporation, October 15, 1980. 5/24/82 [10](2)

p(42). Ling, T. H., Anaconda Wire and Cable Company, to Bonner, J., Stone & Webster Engineering Corporation, October 28, 1980.

5/24/82 [10](2)

- q(44). Bell, C. E., General Electric Company, to Bonner, J., Stone & Webster Engineering Corporation, subject: Qualification of Inside Recirculation Pump Motors to Withstand a pH of 7-11, October 28, 1980.
- r(45). Drab, J. B., Limitorque Corporation, to Reilly, P., Stone & Webster Engineering Corporation, subject: Qualification Information for Limitorque Actuators - Surry Power Station Units 1 & 2, October 8, 1980. Possible attachments include: Reilly, P., Stone & Webster Engineering Corporation, to Drab, J. B., Limitorque Corporation, two letters, September 11, 1980 and September 29, 1980, MacFarlane, I. S., Stone & Webster Engineering Corporation, Memo to Whom It May Concern, dated January 28, 1981, MacFarlane, I. S., Stone & Webster Engineering Corporation, to Drab, J. B., Limitorque Corporation, Telephone Memorandum dated December 12, 1980, MacFarlane, I. S., Stone & Webster Engineering Corporation, to McQuillan, P., Limitorque Corporation, Telephone Memorandum

- r(45). dated October 27, 1980, Zarandi,
  (Cont.) VEPCO, to MacFarlane, I. S., Stone &
  Webster Engineering Corporation,
  November 7, 1980; MacFarlane, I. S.,
  Stone & Webster Engineering
  Corporation, to Padulla, D. and
  Smith, R., VEPCO, Memo dated November
  3, 1980, MacFarlane, I. S., Stone &
  Webster Engineering Corporation, to
  Padulla, D., VEPCO, Memo dated
  November 4, 1980.
- S(47). Conax Corporation, Engineering
  Department Certificate to Virginia
  Electric and Power Company, subject:
  Compliance of NAS-21 revised May 5,
  1972 to equipment ordered under
  purchase order SN-491, dated December
  13, 1972.
- t(51). Drab, J. B., Limitorque Corporation, to Barnhart, J. H., Stone & Webster Engineering Corporation, subject: Qualification Information for Limitorque Actuators Surry Power Station Units 1 & 2, two letters, November 13, 1980. Possible attachments include: Barnhart, J. H., Stone & Webster Engineering Corporation, to Limitorque Corporation, November 3, 1980.
- u(52). Drab, J. B., Limitorque Corporation, to MacFarlane, I. S., Stone & Webster Engineering Corporation, subject:
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iii(118).	NUS-VEPCO QDR Package 5437-117-01.	5/24/82 [10](2)
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111(124).	NUS-VEPCO QDR Package 5437-MOV-2-01 changed to 5437-66-01. (2)	5/24/82 [10](2)
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ttt(137).	NUS-VEPCO QDR Package 5437-132-01.	5/24/82 [10](2)
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ууу(141).	NUS-VEPCO QDR Package 5437-105-01.	5/24/82 [10](2)
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FRC REVIEW OF INSTALLED TMI ACTION PLAN ITEMS

## INFORMATION REQUESTED

DATE RECEIVED BY FRC***

- 1. References 2, 4, and 5⁽¹⁾ do not provide adequate detail with respect to identification of TMI Action Plan equipment installed after 1/1/81. Identification of all TMI Action Plan equipment installed after 1/1/81 is requested.
- 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 [7](1) 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
- 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

- Surry Unit 1 IE Bulletin 79-01B,
   TMI Review Supplement 3, Revision 3 Change Package Virginia Electric & Power Co.,
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- VEPCO Surry Unit 1 IE Bulletin 79-01B Revision 2 - Supplement 3 TMI Review Virginia Electric & Power Co., 01-Dec-80
- 3. Telephone Memorandum dated 8/12/81
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- 4. R. H. Leasburg
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- R. C. Wilson
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