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 2 VOL. 2 OF 2

NRC DOCKET NO. 50-281

NRC TAC NO. 42469

NRC CONTRACT NO. NRC-03-79-118

FRC PROJECT C5257

FRC ASSIGNMENT 13

FRC TASK 483

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December 22, 1982

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EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

EQUIPMENT ITEM NO. 61
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
GENERAL ELECTRIC MODEL 5K182DL126
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 61
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING PUMP COOLING MOTOR (2-CC-P-2A)
LICENSEE SUBMITTAL: SCEW(S): 6-61

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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~~/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action to "begin" first quarter of '83.)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 61

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

LICENSEE RESPONSE TO NRC SER (Continued)

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

PLANT ID NO.	WORKSHEET PAGE NO.
2-CC-P-2A	6-61
2-CC-P-2B	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 first quarter of 1983.

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

EQUIPMENT ITEM NO. 62
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
WESTINGHOUSE MODEL 68F13318
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 62
LICENSEE REFERENCE(S): 604, 33
FUNCTION (PLANT ID): HIGH HEAD SAFETY INJECTION/NORMAL CHARGING (2-CH-P-1C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-7 TO 6-9

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

LICENSEE RESPONSE TO NRC SER (Continued)

7.1.2 Westinghouse Electric Corporation

a. Charging Pump Motors

Plant ID No.	Worksheet Page No.
1-CH-P-1A	6-7
1-CH-P-1B	6-8
1-CH-P-1C	6-9

All deficiencies identified in VEPCO's November, 1980 submittal, and the NRC's SER Appendix B have been resolved. Details are provided in the updated Component Evaluation Worksheets. Complete qualification documentation has been, or will be assembled and available in the central file.

LOCA Qualification

We have replaced the motor lubrication with lubricants qualified to 1.4x10E7 rads, which is above the accident dose level.

HELB Qualification

Through further review of the qualification documentation for the charging pumps we have determined that they are qualified for the HELB environment in the Auxiliary Building. All deficiencies identified in VEPCO's November, 1980 submittal, and the NRC's SER Appendix B have been resolved. Details are provided in the updated Component Evaluation Worksheets. Complete qualification documentation has been, or will be assembled and available in the central file.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

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	Electric motor	Motorette	
Manufacturer's Name (5.2.2/-/-)	Westinghouse	Westinghouse	
Model Number (5.2.2/-/-)	68659	N/A	Note 1 X
Serial Number	ND	N/A	
Features/Mounting (5.2.6/-/-)	N.D	Class B Thermolastic Epoxy stator Insulation	
Connections/Interfaces (5.2.6/-/-)	N.D	N/A	
Location/Elevation	Aux. Bldg. charging Pump Cubicle	N/A	
Equipment ID No.	1-CH-P1A,B,C	N/A	
QUALIFICATION REPORT (8.0/5.0/5.0) Report ID Number	QDR-5437-8-01 Discusses →	WCAP-8754	
Report Date	March 5, 1982	00-Jun-76	
Issued by	NUS Corp.	Westinghouse	
Prepared for	Surry 1	Westinghouse	
Referenced Reports	WCAP-8754	WCAP-7829 for radiation resistance	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)	test + Analysis	test	
QUALIFICATION TEST PROGRAM Functional Test Description (2.5/2.2.9/2.2.9)		dielectric Strength, I R (Hipot)	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.		N/A	

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.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)		not stated	
Accuracy (5.2.5/-/-)		not stated	
Number of Specimens		not stated	
Test Instruments Calibrated		not stated	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	Active	N/A	
Test Duration (5.2.1/-/-)	N/A	N/A	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	120 Days	N/A	Note 2 X
Required Function Time	120 Days	N/A	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)		not stated (separate tests)	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)			
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			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	No Basis	IEEE 275-1966	X Note 3
Material Aging Evaluation (7.0/-/-)	not performed	not stated	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	Thermoplastic Epoxy stator Ins.	not stated	
Radiation Aging, Type	γ	not stated	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	2.8×10^6 R	2×10^8 R (+L dose)	
Radiation Aging, Dose Rate	N.D	not stated	
Radiation Aging, Method		test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	all Nonmetallics	epoxy impregnant	
Operational Aging (-/4.2/-)		500 cycles of line started at Full load voltage until Fuel speed achieved ⇒ immediately reversed	
Other Age Conditioning (-/4.2/-)		not stated	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 years	44,000 running hrs. (5 yrs continuous) Class B operation	X Note 3
Normal Ambient Temperature Normal Ambient Radiation Normal Ambient Humidity	N.D.	130°C (insulation temp.)	
On-Going Surveillance and Preventive Maintenance (7.0/-/-)		not stated	
On-Going Analysis of Failures and Degradation (7.0/-/-)		not stated	
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) Time (+10%, +1 hour + function time minimum)			

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 5

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	N/A	
Radiation Type	γ	not stated	
Radiation Dose (rd) (4.1.2/1.4/1.4)	8×10^6 R	2×10^8 R (+L dose)	
Radiation Dose Rate (rd/hr)	ND	not stated	
Radiation Qual. Method (5.3.1/-/-)	test	test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)			
Equipment Susceptible to Beta Radiation (4.1.2/-/-)			
Radiation Dose (Normal + Accident) (4.1.2/-/-)	1.8×10^7 R	2×10^8 R	Note 4
Plateout Dose Considered (-/1.48/1.48)			
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)			

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

NOTES:

These motors require qualification for thermal aging and radiation exposure (1×10^7 R). The motors are considered out of scope of this Review (mild environment temp./pres.) for an HELB in the Auxiliary building due to their primary function, in this case, being essentially "Cold Shutdown". However, the 40 year + LOCA radiation dose is 1.8×10^7 R. Since these items are required to mitigate a LOCA in containment they must be reviewed wrt qualification for the harsh radiation environment and thermal aging.

The licensee has referenced an NUS Qualification Review Package (QDR-5437-8-01) which discusses WCAP-8754 as evidence of qualification.

Note 1: WCAP-8754 discusses testing performed on the insulation system used in the installed motors. The Qualification Review Package does not establish that the same bearing lubricant and motor to lead splice materials used in the installed motors were tested in the referenced reports.

Note 2: The licensee has not provided evidence that the motors will operate for the required 120 days after a 40 year installed life and radiation exposure

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 62

NOTES:

Note 3: WCAP-8754 establishes a qualified life of 44,000 hours of continuous operation at Class B limits (130°C). The report does not state the Aging time/temperature combination used to establish this. In addition the Qual. Rev. Pack. claims a qualified life of 40 years for the entire motor due to a thermal aging program performed on the stator insulation in the WCAP referenced. The Package Further states that the insulation system was aged at 200°C for 700 hours.

- The motor to lead splice materials were not aged in WCAP-8754.

- The aging time/temperature quoted by the Qual. Review Package was obtained from a plot in the referenced WCAP. The report does not state the program that was implemented.

- The Qual. Review Package does not submit a basis for the stated qualified life of 40 years from the data presented. In addition the normal ambient temperature of the room was not stated nor was the possible dependency on HVAC systems mentioned for maintaining the normal ambient

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 52

NOTES:

(cont) • It should be noted that the 44,000 hrs of continuous operation at class B limits could be extropolated via the arrhenius technique to establish a qualified life estimate for the installed motors if the following information is known:

1) # of hours of operation at what ambient temperature during the installed life

2.) normal ambient temperature of the room for the remainder of the installed life.

Note 4: The licensee should establish that the motor to lead splice materials qualified by WCAP-7829 are similar to those in the installed motors.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

EQUIPMENT ITEM NO. 63
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING CABLE VAULT (AB-13B)
CUTLER HAMMER MODEL UNITROL
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 63
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): SUPPLY POWER TO SAFETY SYSTEMS (2-H1-2 SOUTH, NORTH; 2-J1-2 EAST, WEST)
LICENSEE SUBMITTAL: SCEW(S): 6-23 TO -26

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.3.12 Cutler-Hammer (480V Motor Control Center)

This equipment is not located in harsh environment and therefore the component evaluation worksheet has been deleted.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 63

NOTES:

A radiation dose of 5.06 E04 R is considered a harsh parameter.

∴ This equipment is under the Scope of this review and Qualification has not been established.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

EQUIPMENT ITEM NO. 64
MOTORIZED VALVE ACTUATOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 64
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY (MOV-SW-204A, B, C, D; -205A)
LICENSEE SUBMITTAL: SCEW(S): 6-246 TO -250
FUNCTION (PLANT ID): SERVICE WATER OUTLET RECIRCULATION SPRAY HEAT EXCHANGER (MOV-SW-205B)
LICENSEE SUBMITTAL: SCEW(S): 6-251
FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER (MOV-SW-205C, D)
LICENSEE SUBMITTAL: SCEW(S): 6-252, -253

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

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	195004	NOTE 1
Features/Mounting (5.2.6/-/-)	See Pg. 1a & NOTE 2	Reliance AC Motor Class B Insulation also Electric Apparatus Motor with Class B Insulation	NOTE 2, 7
Connections/Interfaces (5.2.6/-/-)	NOTE 3	Not Stated	NOTE 3
Location/Elevation	See Pg. 1a	Not Applicable	
Equipment ID No.	See Pg. 1a	Not Applicable	
QUALIFICATION REPORT (8.0/5.0/5.0)			
Report ID Number	—	B0003	
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	
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/ Current/Freq.	NOTE 4	Not Applicable	NOTE 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

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	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	ACTIVE	Not Applicable	
Test Duration (5.2.1/-/-)	—	16 Days	NOTE 5
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	1 hour (max.)	Not Applicable	NOTE 5
Required Function Time	See Pg. 1a	Not Applicable	NOTE 5
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	—	Thermal Aging Mechanical Cycling Radiation Exposure Seismic Aging LOCA Simulation	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	—		
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		Not Applicable	
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	120°F for 40 years (Design)	(B0058 provides data on epoxy life) 199.8 hrs @ 165°F/100%RH	NOTE 6
Material Aging Evaluation (7.0/-/-)	NOTE 6	Not Applicable	NOTE 6
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	—	Not Stated	
Radiation Aging, Type	GAMMA	Gamma	

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.)
Radiation Aging, Dose (rd)	2.8 E06 rd (max.-see SCEW for exact value)	See Accident Dose	
Radiation Aging, Dose Rate	—	See Accident Dose	
Radiation Aging, Method	—	Test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	—	Not Stated	
Operational Aging (-/4.2/-)	—	2000 cycles at rated Load	
Other Age Conditioning (-/4.2/-)	—	Seismic	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 years / 40 years	40 Years outside containment	NOTE 6
Normal Ambient Temperature	120°F	Not Applicable	
Normal Ambient Radiation*	8.0 R/hr	Not Applicable	
Normal Ambient Humidity**	20-90%	Not Applicable	
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) 3. Radiation (not required) 4. Time (+10%, +1 hour + function time minimum)		Not Applicable	

$$* \left(\frac{2.8\,E06\ rd}{40\ year}\right)\left(\frac{365\ d}{y}\right)\left(\frac{24\ hr}{d}\right) \cong 8.0\ R/hr$$

** Assumed by FRC

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

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)	8.0E06 rd (max.) See SCEW for exact value	$2x10^7$ (Complete Actuator) $2.04x10^8$ (2 Motors)	
Radiation Dose Rate (rd/hr)	—	1 Mrd/hr	
Radiation Qual. Method (5.3.1/-/-)	—	test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	NOT STATED	Not Applicable	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	—	No	
Radiation Dose (Normal + Accident) (4.1.2/-/-)	1.08E07 rd (max.) see SCEW for exact 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	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

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	2.8°F/sec.; 0.5psig/min	13°F, 2.5psi/sec	
Peak: °F/psig/RH/Time	205/15.2/100 1000 sec.	250/25/100/24 hrs	
Decrease To: °F/psig/RH/Time	160/14.9/100 14 min	200/10/100/15 days	
Decrease To: °F/psig/RH/Time	120/14.9/100 1 hour		
Decrease To: °F/psig/RH/Time			
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	—	Not Applicable	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	N/A	Not Applicable Outside Containment application	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)		Not Applicable	
Spray Density (gpm/ft^2)		Not Applicable	
Spray Duration		Not Applicable	
Submergence Duration (4.1.3/2.2.5/2.2.5)	NOT REQUIRED	Not Applicable	
In-Leakage Considered (5.2.6, 5.3.2/-/-)		Not Stated but none apparent in photographs	
Time to Submergence		Not Applicable	
Dust Environment (-/2.2.11/2.2.11)	—	Not Applicable	

* enveloping profile of maximum outside containment values used for comparison. (excludes Mechanical Equipment Room #3.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

NOTES:

1. Serial numbers are provided in PSR # 29 on the "walk-down" sheets
2. For most motorized valve actuators (MVAs) the motor manufacturer, class of insulation and whether or not the MVA has a motor-brake assembly has been identified in PSR #29 and on the SCEW(s)
3. The component interfaces (i.e. motor leads, splices) are not considered part of the MVA by the licensee, but will be addressed separately.
4. The nameplate operating conditions for the MVA (and brakes where applicable) are provided in PSR # 29 on the "walk-down" sheets.
5. For the equipment located outside containment, a required operating time of 120 days is specified. The test lasted only 16 days. PSR # 29 has attempted to extrapolate the qualified duration by using the Arrhenius technique and the elevated, saturated steam conditions reported in PGR #662 (B0053). The following

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

NOTES:

is noted with respect to this application of the Arrhenius technique.

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 tested showed no indication that exposure to continued post-accident conditions would result in a failure of

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 64

NOTES:

The device. As such, this MVA is considered qualified for the specified operating time.

6. Thermal aging has been addressed in the B0058 report for the motor insulation and is acceptable. The licensee has also addressed seals, gaskets (Not required for absolute sealing) & lubricants. The limit and torque switches are generally made of a phenolic material and would generally not experience significant thermal degradation. The licensee has also stated that the interfaces will be address as separate items. The licensee should be aware that teflon is used in many motor leads as insulation and is susceptible to thermal and radiation degradation. The licensee has also addressed terminal strips (Blocks) and connectors in this review. All information reviewed is acceptable.

7. The difference in motor manufacturers has been adequately addressed.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

EQUIPMENT ITEM NO. 65
MOTORIZED VALVE ACTUATOR LOCATED IN THE SERVICE BUILDING
LIMITORQUE MODEL SMB00
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 65
LICENSEE REFERENCE(S): 29
FUNCTION (PLANT ID): SERVICE WATER (MOV-SW-107B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-254, -255

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.3.16 Motor Operated Valves (Service water)

MOV-SW-107B
MOV-SW-107C

These valves were disconnected during control and relay room chiller modification.

EQUIPMENT 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/ ~~non-concurrence with~~ the technical basis of the Licensee's position are presented below.

Reason for 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)

___ 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 65

Reason for Concurrence

___ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

X Other (see page 3b)

X Resultant NRC Qualification Evaluation Category (IIIa/~~IIIb~~)

___ Note 1: The Licensee (has/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page____)

Reason for Non-Concurrence

___ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

___ Backup (equipment/system) is not safety-related.

___ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

___ The rationale presented by the Licensee is not supported by objective technical evidence.

___ Other (see page___)

LICENSEE STATEMENT

See page 3~~a~~b of this checksheet.

EVALUATION OF LICENSEE STATEMENT

These values have been disconnected, Therefore, qualification is a moot point.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

EQUIPMENT ITEM NO. 66
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL SMB WITH CLASS B INSULATION, SIZE 000, 1, 2; WITH MOTOR-BRAKE ASSEMBLY
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 66
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE VALVE (MOV-2864A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-231, -232
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION STOP VALVE (MOV-2890C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-218 TO -220

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

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

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

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

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

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

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

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
X Other (Replace Brake / Modify MVA)

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

X The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by ~~the~~ third quarter 1982 (820930).)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 66

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET PAGE NO.	
MOV-2890A	6-218
MOV-2890B	9-219
MOV-2890C	6-220
MOV-2115B	6-13
MOV-2115D	6-15
MOV-2863A	6-208
MOV-2863B	6-209
MOV-2864A	6-231
MOV-2864B	6-232

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 third quarter of 1982.

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.

EQUIPMENT 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, 29
FUNCTION (PLANT ID): BORON INJECTION TANK BYPASS (MOV-2869B)
LICENSEE SUBMITTAL: SCEW(S): 6-323A

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 67

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

EQUIPMENT ITEM NO. 68
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE, MODEL NOT STATED, PEERLESS MOTOR, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 68
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-2885A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-232B, C, D

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 68

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

EQUIPMENT ITEM NO. 69
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING (AB-13A)(S)
LIMITORQUE MODEL SMB00
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 69
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE (MOV-2863A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-208, -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:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

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

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

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

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

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

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

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
X Other (Replace Brake/Modify MVA)

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

X The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by Third quarter 1982 (820930).)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 69

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 6a

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET	PAGE NO.
MOV-2890A	6-218
MOV-2890B	9-219
MOV-2890C	6-220
MOV-2115B	6-13
MOV-2115D	6-15
MOV-2863A	6-208
MOV-2863B	6-209
MOV-2864A	6-231
MOV-2864B	6-232

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 third quarter of 1982.

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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

EQUIPMENT ITEM NO. 70
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT, INSIDE CRANEWALL, SUBMERGED (RC-3A)
LIMITORQUE MODEL SMB3
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 70
LICENSEE REFERENCE(S): 45
FUNCTION (PLANT ID): ACCUMULATOR ISOLATION (MOV-2865A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-210, -211, -212

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

See Evaluation on Pages 4a & b

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.3.9 Motor Operated Valves (Safety Injection)

MOV-2865A
MOV-2865B
MOV-2865C

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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

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

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)

___ 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 70

Reason for Concurrence

___ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

___ Other (see page___)

X Resultant NRC Qualification Evaluation Category (IIIa/~~IIIb~~)

___ Note 1: The Licensee (has/has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page_____)

Reason for Non-Concurrence

___ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

___ Backup (equipment/system) is not safety-related.

___ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

___ The rationale presented by the Licensee is not supported by objective technical evidence.

___ Other (see page___)

LICENSEE STATEMENT

See page 3~~a~~b of this checksheet.

EVALUATION OF LICENSEE STATEMENT

These valves are locked in their required accident mitigating position with the power removed (breaker locked open). These valves are exempt from qualification.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

EQUIPMENT ITEM NO. 71
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL SMC04
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 71
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP DISCHARGE (MOV-RS-256A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-171, -172

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 71

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

EQUIPMENT ITEM NO. 72
MOTORIZED VALVE ACTUATOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 72
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHILLED WATER VALVE CONTROL ROOM HVAC (MOV-PG-107A, B, C)
LICENSEE SUBMITTAL; SCEW(S): 6-84, -85, -86

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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; SIZE ΦΦΦ	SMB-0	
Serial Number	NOTE 1	195004	NOTE 1
Features/Mounting (5.2.6/-/-)	See Pg. 1a & NOTE 2	Reliance AC Motor Class B Insulation also Electric Apparatus Motor with Class B Insulation	NOTE 2, 7
Connections/Interfaces (5.2.6/-/-)	NOTE 3	Not Stated	NOTE
Location/Elevation	mech. Equip. Rm # 3 (SB-98)	Not Applicable	
Equipment ID No.	MOV-PG-107A, B, C	Not Applicable	
QUALIFICATION REPORT (8.0/5.0/5.0)			
Report ID Number	—	B0003	
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	
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/ Current/Freq.	NOTE 4	Not Applicable	NOTE

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

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	
Safety Function (Active/Passive) (-/2.1.3/2.1.3)	ACTIVE	Not Applicable	
Test Duration (5.2.1/-/-)	—	16 Days	NOTE 5
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	1 hour	Not Applicable	NOTE 5
Required Function Time	120 days	Not Applicable	NOTE 5
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	—	Thermal Aging Mechanical Cycling Radiation Exposure Seismic Aging LOCA Simulation	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	—		
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		Not Applicable	
Aging (5.2.4, 7.0/4.0/4.0)	120°F/40 years (design)		NOTE 6
Thermal Aging/Basis		199.8 hrs @ 165°F/100%RH	NOTE 6
Material Aging Evaluation (7.0/-/-)	NOTE 6	Not Applicable	NOTE 6
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	—	Not Stated	
Radiation Aging, Type	GAMMA	Gamma	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	2.5×10^3 rd	See Accident Dose	
Radiation Aging, Dose Rate	—	See Accident Dose	
Radiation Aging, Method	—	Test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	—	Not Stated	
Operational Aging (-/4.2/-)	—	2000 cycles at rated Load	
Other Age Conditioning (-/4.2/-)	—	Seismic	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 YR/40 YR	40 Years outside containment	
Normal Ambient Temperature	120°F	Not Applicable	
Normal Ambient Radiation*	0.71 mR/hr	Not Applicable	
Normal Ambient Humidity **	20-90%	Not Applicable	
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) 3. Radiation (not required) 4. Time (+10%, +1 hour + function time minimum)		Not Applicable	

$$* \left(\frac{2.5 \times 10^3 \text{ rd}}{40 \text{ YR}}\right) \Big/ \left(\frac{8760 \text{ hr}}{\text{YR}}\right) = 0.71 \text{ mR/hr}$$

** ASSUMED BY FRC

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

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)	HELB	LOCA/HELB outside Containment	
Radiation Type	GAMMA	Gamma	
Radiation Dose (rd) (4.1.2/1.4/1.4)	2.5×10^3 rd	2×10^7 (Complete Actuator) 2.04×10^8 (2 Motors)	
Radiation Dose Rate (rd/hr)	—	1 Mrd/hr	
Radiation Qual. Method (5.3.1/-/-)	—	test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	NOT STATED	Not Applicable	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	—	No	
Radiation Dose (Normal + Accident) (4.1.2/-/-)	5.0×10^3 rd	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	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

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	UNKNOWN (NO PROFILE shown)	13°F, 2.5psi/sec	
Peak: °F/psig/RH/Time	310/14.9/100 310-30min.	250/25/100/24 hrs	X - NOTE 8
Decrease To: °F/psig/RH/Time	130/14.9/100 30 m - 1 hr.	200/10/100/15 days	
Decrease To: °F/psig/RH/Time	130-120/14.9/100/>1 hr.		
Decrease To: °F/psig/RH/Time			
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	—	Not Applicable	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	N/A	Not Applicable Outside Containment application	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)		Not Applicable	
Spray Density (gpm/ft^2)		Not Applicable	
Spray Duration		Not Applicable	
Submergence Duration (4.1.3/2.2.5/2.2.5)	NOT REQUIRED	Not Applicable	
In-Leakage Considered (5.2.6, 5.3.2/-/-)		Not Stated but none apparent in photographs	
Time to Submergence		Not Applicable	
Dust Environment (-/2.2.11/2.2.11)	—	Not Applicable	

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

NOTES:

1. Serial numbers are provided in PSR # 29 on the "walk-down" sheets
2. For most motorized valve actuators (MVAs) the motor manufacturer, class of insulation and whether or not the MVA has a motor-brake assembly has been identified in PSR 29 and on the SCEW(s)
3. The component interfaces (i.e. motor leads, splices) are not considered part of the MVA by the licensee, but will be addressed separately.
4. The nameplate operating conditions for the MVA (and brakes where applicable) are provided in PSR # 29 on the "walk-down" sheets.
5. For the equipment located outside containment, a required operating time of 120 days is specified. The test lasted only 16 days. PSR # 29 has attempted to extrapolate the qualified duration by using the Arrhenius technique and the elevated, saturated steam conditions reported in PGR # 662 (B0003). The following

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

NOTES:

is noted with respect to this application of the Arrhenius technique.

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 tested showed no indication that exposure to continued post-accident conditions would result in a failure of

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

NOTES:

The device. As such, this MVA is considered qualified for the specified operating time.

6. Thermal aging has been addressed in the B0058 report for the motor insulation and is acceptable. The licensee has also addressed seals, gaskets (Not required for absolute sealing) & lubricants. The limit and torque switches are generally made of a phenolic material and would generally not experience significant thermal degradation. The licensee has also stated that the interfaces will be address as separate items. The licensee should be aware that teflon is used in many motor leads as insulation and is susceptible to thermal and radiation degradation. The licensee has also addressed terminal strips (Blocks) and connectors in this review. All information reviewed is acceptable.

7. The difference in motor manufacturers has been adequately addressed.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 72

NOTES:

8. The peak accident temperature exceeds the qualified peak temperature. The licensee has not addressed this problem in PSR #29.
Heat transfer analyses have shown the MVA temperature rising above the 250°F peak in only several minutes on similar transients.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

EQUIPMENT ITEM NO. 73
ELECTRICAL CABLE, CONTROL LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
CERRO WIRE AND CABLE MODEL PYROTROL III
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 73
LICENSEE REFERENCE(S): 676
FUNCTION (PLANT ID): 1000V CONTROL CABLE (NUS-362 S.N.-1246; NUS-381E S.N.-1447/1246; NUS-381C S.N.-446; NUS-325 SN-246)
LICENSEE SUBMITTAL: SCEW(S): 6-42A, -39, -38, -37

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 73

NOTES:

The Licensee has not established that the test report can be applied to the installed Cables. This is particularly important for Cross Linked Polyethylene where thickness is a major factor in establishing adequate cross linking. If radiation cross linked, then the thickness determines electron energy, beam current and speed of advance of the cable during manufacture. Therefore, qualification of one thickness of insulation cannot be used to establish qualification of any other thickness unless similarity of the molecular structure of the cable insulation can be established. For thick insulations. i.e. greater than 60 mils, space charge effects are often observed which preclude proper creoss linking. For chemically cross linked insulation, processing time and temperatures are critical factors and differ significantly for different insulation thicknesses. Again, unless similarity of molecular structure can be established, use of test reports for different thicknesses is not technically justified.

The Licensee stated:

Form QDR-3/01/80 Sheet 1
Client ID: Virginia Electric & Power Company QDR-5437-118-01
Plant: Surry Unit 2

Qualification Document Review Checklist

Review for: DOR Guidelines [X] NUREG-0588 [ ]

1. Name of the Reviewer: C.J. Endlich Date: 7/7/81
2. Equipment Covered: 600V. Control Cable, XLPE Insulation, Neoprene Jacket (Cerro Wire & Cable Co.)
3. Equipment Tag No(s).: N/A (See Spec. NAS-120)

		YES	NO	NA	Page Ref.
4.	Does the report address all of the Class IE equipment in this category listed in the master IE equipment list?		X		See Attachment #1
*5.	Is the report traceable to the plant equipment?		X		See Attachment #1
*6.	Does the report specify an acceptance criteria for equipment performance?	X			Rpt. 94 Pyrotrol III, See attachment #1

NOTES:

Attachment #1 to QDR-5437-118-01

Additional Information/Classifications/Justifications

1) Question No. 4

NUS evaluated the test specimen cited in the test report against those types of cables used in the Surry Power Plant Units 1 and 2 and determined this report to be adequate in establishing qualification of the following cable with XLPE insulation and neoprene jacket used in the Surry Plants:

Type and Size	Insul. Thickness	Jacket Thickness
1/C #14	30 mils	15 mils
2/C #14	30 mils	45 mils
3/C #14	30 mils	45 mils
5/C #14	30 mils	45 mils
7/C #14	30 mils	60 mils
9/C #14	30 mils	60 mils
12/C #14	30 mils	60 mils
1/C #12	30 mils	15 mils
2/C #12	30 mils	45 mils
4/C #12	30 mils	45 mils
7/C #12	30 mils	60 mils
4/C #10	30 mils	60 mils
2/C #8	45 mils	60 mils
2/C #6	45 mils	60 mils
4/C #6	45 mils	80 mils
7/C #6	45 mils	80 mils
2/C #4	45 mils	80 mils
4/C #4	45 mils	80 mils
2/C #2	45 mils	80 mils

2) Question No. 5

NUS compared the insulation system of the test specimen in the test report versus the insulation system of the cables specified for use in the plant and determined that this report is applicable for establishing qualification status of the cables cited in item 1, above.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

NOTES:

Requirements for establishing similarity between installed and tested cables are contained in the DOR Guidelines and IEEE 383-74 which are reproduced below for convenience.

2. Test Specimen - The test specimen should be the same model as the equipment being qualified. The type test should only be considered valid for equipment identical in design and material construction to the test specimen. Any deviations should be evaluated as part of the qualification documentation (see also Section 8.0 below).

[DOR]

IEEE-383

1.3.1 *Cable Description.* This description or specification should include as a minimum:

1.3.1.1 Conductor — material identification, size, stranding, coating.

1.3.1.2 Insulation — material identification, thickness, method of application.

1.3.1.3 Assembly (multiconductor cables only) — number and arrangement of conductors, fillers, binders.

1.3.1.4 Shielding — tapes, extrusions, braids, or others.

1.3.1.5 Covering — jacket or metallic armor or both, material identification, thickness, method of application.

1.3.1.6 Characteristics — voltage and temperature rating (normal and emergency). For instrumentation cables — capacitance, attenuation, characteristic impedance, microphonics, insulation resistance, as applicable.

1.3.1.7 Identification — manufacturer's trade name, catalog number.

1.3.2 *Field Splice or Connection Description or Both.* This description or specification should include as a minimum:

1.3.2.1 Whether factory or field assembled to cable.

1.3.2.2 Conductor connection — type, material identification, and method of assembly.

1.3.2.3 Items from Sections 1.3.1.2 through 1.3.1.7.

2.2 Type Test Samples. The samples tested should contain the conductor, insulation, fillers, jacket, binder tape, overall jacket, shielding, and field splices which are representative of the cable category being qualified. Table 1 lists sizes which have been considered representative of these categories. The sample lengths should be sufficient to permit reliable test readings and evaluation consistent with good testing practice.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 23

NOTES:

ELECTRIC CABLES, FIELD SPLICES, AND CONNECTIONS — IEEE Std 383-1974

Table 1
Represensentative Cables for Type Tests

Type	Test	Section	Size
Up to 2000 V multiconductor control cable or Shielded multiconductor signal cable (see list below for individual component) or Single conductor power cable	temperature and moisture resistance	2.3.1	1/C — 14 or 12 AWG
	thermal and radiation exposure	2.3.3	1/C or M/C — 14 or 12 AWG
	design basis event simulation	2.4	1/C or M/C — 14 or 12 AWG. 1/C — 6, 4 or 2 AWG
	vertical flame test singles from cable assembly	2.5.6	1/C — 14 or 12 AWG
	vertical tray flame test	2.5.4	7/C — 16, 14 or 12 AWG
Shielded pairs, triple or quad from multiconductor signal cable	temperature and moisture resistance	2.3.1	1 pair shielded 16 AWG or actual cable
	thermal and radiation exposure	2.3.3	
	design basis event simulation	2.4	
	vertical flame test	2.5.6	
Coaxial, triaxial or special instrument cable	temperature and moisture resistance	2.3.1	actual size
	thermal and radiation exposure	2.3.3	
	design basis event simulation	2.4	
	vertical flame test singles from cable assembly	2.5.6	
Single pair thermocouple extension cable	temperature and moisture resistance	2.3.1	2/C — 20 AWG or actual size if smaller
	thermal and radiation exposure	2.3.3	
	design basis event simulation	2.4	
	vertical tray flame test	2.5.4	
	vertical flame test singles from cable assembly	2.5.6	
2001—15 000 V power cable 1/C triplexed and multiconductor	vertical tray flame test	2.5.4	6 AWG (2-5kV) 2/O or 4/O or 4/O (2-15kV)

In Lieu of the detailed description discussed above it would be acceptable for the licensee to obtain certification from the maunfacturer identifying what test report(s) apply to the cables furnished for installation provided these reports adequately establish qualification.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ITEM NO. 74
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT SPRAY PUMP HOUSE BELOW EL. 27'6" (CSPH-11)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 74
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHEMICAL ADDITION TANK ISOLATION (MOV-CS-202B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-77, -76

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 74

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

EQUIPMENT ITEM NO. 75
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT SPRAY PUMP HOUSE (CSPH-27)
LIMITORQUE MODEL SMC04
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 75
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (MOV-CS-201D)
LICENSEE SUBMITTAL: SCEW(S): 6-75
FUNCTION (PLANT ID): SPRAY PUMP DISCHARGE ISOLATION (MOV-CS-201C, 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:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 75

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

EQUIPMENT ITEM NO. 76
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
LIMITORQUE MODEL SMB, CLASS B INSULATION, SIZES 00, 000; WITH MOTOR-BRAKE ASSEMBLY
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 76
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHARGING SUMP SUCTION FROM REFUELING WATER STORAGE TANK (MOV-2115D, B)
LICENSEE SUBMITTAL: SCEW(S): 6-15, -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:

Contents	Checksheet Page No.
Equipment Item	1a
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Equipment Environmental Qualification Review	~~5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j~~
Installed TMI Lessons Learned Implementation Equipment Summary	~~6a, 6b~~
Maintenance and Replacement Schedule Summary	~~7a, 7b, 7c~~

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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

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

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

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

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

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

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
X Other (Replace brake/ modify MVA)

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

X The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by third quarter 1982 (820930).)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 76

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.2 Motor Operators With Brakes

WORKSHEET PAGE NO.	
MOV-2890A	6-218
MOV-2890B	9-219
MOV-2890C	6-220
MOV-2115B	6-13
MOV-2115D	6-15
MOV-2863A	6-208
MOV-2863B	6-209
MOV-2864A	6-231
MOV-2864B	6-232

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 third quarter of 1982.

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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

EQUIPMENT ITEM NO. 77
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
LIMITORQUE, MODEL NOT STATED, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 77
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): REACTOR COOLING PUMP SEAL WATER RETURN (MOV-2381)
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	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, ~~3b, 3c, 3d~~
System Consideration Review	~~4a, 4b, 4c, 4d, 4e, 4f~~
Equipment Environmental Qualification Review	~~5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j~~
Installed TMI Lessons Learned Implementation Equipment Summary	~~6a, 6b~~
Maintenance and Replacement Schedule Summary	~~7a, 7b, 7c~~

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 77

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

EQUIPMENT ITEM NO. 78
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL
ASCO MODEL NP8320179E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 78
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): OUTSIDE BLOWDOWN TRIP VALVE (SOV-BD-200A)
LICENSEE SUBMITTAL: SCEW(S): 6-260
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-200C)
LICENSEE SUBMITTAL: SCEW(S): 6-262

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 7

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 78

NOTES:

The Licensee has identified this equipment as the ASCO NP series valve and has stated that these valves were scheduled for replacement during the last quarter of 1981. The Licensee should identify the installed valves and the qualification documentation that applies if the NP-series valves are installed

EQUIPMENT 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 NOT STATED
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 79
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-200B)
LICENSEE SUBMITTAL: SCEW(S): 6-261

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 79

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

EQUIPMENT ITEM NO. 80
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 8320A102
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 80
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-200D, F)
LICENSEE SUBMITTAL: SCEW(S): 6-263, -265
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION (SOV-IA-201B)
LICENSEE SUBMITTAL: SCEW(S): 6-127

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

EQUIPMENT ITEM NO. 81
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL
ASCO MODEL NP8320A179V
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 81
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION (SOV-BD-200E)
LICENSEE SUBMITTAL: SCEW(S): 6-264

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 81

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ITEM NO. 82
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO MODEL 2068323RF
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 82
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER LIQUID SPACE SAMPLE (SOV-SS-200A1, 201A1)
LICENSEE SUBMITTAL: SCEW(S): 6-233, -235
FUNCTION (PLANT ID): PRESSURIZER RELIEF TANK SAMPLE (SOV-SS-204A)
LICENSEE SUBMITTAL: SCEW(S): 6-240
FUNCTION (PLANT ID): PRIMARY COOLANT HOT LEG SAMPLE (SOV-SS-206A)
LICENSEE SUBMITTAL: SCEW(S): 6-242

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:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

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

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

X Justification for interim operation (has/[redacted]) 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/[redacted]) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

QUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 82

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

EQUIPMENT ITEM NO. 83
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 830281RF
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 83
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER LIQUID SPACE SAMPLE (SOV-SS-200B1)
LICENSEE SUBMITTAL: SCEW(S): 6-234
FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-202B1)
LICENSEE SUBMITTAL: SCEW(S): 6-238
FUNCTION (PLANT ID): RESIDUAL HEAT REMOVAL SAMPLE (SOV-SS-203)
LICENSEE SUBMITTAL: SCEW(S): 6-239
FUNCTION (PLANT ID): PRESSURE RELIEF TANK SAMPLE (SOV-SS-204B)
LICENSEE SUBMITTAL: SCEW(S): 6-241
FUNCTION (PLANT ID): PRIMARY COOLANT HOT LEG SAMPLE (SOV-SS-206B)
LICENSEE SUBMITTAL: SCEW(S): 6-243

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

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

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

X Justification for interim operation (has/[redacted]) 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/[redacted]) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 83

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ITEM NO. 84
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 2068323RF
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 84
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER VAPOR SPACE (SOV-SS-201B1)
LICENSEE SUBMITTAL: SCEW(S): 6-236
FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-202A1)
LICENSEE SUBMITTAL: SCEW(S): 6-237

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 84

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

EQUIPMENT ITEM NO. 85
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 8320A102
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 85
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): NITROGEN SUPPLY (SOV-SI-200)
LICENSEE SUBMITTAL: SCEW(S): 6-221
FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-201B)
LICENSEE SUBMITTAL: SCEW(S): 6-223
FUNCTION (PLANT ID): REACTOR CONTAINMENT SUMP PUMP DISCHARGE (SOV-DA-200B)
LICENSEE SUBMITTAL: SCEW(S): 6-174
FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-200B)
LICENSEE SUBMITTAL: SCEW(S): 6-179
FUNCTION (PLANT ID): COOLING WATER RETURN FROM RESIDUAL HEAT EXCHANGER ISOLATION (SOV-CC-209A)
LICENSEE SUBMITTAL: SCEW(S): 6-67

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 85

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ITEM NO. 86
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO, MODEL NOT STATED
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 86
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-201A)
LICENSEE SUBMITTAL: SCEW(S): 6-222
FUNCTION (PLANT ID): REACTOR CONTAINMENT PUMP DISCHARGE (SOV-DA-200A)
LICENSEE SUBMITTAL: SCEW(S): 6-173
FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-209A)
LICENSEE SUBMITTAL: SCEW(S): 6-177
FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-200C)
LICENSEE SUBMITTAL: SCEW(S): 6-180

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 86

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

EQUIPMENT ITEM NO. 87
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
ASCO MODEL 8302C4U
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 87
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG (SOV-SI-202A1, B1)
LICENSEE SUBMITTAL: SCEW(S): 6-224, -226
FUNCTION (PLANT ID): REFUELING WATER STORAGE TANK CROSS CONNECT (SOV-SI-202A2, B2)
LICENSEE SUBMITTAL: SCEW(S): 6-225, -227

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

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

X The Licensee (has/[redacted]t) 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 _____.)

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.3.15 Solenoid Operated Valves (Safety Injection)

SOV-SI-202A1
SOV-SI-202A2
SOV-SI-202B1
SOV-SI-202B2

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. _

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)

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 Evaluation Category IIIb)

X 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.

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 87

Reason for Concurrence

___ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

___ Other (see page___)

___ Resultant NRC Qualification Evaluation Category (IIIa/IIIb)

X Note 1: The Licensee (~~does~~/ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3b)

Reason for Non-Concurrence

___ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

___ Backup (equipment/system) is not safety-related.

___ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

___ The rationale presented by the Licensee is not supported by objective technical evidence.

___ Other (see page___)

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 8

EQUIPMENT ITEM NO. 88
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL LB831654
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 88
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): BORON INJECTION TANK RECIRCULATION (SOV-2884A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-228 TO -230

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 88

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

EQUIPMENT ITEM NO. 89
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-47A)
ASCO, MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 89
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF (SOV-2455C-1, -2; -2456-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 6-200C, D, F, G

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 89

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 80

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ITEM NO. 90
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-47A)
LAWRENCE MODEL 3300WA742DC
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 90
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF (SOV-24455C-3, -2456-3)
LICENSEE SUBMITTAL: SCEW(S): 6-200E, H

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 90

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ITEM NO. 91
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO MODEL HBX8320A12
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 91
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): NITROGEN SUPPLY LINE (SOV-DG-208A)
LICENSEE SUBMITTAL: SCEW(S): 6-175
FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-250A)
LICENSEE SUBMITTAL: SCEW(S): 6-80

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

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

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

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

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

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

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

X Corrective action specified by the Licensee:

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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 91

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

EQUIPMENT ITEM NO. 92
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HBX8320A12
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 92
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER PUMP (SOV-DG-208B)
LICENSEE SUBMITTAL: SCEW(S): 6-176
FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-200A)
LICENSEE SUBMITTAL: SCEW(S): 6-181
FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-250C, D, B)
LICENSEE SUBMITTAL: SCEW(S): 6-81 TO -83
FUNCTION (PLANT ID): COMPONENT COOLING FROM CONTAINMENT COOLER (SOV-CC-210C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-69 TO -71
FUNCTION (PLANT ID): REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION (SOV-CC-207)
LICENSEE SUBMITTAL: SCEW(S): 6-66
FUNCTION (PLANT ID): REACTOR COOLANT PUMP COOLING WATER ISOLATION (SOV-CC-205C, B, A)
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, (QT), RT, P, H, CS, (A), S, (R), M, I, QM, (RPN), EXN, SEN, QI, RPS, None,

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 92

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

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 last quarter of 1981.

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 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.

EQUIPMENT 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 HT8316C47E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 93
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-201AA, AB, BA, BB)
LICENSEE SUBMITTAL: SCEW(S): 6-160 TO -163

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

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

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

X Justification for interim operation (has/[redacted]) 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/[redacted]) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 93

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ITEM NO. 94
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL NP8316A76E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 94
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-201CA)
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, 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.
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Licensee Response to NRC SER	3a, 3b ~~3c, 3d~~
System Consideration Review	~~4a, 4b, 4c, 4d, 4e, 4f~~
Equipment Environmental Qualification Review	~~5a, 5b, 5c, 5d, 5e,~~ 5f, ~~5g, 5h, 5i, 5j~~
Installed TMI Lessons Learned Implementation Equipment Summary	~~6a, 6b~~
Maintenance and Replacement Schedule Summary	~~7a, 7b, 7c~~

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

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

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

X Justification for interim operation (has/[redacted]) 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/[redacted]) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

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

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 last quarter of 1981.

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 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.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 94

NOTES:

The Licensee has identified this equipment as the ASCO NP series valve and has stated that these valves were scheduled for replacement during the last quarter of 1981. The Licensee should identify the installed valves and the qualification documentation that applies if the NP-series valves are installed

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ITEM NO. 95
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HT8316CE7E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 95
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-201CB)
LICENSEE SUBMITTAL: SCEW(S): 6-165

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 95

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 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

X (2) COMPONENTS REQUIRING REPLACEMENT OR MODIFICATION

___ (3) COMPONENTS DETERMINED TO BE QUALIFIED

___ (4) COMPONENTS DETERMINED TO BE QUALIFIED EXCEPT FOR AGING

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ITEM NO. 96
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL NP8320A174E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 96
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY GRADE WATER TO PRESSURIZER RELIEF TANK (SOV-2519A)
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:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 96

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

NOTES:

The Licensee has identified this equipment as the ASCO NP series valve and has stated that these valves were scheduled for replacement during the last quarter of 1981. The Licensee should identify the installed valves and the qualification documentation that applies if the NP-series valves are installed

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ITEM NO. 97
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 80174
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 97
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-209B)
LICENSEE SUBMITTAL: SCEW(S): 6-178

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 97

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ITEM NO. 98
SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)
ASCO MODEL 80147
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 98
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM LINE DRAINS TO CONDENSER (SOV-MS-209, -210)
LICENSEE SUBMITTAL: SCEW(S): 6-166, -166A

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

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

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

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

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

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

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

X Corrective action specified by the Licensee:

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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 9

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 98

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ITEM NO. 99
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING (AB-13)(N)
ASCO MODEL 8320A102
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 99
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-200A TO H; 201A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-132 TO -138; -140, -141

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 99

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ITEM NO. 100
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HBX8320A26
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 100
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR DISCHARGE (SOV-IA-200)
LICENSEE SUBMITTAL: SCEW(S): 6-125

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

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

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

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

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

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

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

X Corrective action specified by the Licensee:

- 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 100

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

EQUIPMENT ITEM NO. 101
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO MODEL NP8320A179E
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 101
LICENSEE REFERENCE(S): 2850
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION (SOV-IA-201A)
LICENSEE SUBMITTAL: SCEW(S): 6-126

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 101

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

IPMENT 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 NP8320A173V
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 102
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): COOLING WATER RETURN FROM RESIDUAL HEAT EXCHANGER ISOLATION (SOV-CC-209B)
LICENSEE SUBMITTAL: SCEW(S): 6-68

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - X Equipment replacement with qualified equipment
  - ___ Equipment modification
  - ___ Equipment relocation above submergence level
  - ___ Relocate or shield equipment from radiation source
  - ___ Verify qualification by additional (testing/analysis)
  - ___ Equipment relocation to a mild environment
  - ___ Qualification testing of equipment in progress
  - ___ Other (_____)
- ___ The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- X The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1[illegible]

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 102

NOTES:

The Licensee has identified this equipment as the ASCO NP series valve and has stated that these valves were scheduled for replacement during the last quarter of 1981. The Licensee should identify the installed valves and the qualification documentation that applies if the NP-series valves are installed

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103

EQUIPMENT ITEM NO. 103
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
ASCO MODEL NP831654V
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 103
LICENSEE REFERENCE(S): 2850
FUNCTION (PLANT ID): CHEMICAL VOLUME CONTROL SYSTEM ISOLATION VALVE FOR LETDOWN (SOV-2200A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-20 TO -22

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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.

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 103

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

For evaluation see item 101

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ITEM NO. 104
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 831654
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 104
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): LETDOWN INLET NON-REGENERATIVE HEAT EXCHANGER (SOV-2204)
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	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, 3b ~~3c, 3d~~
System Consideration Review	~~4a, 4b, 4c, 4d, 4e, 4f~~
Equipment Environmental Qualification Review	~~5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j~~
Installed TMI Lessons Learned Implementation Equipment Summary	~~6a, 6b~~
Maintenance and Replacement Schedule Summary	~~7a, 7b, 7c~~

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

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

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

X Justification for interim operation (has/[redacted]) 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/[redacted]) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action "during the last quarter of 1981".)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 104

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ITEM NO. 105
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL
ASCO MODEL LB831654
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 105
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER AUXILIARY SPRAY ISOLATION (SOV-2311)
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)

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

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

X The Licensee (has/[redacted]) 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 _____.)

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

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

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.

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 105

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

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)

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

Reason for Concurrence

___ The equipment's accident mitigating function is completed prior to the onset of the hostile environment. No subsequent functions are necessary. See note (1) below. (NRC Qualification Evaluation Category IIIb)

___ Other (see page___)

___ Resultant NRC Qualification Evaluation Category (IIIa/IIIb)

X Note 1: The Licensee (~~has~~/ has not) stated that failure of the primary equipment will not affect other safety-related equipment or cause an operator to be misled. (See page 3b)

Reason for Non-Concurrence

___ Although backup equipment is available, it is not technically sound to relinquish defense-in-depth for this function.

___ Backup (equipment/system) is not safety-related.

___ This equipment is necessary for the operator to ensure an ESF system is performing its intended safety function.

___ The rationale presented by the Licensee is not supported by objective technical evidence.

___ Other (see page___)

LICENSEE STATEMENT

See page 3a of this checksheet.

EVALUATION OF LICENSEE STATEMENT

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ITEM NO. 106
SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)
ASCO MODEL HBX8320A26
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 106
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AIR REMOVAL TO CONTAINMENT (SOV-SV-202A)
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:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

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

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

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

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

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

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

X Corrective action specified by the Licensee:

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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action, "during the last quarter of 1981".)

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 106

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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 last quarter of 1981.

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 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ITEM NO. 107
ELECTRICAL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
KAISER MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 107
LICENSEE REFERENCE(S): 3582
FUNCTION (PLANT ID): 600V POWER CABLE (NUS-225 SN-251)
LICENSEE SUBMITTAL: SCEW(S): 6-48

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

UIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 107

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

Kaiser Aluminum and Chemical Sales Inc. (Spec. Nos. NUS 225, NUS 365A, and NUS 217

Based on field test verification (special test 104) obtained subsequent to the February 1980 submittal, it was established that these cables have not been used in safety related applications in Surry Unit No. 1. Therefore, this has been deleted from the Master List.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

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

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)

___ 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ITEM NO. 108
ELECTRICAL CABLE SPLICE LOCATED IN CONTAINMENT (RC-3A)
MANUFACTURER AND MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 108
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL
LICENSEE SUBMITTAL: SCEW(S): 6-268

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

Contents	Checksheet Page No.
Equipment Item	1a
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System Consideration Review	~~4a, 4b, 4c, 4d, 4e, 4f~~
Equipment Environmental Qualification Review	~~5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j~~
Installed TMI Lessons Learned Implementation Equipment Summary	~~6a, 6b~~
Maintenance and Replacement Schedule Summary	~~7a, 7b, 7c~~

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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

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

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

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

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

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
X Other (qualify or replace)

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 108

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

LICENSEE RESPONSE TO NRC SER (Continued)

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 numers 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 inspction 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.

LICENSEE RESPONSE TO NRC SER (Continued)

7.1.11.3 Justification for Continued Operation

The terminal blocks and splices that exist in the plant have been specified and installed in strict accordance with established power industry practices. These terminal blocks and splices have a history of reliability and satisfactory performance under similar opeating 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 equipment, albeit incomplete qualification documentation, will have little or no impact on plant safety.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ITEM NO. 109
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL H2BC, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 109
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION (MOV-2862B)
LICENSEE SUBMITTAL: SCEW(S): 6-207

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 109

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ITEM NO. 110
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL SMB, CLASS B INSULATION, SIZES 00, 000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 110
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP SUCTION (MOV-RS-255B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-170, -169
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION RECIRCULATION WATER (MOV-2860B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-205, -204
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION FROM REACTOR WATER STORAGE TANK (MOV-2862A)
LICENSEE SUBMITTAL: SCEW(S): 6-206
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-2885D)
LICENSEE SUBMITTAL: SCEW(S): 6-232E

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

MOV-2885D only

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

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

X The Licensee (has/~~has not~~) provided 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 item whose qualification has not been fully established.

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 110

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

EQUIPMENT ITEM NO. 111
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
LIMITORQUE MODEL SMB 00, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 111
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): BORIC ACID INJECTION TANK OUTLET VALVE (MOV-2842, -2867B, C, D)
LICENSEE SUBMITTAL: SCEW(S): 6-203, -214 TO -216
FUNCTION (PLANT ID): BORIC ACID INJECTION TANK VALVE (MOV-2867A)
LICENSEE SUBMITTAL: SCEW(S): 6-213
FUNCTION (PLANT ID): SAFETY INJECTION TO REACTOR HOT LEGS ISOLATION (MOV-2869A)
LICENSEE SUBMITTAL: SCEW(S): 6-217
FUNCTION (PLANT ID): CHARGING HEADER ISOLATION VALVE (MOV-2289B)
LICENSEE SUBMITTAL: SCEW(S): 6-18
FUNCTION (PLANT ID): CHARGING TO REGENERATIVE HEAT EXCHANGER STOP VALVE (MOV-2289A)
LICENSEE SUBMITTAL: SCEW(S): 6-17
FUNCTION (PLANT ID): CHARGING PUMP 2-CH-P-1B RECIRCULATION/REFUELING WATER STORAGE TANK HEADER ISOLATION (MOV-2373)
LICENSEE SUBMITTAL: SCEW(S): 6-5

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 111

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ITEM NO. 112
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-47A)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 112
LICENSEE REFERENCE(S): 659, 706, 45
FUNCTION (PLANT ID): PRESSURIZER RELIEF BLOCK VALVE (MOV-2535, -2536)
LICENSEE SUBMITTAL: SCEW(S): 6-200A, B

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

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

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

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

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

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

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

X Corrective action specified by the Licensee:

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

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

X The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by 3rd Quarter 1982 (820930).)

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

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

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.	WORKSHEET PAGE NO.
MOV-FW251A	6-96
MOV-FW251B	6-97
MOV-FW251C	6-98
MOV-FW251D	6-99
MOV-FW251E	6-100
MOV-FW251F	6-101
MOV-2535	6-196
MOV-2536	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 third quarter of 1982.

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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. [redacted]

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines X; NUREG-0588, Cat. I___; NUREG-0588, Cat. II ___.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
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, 7
Connections/Interfaces (5.2.6/-/-)	NOTE 3	CONTROL & POWER LEADS THRU FLEXIBLE, PRESSURE-TIGHT CONDUIT	NOTE [redacted]
Location/Elevation	See Pg. 1a	AUTOCLAVE	
Equipment ID No.	See Pg. 1a	—	
QUALIFICATION REPORT (8.0/5.0/5.0)			
Report ID Number	—	600456 (with B-0058)	
Report Date	—	751201	
Issued by	—	LIMITORQUE	
Prepared for	—	LIMITORQUE	
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	
Operating Conditions (-/2,2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.	NOTE 4	40 ft-#/460 Volts/60 Hz	NOTE 4

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Acceptance Criteria (5.2.5/2.2.1/2.2.1)	—	SUCCESSFUL OPERATION OF THE MVA	
Accuracy (5.2.5/-/-)	—	—	
Number of Specimens	—	1 COMPLETE MVA AND 1 ADDITIONAL MOTOR	
Test Instruments Calibrated	—	YES	
Safety Function (Active/Passive) (-/2.1.3/2.1.3)	ACTIVE	—	
Test Duration (5.2.1/-/-)	—	30 DAYS	NOTE 5
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	48 hrs.	—	NOTE 5
Required Function Time	120 days	—	NOTE 5
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	—	—	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	—	—	
1. Representative Sample		—	
2. Baseline Data		—	
3. Performance Extremes		—	
4. Thermal Aging		YES	
5. Radiation Aging		YES	
6. Wear Aging		YES	
7. Vibration/Seismic		YES	
8. DBE Exposure		YES	
9. Post-DBE Exposure		YES	
10. Inspection		YES	
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	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)	1.3E07 rd	4 Mrd (COMPLETE UNIT)	
Radiation Aging, Dose Rate	—	1 Mrd/Hr	
Radiation Aging, Method	—	TEST (SEQUENTIAL)	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)	—	NOT STATED	
Operational Aging (-/4.2/-)	—	1208 OPEN/CLOSE CYCLES+ 803 (LOCA+POST-LOCA) CYCLES + 2184 CYCLES OF MVA WITH BASE TEST MOTOR INSTALLED	
Other Age Conditioning (-/4.2/-)	—	SEISMIC/VIBRATIONAL	
Qualified Life Claimed/ Established (5.2.4/4.10/-)	40 years/ None	NONE	
Normal Ambient Temperature	120°F	—	
Normal Ambient Radiation*	37.1 R/hr	—	
Normal Ambient Humidity**	20-90%	—	
On-Going Surveillance and Preventive Maintenance (7.0/-/-)	yes	—	
On-Going Analysis of Failures and Degradation (7.0/-/-)	yes	—	
Margin (General) (6.0/3.0/3.0)	—	—	
Margin (NUREG-0588, Cat. I) (-/3.2/-)		NOT STATED, EXCEPT FOR THE POST-LOCA ADDITIONAL MVA CYCLING	
1. Temperature (+15°F)		—	
2. Pressure (+10%, 10 psig max)		—	
3. Radiation (not required)		—	
4. Time (+10%, +1 hour + function time minimum)		—	

$$* \quad \frac{(1.3E07\ rd)}{40\ yr}\left(\frac{1\ yr}{8760\ hr}\right) = 37.1\ R/hr$$

** assumed by FRC

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
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	GAMMA	
Radiation Dose (rd) (4.1.2/1.4/1.4)	2.4E07rd	200 Mrd	
Radiation Dose Rate (rd/hr)	—	1 Mrd/Hr	
Radiation Qual. Method (5.3.1/-/-)	—	TEST	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	Not Stated	—	
Equipment Susceptible to Beta Radiation (4.1.2/-/-)	—	—	
Radiation Dose (Normal + Accident) (4.1.2/-/-)	3.7E07rd	204 Mrd TOTAL DOSE	
Plateout Dose Considered (-/1.48/1.48)	—	—	
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)	3.7E07rd	—	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. [redacted]

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE No.)
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	280/45/100/30 min.	310/78/100/30 min.	2 PEAKS
~~Decrease~~ Drop To: °F/psig/RH/Time	280→150/45→0/100/30m→1hr	255/30/100/91 hours	
~~Decrease~~ Drop To: °F/psig/RH/Time	150→120/0/100 1hr→48hr	195/10/100/623 hours	
Decrease To: °F/psig/RH/Time	120/0/100/>48hrs	COOL TO AMBIENT	
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)	—	—	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)	—	TEST PER IEEE-323-1974	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	H_3BO_3 (2000 2200 ppm B); NaOH, 8.5-11 pH	3000 PPM BORON (0.28 molar H_3BO_3), 0.064 molar $Na_2S_2O_3$ NaOH to pH of 10.5 @ 77F	
Spray Density (gpm/ft^2)	NOT STATED	1.2 gpm	
Spray Duration	0 - 4 hrs	24 hours (ASSUMED)	
Submergence Duration (4.1.3/2.2.5/2.2.5)	NONE	—	
In-Leakage Considered (5.2.6, 5.3.2/-/-)	↓	—	
Time to Submergence	↓	—	
Dust Environment (-/2.2.11/2.2.11)	—	—	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

NOTES:

1. The serial numbers are provided in PSR #45 on the "walk down" sheets
2. For most motorized valve actuators (MVA's) the motor manufacturer, class of insulation, and whether or not the MVA contains a motor-brake assembly has been identified in PSR #45 and on the SCEWs
3. The component interfaces (i.e. motor leads, splices) are not considered part of the MVA by the licensee and will be addressed separately.
4. The nameplate operating conditions for the MVA are provided in PSR #45 on the "walk down" sheets.
5. For the equipment located inside containment, a required operating time of 120 days is specified. PSR #45 has attempted to extrapolate the saturated steam test data to extend the qualified duration. The following facts should be noted in considering this methodology:

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NOTES:

a. The installed motor is Class B
b. The replacement motor is Class RH
c. The extrapolation and thermal aging analyses use data from BØØ58.
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%RH/200hr. exposure cited in BØØ58 for class B motor was performed in BØØØ3 and simulates only a small fraction of the installed life.
g. The thermal aging (log-life) data in BØØ58 (for both Class B and RH) did 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 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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 112

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 provided the technical basis for extending the test duration by using Arrhenius, the license did state the following with respect to thermal aging, (PSR #43)

"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."

NOTES:

This statement has not been related to the test duration extension and pressure effects were also not addressed. However, there was no indication during the test that continued exposure to the post-LOCA conditions would result in a failure of the device, and, as such, this device is considered qualified for the specified duration.

6. Thermal aging has been addressed in B0058 for the motor insulation system. The licensee has also addressed the qualification of the seals, gaskets and the lubricants. The limit and torque switches are to be replaced along with the motor and thermal aging of these devices has been addressed in B0058. These devices are composed of phenolics and metals which are not significantly affected by thermal aging degradation. Terminal strips (blocks) and connectors have been addressed also. The licensee

NOTES:

has stated that the equipment interfaces will be addressed as separate items. The licensee should be aware that teflon is used in many motor leads and is susceptible to thermal aging and radiation effects.

7. The difference in motor manufacturers has been adequately addressed

GENERAL NOTE:

Since the licensee has committed to replace the motor, limit switches, install "T" drains on the limit switch compartments and use grease relief valves on the main gear box; the licensee should provide documented evidence that the modified MVA and the tested MVA are similar because the changes are extensive. This request is meant as a precaution to assure qualification.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ITEM NO. 113
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)
LIMITORQUE MODEL SMB00, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 113
LICENSEE REFERENCE(S): 659, 706, 45
FUNCTION (PLANT ID): AUXILIARY FEEDWATER/HELB MITIGATION (MOV-FW-251A TO F)
LICENSEE SUBMITTAL: SCEW(S): 6-99 TO -104

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

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

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

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

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

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

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

X Corrective action specified by the Licensee:

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

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

X The Licensee (has/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action by third quarter of 1982 (820930).)

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

For detailed evaluation of the referenced documents refer to equipment item #112. The licensee has committed to replace the torque switch on MOV-FW-251A, B, C in addition to the other modifications noted.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 113

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.8.1 Motor Operators Without Brakes

PLANT ID NO.	WORKSHEET PAGE NO.
MOV-FW251A	6-96
MOV-FW251B	6-97
MOV-FW251C	6-98
MOV-FW251D	6-99
MOV-FW251E	6-100
MOV-FW251F	6-101
MOV-2535	6-196
MOV-2536	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 third 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.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ITEM NO. 114
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
LIMITORQUE, MODEL NOT STATED, PEERLESS MOTOR, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 114
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHARGING PUMP 2-CH-P-1A RECIRCULATION TO REFUELING WATER STORAGE TANK (MOV-2275A)
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	1a
Summary of Licensee Responses to the NRC SER	1b
Equipment Environmental Qualification Summary Forms	2
Licensee Response to NRC SER	3a, ~~3b, 3c, 3d~~
System Consideration Review	~~4a, 4b, 4c, 4d, 4e, 4f~~
Equipment Environmental Qualification Review	~~5a, 5b, 5c, 5d, 5e, 5f, 5g, 5h, 5i, 5j~~
Installed TMI Lessons Learned Implementation Equipment Summary	~~6a, 6b~~
Maintenance and Replacement Schedule Summary	~~7a, 7b, 7c~~

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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 item whose qualification has not been fully established.

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 114

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

EQUIPMENT ITEM NO. 115
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. 115
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHARGING PUMP 2-CH-P-1C RECIRCULATION TO REFUELING WATER STORAGE TANK (MOV-2275C, B)
LICENSEE SUBMITTAL: SCEW(S): 6-4, 6-3
FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM VOLUME CONTROL TANK (MOV-2115E, C)
LICENSEE SUBMITTAL: SCEW(S): 6-16, -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,
→ MOV-2115E, C only
Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 45

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

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

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 item whose qualification has not been fully established.

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 115

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

REFER TO EQUIPMENT ITEM #64 FOR DETAILED EVALUATION OF THE REFERENCED REPORTS. SPECIFIC NOTES, IF ANY, WILL BE FOUND ON THE APPROPRIATE NOTE PAGES.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

EQUIPMENT ITEM NO. 116
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-201A, -201B)
LICENSEE SUBMITTAL: SCEW(S): T-1, T-2 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NA new item

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 116

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 10

LICENSEE RESPONSE TO NRC SER

5. Rosemount Inc. - Pressure Transmitters

Plant ID No.	Model	Worksheet Page No.
PT-LM-201A	1152AP7A22PB	10.3-1
PT-LM-201B	1152AP7A22PB	10.3-2

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

EQUIPMENT ITEM NO. 117
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-203A, B)
LICENSEE SUBMITTAL: SCEW(S): T-3, T-4 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

NA new item

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 117

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

See equipment item no. 101 for evaluation.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQIUPMENT ITEM NO. 118
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-251A, B)
LICENSEE SUBMITTAL: SCEW(S): T-30, T-31 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 118

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

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 equipment item whose qualification has not been fully established.

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

LICENSEE RESPONSE TO NRC SER

1. GEMS - Level Transmitters

Plant ID No.	Model	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 323-1974.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ITEM NO. 119
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-210A, B)
LICENSEE SUBMITTAL: SCEW(S): T-5, T-6 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

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

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 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
(I.a) Qualification Not Established
I.b Not Qualified
II.c Qualified Life Deficiency
III.a Exempt
III.b Not in Scope
IV Documentation Not Available

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 119

LICENSEE RESPONSE TO NRC SER

1. GEMS - Level Transmitters

Plant ID No.	Model	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 323-1974.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ITEM NO. 120
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-203A, B)
LICENSEE SUBMITTAL: SCEW(S): T-7, T-8 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

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

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 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
I.a Qualification Not Established
.b Not Qualified
(II.c) Qualified Life Deficiency
III.a Exempt
III.b Not in Scope
IV Documentation Not Available

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines ___; NUREG-0588, Cat. I X; 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	
Manufacturer's Name (5.2.2/-/-)	NAMCO	NAMCO Controls	
Model Number (5.2.2/-/-)	EA180-31302	EA-180, Type 23	
Serial Number	—	EA-180-11302,Rev.-D	
Features/Mounting (5.2.6/-/-)	—	Horizontal in Autoclave	
Connections/Interfaces (5.2.6/-/-)	—	—	
Location/Elevation	outside Containment	Not Applicable	
Equipment ID No.	ZS-DA-103A ZS-DA-103B	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	8/20/81	
Issued by	Cleveland Development Co.	ACME CLEVELAND DEVELOPMENT COMPANY	
Prepared for		NAMCO CONTROLS	
Referenced Reports	—	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 (2.2.5/2.2.9/2.2.9)	—	Make/break contact	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/ Current/Freq.	—	0.5Amps @ 100 Vdc	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

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 Required	Not Stated	
Number of Specimens	—	One (1)	
Test Instruments Calibrated	—	Yes	
Safety Function (Active/Passive) (-/2.1.3/2.1.3)	Active		
Test Duration (5.2.1/-/-)	—	30 days	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)	120 days	Not Applicable	Note 2, page 5f
Required Function Time	120 days	Not Applicable	
Test Sequence (General) (5.2.3/2.3.1/2.3.1)	—	Inspection/Base line data Heat/Humidity Aging Mechanical Aging Irradiation Seismic testing LOCA Simulation	
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)	—		
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			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis	See Note 3, page 5f.	120°C for 400 hours	
Material Aging Evaluation (7.0/-/-)	—	Not Stated	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)	—	Not Stated	
Radiation Aging, Type	—	Gamma	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. [redacted]

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
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/MSLB	
Radiation Type	—	Gamma	
Radiation Dose (rd) (4.1.2/1.4/1.4)	8 E 6 Rads	204 Megarads	*
Radiation Dose Rate (rd/hr)	—	0.7 Megarads per hour	
Radiation Qual. Method (5.3.1/-/-)	Test	Test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)	—	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)	—	Not Applicable	

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 120

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 Required	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, [illegible]/1.2.5.C, 2.2.6)		Not Applicable	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		Test	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)		Boric Acid/water/sodium thiosulfate/sodium hydroxide	
Spray Density (gpm/ft^2)		0.15	
Spray Duration		30Days	
Submergence Duration (4.1.3/2.2.5/2.2.5)		Not Applicable	
In-Leakage Considered (5.2.6, 5.3.2/-/-)		Not Applicable	
Time to Submergence		Not Applicable	
Dust Environment (-/2.2.11/2.2.11)		Not Applicable	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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 qualification 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 1E 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.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

EQUIPMENT ITEM NO. 121
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-200A-1, -2; -200B-1, -2; -200C-1, -2; -201A-1, -2; 201B-1, -2)
LICENSEE SUBMITTAL: SCEW(S): T-9 THROUGH T-18 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

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

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

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

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

X 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.

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 item that can be construed as a basis for justification for interim operation.

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 121

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

3. Endevco - Acoustical Monitoring Accelerometer

Plant ID No.	Model	Worksheet Page No.
YE-VMS-200A-1	2273AM20	10.3-9
YE-VMS-200A-2	2273AM20	10.3-10
YE-VMS-200B-1	2273AM20	10.3-11
YE-VMS-200B-2	2273AM20	10.3-12
YE-VMS-200C-1	2273AM20	10.3-13
YE-VMS-200C-2	2273AM20	10.3-14
YE-VMS-201A-1	2273AM20	10.3-15
YE-VMS-201A-2	2273AM20	10.3-16
YE-VMS-201B-1	2273AM20	10.3-17
YE-VMS-201B-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 be tested.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 122

EQUIPMENT ITEM NO. 122
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 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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

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

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

X 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
X Qualification testing of equipment in progress
___ Other (_____)

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

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12-2

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

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.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

EQUIPMENT ITEM NO. 123
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-200A-1, -2; B-1, -2; C-1, -2; -201A-1, -2; B-1, -2)
LICENSEE SUBMITTAL: SCEW(S): T-20 THROUGH T-29 [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 New item

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

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

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

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

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

X 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.

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 item that can be construed as a basis for justification for interim operation.

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 123

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

NRC QUALIFICATION CATEGORY		DESIGNATION: X = CATEGORY
I.a	Equipment Qualified	____
I.b	Equipment Qualification Pending Modification	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	____

LICENSEE RESPONSE TO NRC SER

2. Unholtz-Dickie - Acoustical Monitoring Preamplifier

Plant ID No.	Model	Worksheet Page No.
YY-VMS-200A-1	22CA-2TR	10.3-20
YY-VMS-200A-2	22CA-2TR	10.3-21
YY-VMS-200B-1	22CA-2TR	10.3-22
YY-VMS-200B-2	22CA-2TR	10.3-23
YY-VMS-200C-1	22CA-2TR	10.3-24
YY-VMS-200C-2	22CA-2TR	10.3-25
YY-VMS-201A-1	22CA-2TR	10.3-26
YY-VMS-201A-2	22CA-2TR	10.3-27
YY-VMS-201B-1	22CA-2TR	10.3-28
YY-VMS-201B-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.

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

EQUIPMENT ITEM NO. 124
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-200A, -200B)
LICENSEE SUBMITTAL: SCEW(S): 10.3-38, -39 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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 equipment item whose qualification has not been fully established.

- ___ Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- ___ Corrective action specified by the Licensee:
  - ___ Equipment replacement with qualified equipment
  - ___ Equipment modification
  - ___ Equipment relocation above submergence level
  - ___ Relocate or shield equipment from radiation source
  - ___ Verify qualification by additional (testing/analysis)
  - ___ Equipment relocation to a mild environment
  - ___ Qualification testing of equipment in progress
  - ___ Other (_____)
- ___ The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- ___ The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

LICENSEE RESPONSE TO NRC SER

6. Valcor - Solenoid Operated Valves

Plant ID No.	Model	Worksheet Page No.
TV-SS-202A	V526-5683-19	10.3-32
TV-SS-202B	V526-5683-19	10.3-33
TV-SS-206A	V526-5683-19	10.3-34
TV-SS-206B	V526-5683-19	10.3-35
HCV-SS-201D	V526-5683-19	10.3-36
HCV-SS-202A	V526-5683-19	10.3-37
HCV-SS-200A	V526-5683-19	10.3-38
HCV-SS-200B	V526-5683-19	10.3-39
TV-SS-203A	V526-5683-19	10.3-40
TV-SS-203B	V526-5683-19	10.3-41
S2-XCV-2401A	V526-5683-19	10.3-62
S2-XCV-2401B	V526-5683-19	10.3-63
S2-XCV-2422A	V526-5683-19	10.3-64
S2-XCV-2422B	V526-5683-19	10.3-65
TV-GW-200	V526-5695-31	10.3-76
TV-GW-201	V526-5695-31	10.3-77
TV-GW-202	V526-5695-31	10.3-78
TV-GW-203	V526-5695-31	10.3-79
TV-GW-204	V526-5695-31	10.3-80
TV-GW-205	V526-5695-31	10.3-81
TV-GW-206	V526-5695-31	10.3-82
TV-GW-207	V526-5695-31	10.3-83

The vendor has been contacted for qualification test data.

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW

Criteria: DOR Guidelines ___; NUREG-0588, Cat. I X; 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	Solenoid Valve	Solenoid Valve	
Manufacturer's Name (5.2.2/-/-)	Valcor Engineering	Valcor Engineering	
Model Number (5.2.2/-/-)	V526-5683-19 and V526-5295-31	V52600-5291-2	
Serial Number			
Features/Mounting (5.2.6/-/-)			
Connections/Interfaces (5.2.6/-/-)			
Location/Elevation	Containment and Aux. Bldg.		
Equipment ID No.	Various		
QUALIFICATION REPORT (8.0/5.0/5.0)			
Report ID Number	not cited	QR-52600-5940-2	
Report Date		05-July-1979	
Issued by		Valcor Engineering Corp.	
Prepared for		Isomedix Inc.	
Referenced Reports		IFR-V877-01	
Qualification Method (5.1, 5.3/2.1, 2.4/2.1, 2.4)		Type Test	
QUALIFICATION TEST PROGRAM			
Functional Test Description (5.2.5/2.2.9/2.2.9)		Insulation Resistance Tests	
Operating Conditions (-/2.2.10/2.2.10) Load/Cycles/Voltage/Current/Freq.		108 VAC 44 psig N_2	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 17

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)		Pass Functional Tests, Demonstrate Satisfactory Operability	
Accuracy (5.2.5/-/-)		ND	
Number of Specimens		1	
Test Instruments Calibrated		Yes	
Safety Function (Active/ Passive) (-/2.1.3/2.1.3)	Active; Cont. Isolation and Post Accident Sampling system		
Test Duration (5.2.1/-/-)		31 Days	
Accident Duration (Envir. Above Normal) (5.2.1/-/-)			
Required Function Time	120 days		
Test Sequence (General) (5.2.3/2.3.1/2.3.1)			
Test Sequence (NUREG-0588, Cat. I) (-/2.3.1/-)		TA/OPER/RAD/SEIS/STM+CHSP	
1. Representative Sample			
2. Baseline Data			
3. Performance Extremes			
4. Thermal Aging			
5. Radiation Aging			
6. Wear Aging			
7. Vibration/Seismic			
8. DBE Exposure			
9. Post-DBE Exposure			
10. Inspection			
Aging (5.2.4, 7.0/4.0/4.0) Thermal Aging/Basis		318 deg.F, 172 Hr. To Simulate 40 Yrs. @ 120 deg.F	
Material Aging Evaluation (7.0/-/-)		MR52600-515-2 Additional 442 Hr.@318°F to age polyimide to 40 Yr.	
Materials Susceptible (Thermal) (5.2.4, 7.0/-/-)		Coil Materials	
Radiation Aging, Type		GAMMA	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

NRC REQUIREMENTS WITH SECTION REFERENCE (DOR/0588-I/0588-II)	LICENSEE SUBMITTAL	QUALIFICATION DOCUMENTATION	DEFICIENCY (X OR NOTE NO.)
Radiation Aging, Dose (rd)		50×10^6	
Radiation Aging, Dose Rate		0.75 Mrd/h	
Radiation Aging, Method		Test	
Materials Susceptible (Radiation) (5.2.4, 7.0/-/-)			
Operational Aging (-/4.2/-)		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/-/-)			
On-Going Analysis of Failures and Degradation (7.0/-/-)			
Margin (General) (6.0/3.0/3.0)			
Margin (NUREG-0588, Cat. I) (-/3.2/-) 1. Temperature (+15°F) 2. Pressure (+10%, 10 psig max) 3. Radiation (not required) 4. Time (+10%, +1 hour + function time minimum)			

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. [illegible]

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)			
Radiation Type		GAMMA	
Radiation Dose (rd) (4.1.2/1.4/1.4)	3.7×10^7 rd	150×10^6	
Radiation Dose Rate (rd/hr) Radiation Qual. Method (5.3.1/-/-)		0.75×10^6, Test	
Proximity to Concentrated Radiation (4.1.2/1.4.6/1.4.6)			
Equipment Susceptible to Beta Radiation (4.1.2/-/-)			
Radiation Dose (Normal + Accident) (4.1.2/-/-)	3.7×10^7 rd.	200×10^6 rad	
Plateout Dose Considered (-/1.48/1.48)		NA	
Gamma + Beta Dose (rd) (4.1.2/1.4.7/1.4.7)		NA	

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 124

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 Stated But Within 3 - 5 Min.	
Peak: °F/psig/RH/Time	275/45/-/30min.	346/113/100/3h	
Decrease To: °F/psig/RH/Time	275 ↓ 150 / 45 ↓ 1.0 / -/30min.	335/113/100/3h	
Decrease To: °F/psig/RH/Time	150 ↓ 125 / 1.0 / -/47hr.	315/69/100/4h	
Decrease To: °F/psig/RH/Time	150/1.0/-/120days	272/28/100/4h	
Equipment Surface Temperature (MSLB) (-/1.2.5.C, 2.2.6/1.2.5.C, 2.2.6)		245/13/100/27.5d	
Spray Qualification Method (5.3.2/1.3, 2.2.8/1.3, 2.2.8)		Test (Simultaneous)	
Spray Composition (4.1.4/1.3, 2.2.8/1.3, 2.2.8)	H_3BO_3 (2000 - 2200 ppm) NaOH buffer ph 8.5-11	2200 ppm Boron H_3BO_3 0.064m $Na_2S_2O_3$ NaOH, ph=10.5	
Spray Density (gpm/ft^2)		0.15 gpm/ft^2	
Spray Duration	4 hr.	44,640 min.	
Submergence Duration (4.1.3/2.2.5/2.2.5)	NA		
In-Leakage Considered (5.2.6, 5.3.2/-/-)			
Time to Submergence	NA		
Dust Environment (-/2.2.11/2.2.11)			

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

NOTES:

1. 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.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

EQUIPMENT ITEM NO. 125
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-202A, -206A, -203A; HCV-SS-201D, -202A)
LICENSEE SUBMITTAL: SCEW(S): 10.3-32, -34, -40, -36, -37 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 125

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

See item 124 for evaluation

LICENSEE RESPONSE TO NRC SER

6. Valcor - Solenoid Operated Valves

Plant ID No.	Model	Worksheet Page No.
TV-SS-202A	V526-5683-19	10.3-32
TV-SS-202B	V526-5683-19	10.3-33
TV-SS-206A	V526-5683-19	10.3-34
TV-SS-206B	V526-5683-19	10.3-35
HCV-SS-201D	V526-5683-19	10.3-36
HCV-SS-202A	V526-5683-19	10.3-37
HCV-SS-200A	V526-5683-19	10.3-38
HCV-SS-200B	V526-5683-19	10.3-39
TV-SS-203A	V526-5683-19	10.3-40
TV-SS-203B	V526-5683-19	10.3-41
S2-XCV-2401A	V526-5683-19	10.3-62
S2-XCV-2401B	V526-5683-19	10.3-63
S2-XCV-2422A	V526-5683-19	10.3-64
S2-XCV-2422B	V526-5683-19	10.3-65
TV-GW-200	V526-5695-31	10.3-76
TV-GW-201	V526-5695-31	10.3-77
TV-GW-202	V526-5695-31	10.3-78
TV-GW-203	V526-5695-31	10.3-79
TV-GW-204	V526-5695-31	10.3-80
TV-GW-205	V526-5695-31	10.3-81
TV-GW-206	V526-5695-31	10.3-82
TV-GW-207	V526-5695-31	10.3-83

The vendor has been contacted for qualification test data.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EQUIPMENT ITEM NO. 126
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-200 THROUGH -207; TV-SS-202B, -203B, -206B; S1-XCV-2401A, B; -2422A, B)
LICENSEE SUBMITTAL: SCEW(S): 10.3-76 THROUGH -83; 10.3-33, -35, -41, -62, -63, -64, -65 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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 equipment item whose qualification has not been fully established.

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 126

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

See equipment item no. 124 for evaluation.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

LICENSEE RESPONSE TO NRC SER

6. Valcor - Solenoid Operated Valves

Plant ID No.	Model	Worksheet Page No.
TV-SS-202A	V526-5683-19	10.3-32
TV-SS-202B	V526-5683-19	10.3-33
TV-SS-206A	V526-5683-19	10.3-34
TV-SS-206B	V526-5683-19	10.3-35
HCV-SS-201D	V526-5683-19	10.3-36
HCV-SS-202A	V526-5683-19	10.3-37
HCV-SS-200A	V526-5683-19	10.3-38
HCV-SS-200B	V526-5683-19	10.3-39
TV-SS-203A	V526-5683-19	10.3-40
TV-SS-203B	V526-5683-19	10.3-41
S2-XCV-2401A	V526-5683-19	10.3-62
S2-XCV-2401B	V526-5683-19	10.3-63
S2-XCV-2422A	V526-5683-19	10.3-64
S2-XCV-2422B	V526-5683-19	10.3-65
TV-GW-200	V526-5695-31	10.3-76
TV-GW-201	V526-5695-31	10.3-77
TV-GW-202	V526-5695-31	10.3-78
TV-GW-203	V526-5695-31	10.3-79
TV-GW-204	V526-5695-31	10.3-80
TV-GW-205	V526-5695-31	10.3-81
TV-GW-206	V526-5695-31	10.3-82
TV-GW-207	V526-5695-31	10.3-83

The vendor has been contacted for qualification test data.

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

EQUIPMENT ITEM NO. 127
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-200A-1, -2; -200B-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 10.3-54, -55, -56, -57 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

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

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

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

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

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

- ___ Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- ___ Corrective action specified by the Licensee:
  - ___ Equipment replacement with qualified equipment
  - ___ Equipment modification
  - ___ Equipment relocation above submergence level
  - ___ Relocate or shield equipment from radiation source
  - ___ Verify qualification by additional (testing/analysis)
  - ___ Equipment relocation to a mild environment
  - ___ Qualification testing of equipment in progress
  - ___ Other (_____)
- ___ The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- ___ The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

___ 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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 127

LICENSEE RESPONSE TO NRC SER

7. Gordos - Limit Switches

Plant ID No.	Model	Worksheet Page No.
ZS-SS-202A-1	MR8901	10.3-42
ZS-SS-202A-2	MR8901	10.3-43
ZS-SS-202B-1	MR8901	10.3-44
ZS-SS-202B-2	MR8901	10.3-45
ZS-SS-206A-1	MR8901	10.3-46
ZS-SS-206A-2	MR8901	10.3-47
ZS-SS-206B-1	MR8901	10.3-48
ZS-SS-206B-2	MR8901	10.3-49
ZS-SS-201D-1	MR8901	10.3-50
ZS-SS-201D-2	MR8901	10.3-51
ZS-SS-202A-3	MR8901	10.3-52
ZS-SS-202A-4	MR8901	10.3-53
ZS-SS-200A-1	MR8901	10.3-54
ZS-SS-200A-2	MR8901	10.3-55
ZS-SS-200B-1	MR8901	10.3-56
ZS-SS-200B-2	MR8901	10.3-57
ZS-SS-203A-1	MR8901	10.3-58
ZS-SS-203A-2	MR8901	10.3-59
ZS-SS-203B-1	MR8901	10.3-60
ZS-SS-203B-2	MR8901	10.3-61
ZS-XCV-2401A-1	MR8901	10.3-66
ZS-XCV-2401A-2	MR8901	10.3-67
ZS-XCV-2401B-1	MR8901	10.3-68
ZS-XCV-2401B-2	MR8901	10.3-69
ZS-XCV-2422A-1	MR8901	10.3-70
ZS-XCV-2422A-2	MR8901	10.3-71
ZS-XCV-2422B-1	MR8901	10.3-72
ZS-XCV-2422B-2	MR8901	10.3-73
ZS-GW-200-1	MR8901	10.3-84
ZS-GW-200-2	MR8901	10.3-85
ZS-GW-201-1	MR8901	10.3-86
ZS-GW-201-2	MR8901	10.3-87
ZS-GW-202-1	MR8901	10.3-88
ZS-GW-202-2	MR8901	10.3-89
ZS-GW-203-1	MR8901	10.3-90
ZS-GW-203-2	MR8901	10.3-91
ZS-GW-204-1	MR8901	10.3-92
ZS-GW-204-2	MR8901	10.3-93
ZS-GW-205-1	MR8901	10.3-94
ZS-GW-205-2	MR8901	10.3-95
ZS-GW-206-1	MR8901	10.3-96
ZS-GW-206-2	MR8901	10.3-97
ZS-GW-207-1	MR8901	10.3-98
ZS-GW-207-2	MR8901	10.3-99

The vendor has been contacted for qualification test data.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

EQUIPMENT ITEM NO. 128
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-202A-1, -2; -206A-1, -2; -201D-1, -2; 202A-3, -4; 203A-1, -2)
LICENSEE SBUMITTAL: SCEW(S): 10.3-42, -43, -46, -47, -50, -51, -52, -53, -58, -59 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 128

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 13

LICENSEE RESPONSE TO NRC SER

7. Gordos - Limit Switches

Plant ID No.	Model	Worksheet Page No.
ZS-SS-202A-1	MR8901	10.3-42
ZS-SS-202A-2	MR8901	10.3-43
ZS-SS-202B-1	MR8901	10.3-44
ZS-SS-202B-2	MR8901	10.3-45
ZS-SS-206A-1	MR8901	10.3-46
ZS-SS-206A-2	MR8901	10.3-47
ZS-SS-206B-1	MR8901	10.3-48
ZS-SS-206B-2	MR8901	10.3-49
ZS-SS-201D-1	MR8901	10.3-50
ZS-SS-201D-2	MR8901	10.3-51
ZS-SS-202A-3	MR8901	10.3-52
ZS-SS-202A-4	MR8901	10.3-53
ZS-SS-200A-1	MR8901	10.3-54
ZS-SS-200A-2	MR8901	10.3-55
ZS-SS-200B-1	MR8901	10.3-56
ZS-SS-200B-2	MR8901	10.3-57
ZS-SS-203A-1	MR8901	10.3-58
ZS-SS-203A-2	MR8901	10.3-59
ZS-SS-203B-1	MR8901	10.3-60
ZS-SS-203B-2	MR8901	10.3-61
ZS-XCV-2401A-1	MR8901	10.3-66
ZS-XCV-2401A-2	MR8901	10.3-67
ZS-XCV-2401B-1	MR8901	10.3-68
ZS-XCV-2401B-2	MR8901	10.3-69
ZS-XCV-2422A-1	MR8901	10.3-70
ZS-XCV-2422A-2	MR8901	10.3-71
ZS-XCV-2422B-1	MR8901	10.3-72
ZS-XCV-2422B-2	MR8901	10.3-73
ZS-GW-200-1	MR8901	10.3-84
ZS-GW-200-2	MR8901	10.3-85
ZS-GW-201-1	MR8901	10.3-86
ZS-GW-201-2	MR8901	10.3-87
ZS-GW-202-1	MR8901	10.3-88
ZS-GW-202-2	MR8901	10.3-89
ZS-GW-203-1	MR8901	10.3-90
ZS-GW-203-2	MR8901	10.3-91
ZS-GW-204-1	MR8901	10.3-92
ZS-GW-204-2	MR8901	10.3-93
ZS-GW-205-1	MR8901	10.3-94
ZS-GW-205-2	MR8901	10.3-95
ZS-GW-206-1	MR8901	10.3-96
ZS-GW-206-2	MR8901	10.3-97
ZS-GW-207-1	MR8901	10.3-98
ZS-GW-207-2	MR8901	10.3-99

The vendor has been contacted for qualification test data.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

EQUIPMENT ITEM NO. 129
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-202B-2, -1; -206B-1, -2; 203B-1, -2; ZS-XCV-2401A-1, -2; -2401B-1, -2; 2422A-1, -2; -2422B-1, -2; ZS-GW-200-1, -2; -201-1, -2; -202-1, -2; -203-1, -2; -204-1, -2; -205-1, -2; -206-1, -2; -207-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 10.3-45, -44, -48, -49, -60, -61, -66 THROUGH -69, -70 THROUGH -73, -84 THROUGH -99 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 1

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

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

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

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

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

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

___ Corrective action specified by the Licensee:

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

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

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

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

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

I.a Qualified
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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 129

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 12

LICENSEE RESPONSE TO NRC SER

7. Gordos - Limit Switches

Plant ID No.	Model	Worksheet Page No.
ZS-SS-202A-1	MR8901	10.3-42
ZS-SS-202A-2	MR8901	10.3-43
ZS-SS-202B-1	MR8901	10.3-44
ZS-SS-202B-2	MR8901	10.3-45
ZS-SS-206A-1	MR8901	10.3-46
ZS-SS-206A-2	MR8901	10.3-47
ZS-SS-206B-1	MR8901	10.3-48
ZS-SS-206B-2	MR8901	10.3-49
ZS-SS-201D-1	MR8901	10.3-50
ZS-SS-201D-2	MR8901	10.3-51
ZS-SS-202A-3	MR8901	10.3-52
ZS-SS-202A-4	MR8901	10.3-53
ZS-SS-200A-1	MR8901	10.3-54
ZS-SS-200A-2	MR8901	10.3-55
ZS-SS-200B-1	MR8901	10.3-56
ZS-SS-200B-2	MR8901	10.3-57
ZS-SS-203A-1	MR8901	10.3-58
ZS-SS-203A-2	MR8901	10.3-59
ZS-SS-203B-1	MR8901	10.3-60
ZS-SS-203B-2	MR8901	10.3-61
ZS-XCV-2401A-1	MR8901	10.3-66
ZS-XCV-2401A-2	MR8901	10.3-67
ZS-XCV-2401B-1	MR8901	10.3-68
ZS-XCV-2401B-2	MR8901	10.3-69
ZS-XCV-2422A-1	MR8901	10.3-70
ZS-XCV-2422A-2	MR8901	10.3-71
ZS-XCV-2422B-1	MR8901	10.3-72
ZS-XCV-2422B-2	MR8901	10.3-73
ZS-GW-200-1	MR8901	10.3-84
ZS-GW-200-2	MR8901	10.3-85
ZS-GW-201-1	MR8901	10.3-86
ZS-GW-201-2	MR8901	10.3-87
ZS-GW-202-1	MR8901	10.3-88
ZS-GW-202-2	MR8901	10.3-89
ZS-GW-203-1	MR8901	10.3-90
ZS-GW-203-2	MR8901	10.3-91
ZS-GW-204-1	MR8901	10.3-92
ZS-GW-204-2	MR8901	10.3-93
ZS-GW-205-1	MR8901	10.3-94
ZS-GW-205-2	MR8901	10.3-95
ZS-GW-206-1	MR8901	10.3-96
ZS-GW-206-2	MR8901	10.3-97
ZS-GW-207-1	MR8901	10.3-98
ZS-GW-207-2	MR8901	10.3-99

The vendor has been contacted for qualification test data.

PMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 130

EQUIPMENT ITEM NO. 130
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-201-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 10.3-74, -75 [15]

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 170

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

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

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

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

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

- ___ Justification for interim operation (has/has not) been provided by the Licensee for this equipment item.
- ___ Corrective action specified by the Licensee:
  - ___ Equipment replacement with qualified equipment
  - ___ Equipment modification
  - ___ Equipment relocation above submergence level
  - ___ Relocate or shield equipment from radiation source
  - ___ Verify qualification by additional (testing/analysis)
  - ___ Equipment relocation to a mild environment
  - ___ Qualification testing of equipment in progress
  - ___ Other (_____)
- ___ The Licensee has provided other information for this equipment item that can be construed as a basis for justification for interim operation.
- ___ The Licensee (has/has not) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action _____.)

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

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

LICENSEE RESPONSE TO NRC SER

8. Comsip Delphi - Hydrogen Analyzer

Plant ID No.	Model	Worksheet Page No.
H2A-GW-201-1	K-III	10.3-74
H2A-GW-201-2	K-III	10.3-75

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

EQUIPMENT ITEM NO. 131
FLOW TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
FISCHER AND PORTER MODEL 10B2496QB
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 131
LICENSEE REFERENCE(S): 687
FUNCTION (PLANT ID): STEAM-FLOW TRANSMITTER (FT-2474, -2475, -2484, -2485, -2494, -2495)
LICENSEE SUBMITTAL: SCEW(S): 6-142 TO -147

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

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

Not stated, Not applicable

LISTING OF APPLICABLE CHECKSHEETS:

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

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

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

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

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

- X Justification for interim operation (has/~~has not~~) been provided by the Licensee for this equipment item.
- X Corrective action specified by the Licensee:
  - 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/~~has not~~) provided a schedule for the proposed corrective action. (Schedule for accomplishing the corrective action: 12/31/81.)

___ 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

IPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO. 131

EQUIPMENT ENVIRONMENTAL QUALIFICATION SUMMARY FORM

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

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

EQUIPMENT ENVIRONMENTAL QUALIFICATION REVIEW OF EQUIPMENT ITEM NO.

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

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.4 Fischer Porter (Transmitters)

PLANT ID NO.	MODEL NO.	WORKSHEET PAGE NO.
FT-2474	10B2496OB	6-142
FT-2475	10B2496OB	6-142
FT-2484	10B2496OB	6-144
FT-2485	10B2496OB	6-145
FT-2494	10B2496OB	6-146
FT-2495	10B2496OB	6-147
FT-FW-200A	10B2496PB-NS	6-87
FT-FW-200B	10B2496PB-NS	6-88
FT-FW-200C	10B2496PB-NS	6-89
PT-2464	50EP1041BCXA-NS	6-148
PT-2466	50EP1041BCXA-NS	6-149
PT-2468	50EP1041BCXA-NS	6-150
PT-2474	50EP1041BCXA-NS	6-151
PT-2475	50EP1041BCXA-NS	6-152
PT-2476	50EP1041BCXA-NS	6-153
PT-2484	50EP1041BCXA-NS	6-154
PT-2484	50EP1041BCXA-NS	6-155
PT-2486	50EP1041BCXA-NS	6-156
PT-2494	50EP1041BCXA-NS	6-157
PT-2495	50EP1041BCXA-NS	6-158
PT-2496	50EP1041BCXA-NS	6-159
PT-LM-200A	50EN1071BCXA	6-128
PT-LM-200B	50EN1071BCXA	6-129
PT-LM-200C	50EN1071BCXA	6-130
PT-LM-200D	50EN0171BCXA	6-131
PT-2455	10B2496OBXA-NS	6-185
PT-2456	10B2496OBXA-NS	6-186
PT-2457	10B2496OBXA-NS	6-187

7.2.4.1 Modification/Replacement Status

We are presently participating in a transmitter qualification program which is scheduled to be completed by June 1982. We have ordered replacement transmitters of the type being tested (Rosemount Series No. 1153D) to ensure that we will have transmitters available to replace existing types.

LICENSEE RESPONSE TO NRC SER (Continued)

7.2.4.2 Modification/Replacement Schedule

Replacement transmitters have been placed on order. Based on current projections for material delivery and our current outage schedule, replacement is scheduled to begin during the last quarter of 1981.

7.2.4.3 Justification For Continued Operation

These transmitters have been environmentally tested and have demonstrated their ability to provide an accident mitigation trip signal when subject to a harsh environment. Therefore, it is concluded that continued operation of the Surry Units in the interim with this equipment will have no effect on safety.

5. CONCLUSIONS

The tabulations in Section 4.2 represent a summary of the results of the equipment environmental qualification (EEQ) assessment conducted in accordance with the methodology presented in Section 3. The evaluations are based on the available qualification documentation provided by the Licensee, complemented in several cases by other relevant technical information. The major qualification deficiencies that have been identified and the results of the evaluation are shown in the Equipment Environmental Qualification Summary Forms (Tables 4-1, 4-2, 4-3, and 4-4).

Although Sections 4.3, 4.4, and Appendix C of this report present a detailed evaluation of (1) the Licensee's qualification methodology, (2) the equipment environmental qualification of each equipment item, and (3) the Licensee's response to the NRC SER, it is appropriate to highlight for the Licensee and the NRC certain conclusions 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, 1981, the Licensee provided the following response concerning TMI Action Plan equipment [15]:

STONE & WEBSTER ENGINEERING CORPORATION 10.2-1

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: AUXILIARY FEEDWATER

Plant Identification Number		Generic Name	Location	
			Inside Containment	Outside Containment
	Worksheet Page No.			
FT-FW-200A	Note 1	Flow Transmitter	x	
FT-FW-200B	Note 1	Flow Transmitter	x	
FT-FW-200C	Note 1	Flow Transmitter	x	

		TITLE						
CHECKED		VIRGINIA ELECTRIC AND POWER COMPANY						
CORRECT		SURRY UNIT 2						
APPROVED								
REVISIONS		(2)		(3)		(4)		(5)

Note 1: Refer to IE Bulletin 79-01B, pages 6-87, 6-88, and 6-89 of the 90-Day Review.

FIGURE SUPPLIED BY THE LICENSEE

STONE & WEBSTER ENGINEERING CORPORATION 10.2-2

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: LEAKAGE MONITORING

Plant Identification Number		Generic Name	Location	
			Inside Containment	Outside Containment
	Worksheet Page No.			
PT-LM-201A	10.3-1	Pressure Transmitter		x
PT-LM-201B	10.3-2	Pressure Transmitter		x
PT-LM-200A	Note 1	Pressure Transmitter		x
PT-LM-200B	Note 1	Pressure Transmitter		x
PT-LM-200C	Note 1	Pressure Transmitter		x
PT-LM-200D	Note 1	Pressure Transmitter		x

		TITLE							
CHECKED		VIRGINIA ELECTRIC AND POWER COMPANY							
CORRECT		SURRY UNIT 2							
APPROVED									
REVISIONS		(2)		(3)		(4)		(5)	

Note 1: Refer to IE Bulletin 79-01B, pages 6-128, 6-129, 6-130, 6-131 of the 90-Day Review.

FIGURE SUPPLIED BY THE LICENSEE

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STONE & WEBSTER ENGINEERING CORPORATION 10.2-3

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: PRIMARY PLANT VENT AND DRAINS

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
SOV-DA-203A	10.3-3	Solenoid Operated Valve		x
SOV-DA-203B	10.3-4	Solenoid Operated Valve		x
LT-DA-210A	10.3-5	Level Transmitter	x	
LT-DA-210B	10.3-6	Level Transmitter	x	
ZS-DA-203A for TV-DA-203A	10.3-7	Limit Switch		x
ZS-DA-203B for TV-DA-203B	10.3-8	Limit Switch		x

CHECKED		TITLE				
CORRECT		VIRGINIA ELECTRIC AND POWER COMPANY				
APPROVED		SURRY UNIT 2				
REVISIONS		②	③	④	⑤	

FIGURE SUPPLIED BY THE LICENSEE

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STONE & WEBSTER ENGINEERING CORPORATION 10.2-4

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: REACTOR COOLANT

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
YE-VMS-200A-1	10.3-9	Accelerometer	x	
YE-VMS-200A-2	10.3-10	Accelerometer	x	
YE-VMS-200B-1	10.3-11	Accelerometer	x	
YE-VMS-200B-2	10.3-12	Accelerometer	x	
YE-VMS-200C-1	10.3-13	Accelerometer	x	
YE-VMS-200C-2	10.3-14	Accelerometer	x	
YE-VMS-201A-1	10.3-15	Accelerometer	x	
YE-VMS-201A-2	10.3-16	Accelerometer	x	
YE-VMS-201B-1	10.3-17	Accelerometer	x	
YE-VMS-201B-2	10.3-18	Accelerometer	x	
LOW NOISE CABLE	10.3-19	Hardline Coaxial Cable	x	

CHECKED		TITLE VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 2			
CORRECT					
APPROVED					
REVISIONS		(2)	(3)	(4)	(5)

FIGURE SUPPLIED BY THE LICENSEE

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STONE & WEBSTER ENGINEERING CORPORATION 10.2-5

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: REACTOR COOLANT

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
YY-VMS-200A-1	10.3-20	Remote Charge Preamplifier	x	
YY-VMS-200A-2	10.3-21	Remote Charge Preamplifier	x	
YY-VMS-200B-1	10.3-22	Remote Charge Preamplifier	x	
YY-VMS-200B-2	10.3-23	Remote Charge Preamplifier	x	
YY-VMS-200C-1	10.3-24	Remote Charge Preamplifier	x	
YY-VMS-200C-2	10.3-25	Remote Charge Preamplifier	x	
YY-VMS-201A-1	10.3-26	Remote Charge Preamplifier	x	
YY-VMS-201A-2	10.3-27	Remote Charge Preamplifier	x	
YY-VMS-201B-1	10.3-28	Remote Charge Preamplifier	x	
YY-VMS-201B-2	10.3-29	Remote Charge Preamplifier	x	

		TITLE						
CHECKED		VIRGINIA ELECTRIC AND POWER COMPANY						
CORRECT		SURRY UNIT 2						
APPROVED								
REVISIONS		(2)		(3)		(4)		(5)

FIGURE SUPPLIED BY THE LICENSEE

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STONE & WEBSTER ENGINEERING CORPORATION 10.2-6

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: RECIRCULATING SPRAY

Plant Identification Number		Generic Name	Location	
			Inside Containment	Outside Containment
	Worksheet Page No.			
LT-RS-251A	10.3-30	Level Transmitter	x	
LT-RS-251B	10.3-31	Level Transmitter	x	

		TITLE							
CHECKED		VIRGINIA ELECTRIC AND POWER COMPANY							
CORRECT		SURRY UNIT 2							
APPROVED									
REVISIONS		(2)		(3)		(4)		(5)	

FIGURE SUPPLIED BY THE LICENSEE

Franklin Research Center
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STONE & WEBSTER ENGINEERING CORPORATION

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

Plant Identification Number		Generic Name	Location	
			Inside Containment	Outside Containment
	Worksheet Page No.			
TV-SS-202A	10.3-32	Solenoid Operated Valve	x	
TV-SS-202B	10.3-33	Solenoid Operated Valve		x
TV-SS-206A	10.3-34	Solenoid Operated Valve	x	
TV-SS-206B	10.3-35	Solenoid Operated Valve		x
HCV-SS-201D	10.3-36	Solenoid Operated Valve	x	
HCV-SS-202A	10.3-37	Solenoid Operated Valve	x	
HCV-SS-200A	10.3-38	Solenoid Operated Valve	x	
HCV-SS-200B	10.3-39	Solenoid Operated Valve	x	
TV-SS-203A	10.3-40	Solenoid Operated Valve	x	
TV-SS-203B	10.3-41	Solenoid Operated Valve		x
ZS-SS-202A-1	10.3-42	Open Position Limit Switch for TV-SS-202A	x	

CHECKED		TITLE						
CORRECT		VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 2						
APPROVED								
REVISIONS		(2)		(3)		(4)		(5)

Supplement 3
February 1, 1981

FIGURE SUPPLIED BY THE LICENSEE

Franklin Research Center
A Division of The Franklin Institute

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
ZS-SS-202A-2	10.3-43	Closed Position Limit Switch for TV-SS-202A	x	
ZS-SS-202B-1	10.3-44	Open Position Limit Switch for TV-SS-202B		x
ZS-SS-202B-2	10.3-45	Closed Position Limit Switch for TV-SS-202B		x
ZS-SS-206A-1	10.3-46	Open Position Limit Switch for TV-SS-206A	x	
ZS-SS-206A-2	10.3-47	Closed Position Limit Switch for TV-SS-206A	x	
ZS-SS-206B-1	10.3-48	Open Position Limit Switch for TV-SS-206B		x
ZS-SS-206B-2	10.3-49	Closed Position Limit Switch for TV-SS-206B		x
ZS-SS-201D-1	10.3-50	Open Position Limit Switch for HCV-SS-201D	x	
ZS-SS-201D-2	10.3-51	Closed Position Limit Switch for HCV-SS-201D	x	
ZS-SS-202A-3	10.3-52	Open Position Limit Switch for HCV-SS-202A	x	
ZS-SS-202A-4	10.3-53	Closed Position Limit Switch for HCV-SS-202A	x	

CHECKED		TITLE VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 2			
CORRECT					
APPROVED					
REVISIONS		(2)	(3)	(4)	(5)

Supplement 3
February 1, 1981

FIGURE SUPPLIED BY THE LICENSEE

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STONE & WEBSTER ENGINEERING CORPORATION 10.2-9

MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
ZS-SS-200A-1	10.3-54	Open Position Limit Switch for HCV-SS-200A	x	
ZS-SS-200A-2	10.3-55	Closed Position Limit Switch for HCV-SS-200A	x	
ZS-SS-200B-1	10.3-56	Open Position Limit Switch for HCV-SS-200B	x	
ZS-SS-200B-2	10.3-57	Closed Position Limit Switch for HCV-SS-200B	x	
ZS-SS-203A-1	10.3-58	Open Position Limit Switch for TV-SS-203A	x	
ZS-SS-203A-2	10.3-59	Closed Position Limit Switch for TV-SS-203A	x	
ZS-SS-203B-1	10.3-60	Open Position Limit Switch for TV-SS-203B		x
ZS-SS-203B-2	10.3-61	Closed Position Limit Switch for TV-SS-203B		x
S2-XCV-1402A	10.3-62	Solenoid Operated Valve		x
S2-XCV-1402B	10.3-63	Solenoid Operated Valve		x
S2-XCV-1423A	10.3-64	Solenoid Operated Valve		x

CHECKED		TITLE VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 2			
CORRECT					
APPROVED					
REVISIONS		(2)	(3)	(4)	(5)

Supplement 3
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FIGURE SUPPLIED BY THE LICENSEE

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MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: POST-ACCIDENT SAMPLING SYSTEM

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
S2-XCV-1423B	10.3-65	Solenoid Operated Valve		x
ZS-XCV-1402A-1	10.3-66	Open Position Limit Switch for S2-XCV-1402A		x
ZS-XCV-1402A-2	10.3-67	Closed Position Limit Switch for S2-XCV-1402A		x
ZS-XCV-1402B-1	10.3-68	Open Position Limit Switch for S2-XCV-1402B		x
ZS-XCV-1402B-2	10.3-69	Closed Position Limit switch for S2-XCV-1402B		x
ZS-XCV-1423A-1	10.3-70	Open Position Limit Switch for S2-XCV-1423A		x
ZS-XCV-1423A-2	10.3-71	Closed Position Limit Switch for S2-XCV-1423A		x
ZS-XCV-1423B-1	10.3-72	Open Position Limit Switch for S2-XCV-1423B		x
ZS-XCV-1423B-2	10.3-73	Closed Position Limit Switch for S2-XCV-1423B		x

CHECKED		TITLE						
CORRECT		VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 2						
APPROVED								
REVISIONS		(2)		(3)		(4)		(5)

Supplement 3
February 1, 1981

FIGURE SUPPLIED BY THE LICENSEE

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MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: HYDROGEN ANALYZER

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
H2A-GW-201-1	10.3-74	Hydrogen Analyzer		x
H2A-GW-201-2	10.3-75	Analyzer Remote Control Module		x
TV-GW-200	10.3-76	Solenoid Operated Valve		x
TV-GW-201	10.3-77	Solenoid Operated Valve		x
TV-GW-202	10.3-78	Solenoid Operated Valve		x
TV-GW-203	10.3-79	Solenoid Operated Valve		x
TV-GW-204	10.3-80	Solenoid Operated Valve		x
TV-GW-205	10.3-81	Solenoid Operated Valve		x
TV-GW-206	10.3-82	Solenoid Operated Valve		x
TV-GW-207	10.3-83	Solenoid Operated Valve		x
ZS-GW-200-1	10.3-84	Open Position Limit Switch for TV-HC-200		x

CHECKED		TITLE			
CORRECT		VIRGINIA ELECTRIC AND POWER COMPANY			
APPROVED		SURRY UNIT 2			
REVISIONS		(2)	(3)	(4)	(5)

Supplement 3
February 1, 1981

FIGURE SUPPLIED BY THE LICENSEE

Franklin Research Center
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MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: HYDROGEN ANALYZER

Plant Identification Number	Worksheet Page No.	Generic Name	Location: Inside Containment	Location: Outside Containment
ZS-GW-200-2	10.3-85	Closed Position Limit Switch for TV-HC-200		x
ZS-GW-201-1	10.3-86	Open Position Limit Switch for TV-HC-201		x
ZS-GW-201-2	10.3-87	Closed Position Limit Switch for TV-HC-201		x
ZS-GW-202-1	10.3-88	Open Position Limit Switch for TV-HC-202		x
ZS-GW-202-2	10.3-89	Closed Position Limit Switch for TV-HC-202		x
ZS-GW-203-1	10.3-90	Open Position Limit Switch for TV-HC-203		x
ZS-GW-203-2	10.3-91	Closed Position Limit Switch for TV-HC-203		x
ZS-GW-204-1	10.3-92	Open Position Limit Switch for TV-HC-204		x
ZS-GW-204-2	10.3-93	Closed Position Limit Switch for TV-HC-204		x
ZS-GW-205-1	10.3-94	Open Position Limit Switch for TV-HC-205		x
ZS-GW-205-2	10.3-95	Closed Position Limit Switch for TV-HC-205		x

CHECKED		TITLE VIRGINIA ELECTRIC AND POWER COMPANY SURRY UNIT 2			
CORRECT					
APPROVED					
REVISIONS		(2)	(3)	(4)	(5)

Supplement 3
February 1, 1981

FIGURE SUPPLIED BY THE LICENSEE

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MASTER LIST

Class IE Electrical Equipment Required to Function

Under Postulated Accident Conditions

SYSTEM: HYDROGEN ANALYZER

Plant Identification Number		Generic Name	Location	
			Inside Containment	Outside Containment
	Worksheet Page No.			
ZS-GW-206-1	10.3-96	Open Position Limit Switch for TV-HC-206		x
ZS-GW-206-2	10.3-97	Closed Position Limit Switch for TV-HC-206		x
ZS-GW-207-1	10.3-98	Open Position Limit Switch for TV-HC-207		x
ZS-GW-207-2	10.3-99	Closed Position Limit Switch for TV-HC-207		x

		TITLE						
CHECKED		VIRGINIA ELECTRIC AND POWER COMPANY						
CORRECT		SURRY UNIT 2						
APPROVED								
REVISIONS		(2)		(3)		(4)		(5)

Supplement 3
February 1, 1981

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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 [18, 20].

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 postulated 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 [20]:

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 20 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, these 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 identified 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 preceeding 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 [18]:

"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 [18]:

"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]

[1]A 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 [18]:

"1. <u>Inside Reactor Containment Building</u>

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 [18]:

"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 [18]:

"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 [18]:

"The calculated total integrated gamma radiation doses inside containment range from 7.4×10^6 to 3.8×10^7 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 1.8×10^6 ft^3. 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.

TABLE 2

40-year normal plus LOCA gamma dose inside containment

Location		Dose (rads)
el. 47'4"	- Inside crane wall	3.7×10^7
el. 47'4"	- Outside crane wall	7.4×10^6
el. 18'4"	- Outside crane wall	7.4×10^6
el. (-) 3'6"	- Inside crane wall	3.7×10^7
el. (-) 3'6"	- Outside crane wall	7.4×10^6
el. (-)27'7"	- Above sump water	3.5×10^7
el. (-)27'7"	- Submerged in sump water	3.8×10^7"

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: AB-2B
DESCRIPTION: Auxiliary Building Penetration Area, Elev. 2'0"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	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	4
PRESSURE (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)	2.5×10^4	7	2.5×10^4	7	NA	_____	NA	_____
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 2'0" elevation of the Auxiliary Building.

Figure A-1. Auxiliary Building Penetration Area, Elev. 2'0"

FIGURE SUPPLIED BY THE LICENSEE

Franklin Research Center
A Division of The Franklin Institute

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: AB-2C
DESCRIPTION: Auxiliary Building Charging Pump Cubicles, Elev. 2'0"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Normally unoccupied machinery spaces, 120F	14	NA	_____	NA	_____	120-140F, 0-30 secs 140F, 30-1000 secs 140-125F, 1000-2000 secs 125-120F, 2000 secs-1 hr	4
PRESSURE (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)	2.8×10^6	7	8.0×10^6	7	NA	_____	NA	_____
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 2'0" elevation of the Auxiliary Building.

Figure A-2. Auxiliary Building Charging Pump Cubicles, Elev. 2'0"

FIGURE SUPPLIED BY THE LICENSEE

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A Division of The Franklin Institute

ENVIRONMENTAL ZONE DESCRIPTION SHEET

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, 100F Normally unoccupied 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-1hr	4
PRESSURE (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)	NOTE	10	9.3×10^5	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.

NOTE: The radiation dose of 2.66×10^7 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 4.87×10^3 in radiation zones O (Unit 1) and N (Unit 2) and 1.40×10^5 in radiation zones T (Unit 1) and S (Unit 2).

Figure A-3. Auxiliary Building, General, Elev. 13'0"

FIGURE SUPPLIED BY THE LICENSEE

Franklin Research Center
A Division of The Franklin Institute

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: AB-13B
DESCRIPTION: Auxiliary Building Cable Vault, Elev. 13'0"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Normally unoccupied machinery spaces, 120F	14	NA	_____	NA	_____	NA	_____
PRESSURE (psia)	NA	_____	NA	_____	NA	_____	NA	_____
RELATIVE HUMIDITY (%)	NC	_____	NA	_____	NA	_____	NA	_____
CHEMICAL SPRAY	NA	_____	NA	_____	NA	_____	NA	_____
RADIATION (rads)	1.96×10^4	10	3.2×10^4	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-4. Auxiliary Building Cable Vault, Elev. 13'0"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

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]

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	RELB 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	4
PRESSURE (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)	1.3×10^8	10	6.8×10^2	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)

FIGURE SUPPLIED BY THE LICENSEE

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ENVIRONMENTAL ZONE DESCRIPTION SHEET

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 ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Occupied spaces, 100F Normally un-occupied machinery spaces, 120F	14	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)	1.1×10^5	10	2.7×10^5	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-6. Auxiliary Building, General, Elev. 45'10"

FIGURE SUPPLIED BY THE LICENSEE

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	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	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		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	8.8×10^2	11	5.9×10^6	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"

FIGURE SUPPLIED BY THE LICENSEE

Franklin Research Center
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ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: CSPH-27
DESCRIPTION: Containment Spray Pump House, Elev. 27'6"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	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		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	8.8×10^2	11	5.3×10^2	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-8. Containment Spray Pump House, Elev. 27'6"

FIGURE SUPPLIED BY THE LICENSEE

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ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: MSVH-11
DESCRIPTION: Main Steam Valve House, General, Elev. 11'6"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Normally unoccupied machinery spaces, 120F	14	NA		NA		NA	
PRESSURE (psia)	NA		NA		NA		NA	
RELATIVE HUMIDITY (%)	NC		NA		NA		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	8.8×10^2	11	5.9×10^6	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-9. Main Steam Valve House, General, Elev. 11'6"

FIGURE SUPPLIED BY THE LICENSEE

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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. 27'6"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Normally unoccupied machinery spaces, 120F	14	NA		NA		Note	12
PRESSURE (psia)	NA		NA		NA		16.5, 0-10 sec 16.2, 10 sec-1 hr	12
RELATIVE HUMIDITY (%)	NC		NA		NA		100	12
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	6.8×10^2	11	1.7×10^4	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.

NOTE: The HELB temperature of 300°F (0-1 hr) was calculated for environmental zone MSVH-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 (0-1 hr).

Figure A-10. Main Steam Valve House, General, Elev. 27'6"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

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	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	1.3×10^7	3	$\leq 2.4 \times 10^7$	3	$<2.4 \times 10^7$	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"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: RC-3B
DESCRIPTION: Containment Outside Cranewall, Elev. (-)3'6"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	3.5×10^4	3	7.4×10^6	3	$<7.4 \times 10^6$	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-12. Containment Outside Cranewall, Elev. (-)3'6"

FIGURE SUPPLIED BY THE LICENS

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: RC-18B
DESCRIPTION: Containment Outside Cranewall, Elev. 18'4"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	3.5×10^4	3	7.4×10^6	3	$<7.4 \times 10^6$	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-13. Containment Outside Cranewall, Elev. 18'4"

FIGURE SUPPLIED BY THE LICENSEE

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ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: RC-27A
DESCRIPTION: Containment General, Elev. (-)27'7"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	3.5×10^4	3	3.5×10^7	3	$<3.5 \times 10^7$	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-14. Containment, General, Elev. (-)27'7"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

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 ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	3.5×10^4	3	3.8×10^7	3	$<3.8 \times 10^7$	3,5	NA	
SUBMERGENCE (elev)	NA		(-)21'11"	6	(-)21'11"	6	NA	

NA = Not applicable. NC = Not calculated. Numbers appearing in Reference columns are identified at the end of this section.

* No safety-related electrical equipment is contained in environmental zone RC-27B.

Figure A-15. Containment, Elev. (-)27'7" Submerged (Below (-)21'11")

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: RC-47A
DESCRIPTION: Containment Inside Cranewall, Elev. 47'4"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	$<1.3 \times 10^7$	3	2.4×10^7	3	$<2.4 \times 10^7$	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-16. Containment Inside Cranewall, Elev. 47'4"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

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	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	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 days	2	280F, 0-30 min 280-150F, 30-60 min 150-120F, 1-48 hr 120F, 2-120 days	2	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 days	2	59.7, 0-30 min 59.7-14.7, 30-60 min 14.7-12.7, 1-48 hr 12.7, 2-120 days	2	NA	
RELATIVE HUMIDITY (%)	NC		100, 0-120 days	2	100, 0-120 days	2	NA	
CHEMICAL SPRAY	NA		Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	Solution of 2000-2200 ppm H_3BO_3 buffered with NaOH to pH of 8.5-11, 0-4 hr Same solution with pH of between 8.0 and 9.5, 4 hr-120 days	2	NA	
RADIATION (rads)	3.5×10^4	3	7.4×10^6	3	$<7.4 \times 10^6$	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-17. Containment Outside Cranewall, Elev. 47'4"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: SB-9B
DESCRIPTION: Mechanical Equipment Room 3

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Occupied spaces, 100F Normally un-occupied machinery spaces, 120F	14	NA		NA		310F, 0-30 min 310-130F, 30-60 min	8
PRESSURE (psia)	NA		NA		NA		15.0	8
RELATIVE HUMIDITY (%)	NC		NA		NA		100	8
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	<2500	11	<2500	13	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-18. Mechanical Equipment Room 3

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: SFGD-1
DESCRIPTION: Safeguards Area

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	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		NA	
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	8.8×10^2	7	8.0×10^6	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

FIGURE SUPPLIED BY THE LICENSEE

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ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: TB-9
DESCRIPTION: Turbine Building, General, Elev. 9'6"

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Occupied spaces, 100F Normally un-occupied machinery spaces, 120F	14	NA		NA		310F, 0-30 min 310-130F, 30-60 min	8
PRESSURE (psia)	NA		NA		NA		15.0	8
RELATIVE HUMIDITY (%)	NC		NA		NA		100	8
CHEMICAL SPRAY	NA		NA		NA		NA	
RADIATION (rads)	<2500	11	<2500	13	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-20. Turbine Building, General, Elev. 9'6"

FIGURE SUPPLIED BY THE LICENSEE

ENVIRONMENTAL ZONE DESCRIPTION SHEET

Facility: VEPCO, SURRY
Units: 1 and 2
Dockets: 50-280 and 50-281

ZONE: TB-35
DESCRIPTION: Turbine Building, Mezzanine Level

PARAMETER	NORMAL ENVIRONMENT	REFERENCE	LOCA ENVIRONMENT	REFERENCE	MSLB ENVIRONMENT	REFERENCE	HELB ENVIRONMENT	REFERENCE
TEMPERATURE (°F)	Occupied spaces, 100F Normally un-occupied machinery spaces, 120F	14	NA	_____	NA	_____	310F, 0-30 min 310-130F, 30-60 min	8
PRESSURE (psia)	NA	_____	NA	_____	NA	_____	15.0	8
RELATIVE HUMIDITY (%)	NC	_____	NA	_____	NA	_____	100	8
CHEMICAL SPRAY	NA	_____	NA	_____	NA	_____	NA	_____
RADIATION (rads)	<2500	11	<2500	13	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-21. Turbine Building, Mezzanine Level

FIGURE SUPPLIED BY THE LICENSEE

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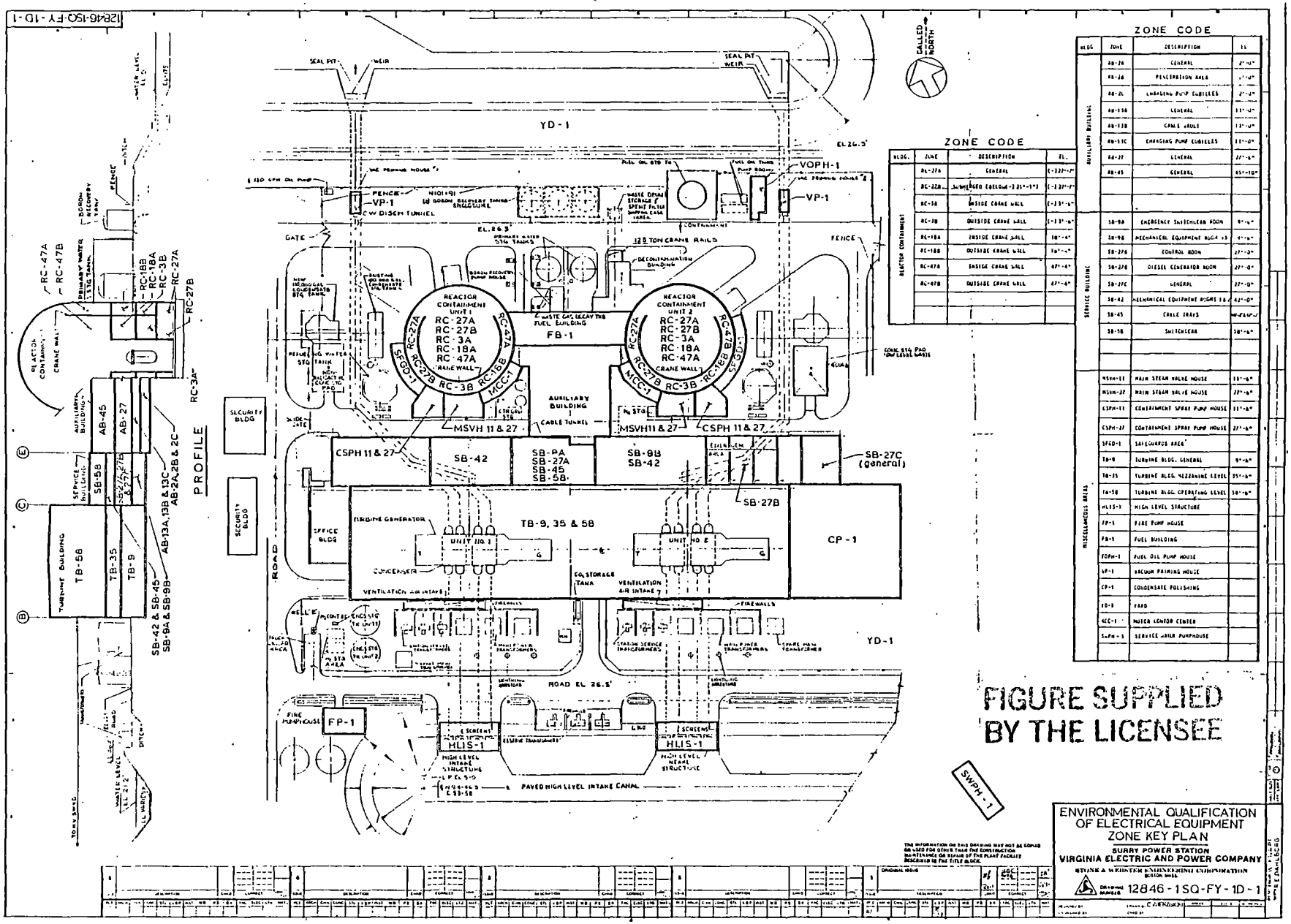

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TER-C5257-483

Figure A-22. Environmental Qualificati 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 2. 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 [15, 18].

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 SAFEGUARD AREA (SFGD-1)
FISCHER AND PORTER MODEL 50EP1031BCXA
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 1
LICENSEE REFERENCE(S): NOT CITED
FUNCTION PLANT (ID): OUTSIDE REACTOR SUMP PUMP DISCHARGE (PT-RS-256A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-278, -279

EQUIPMENT ITEM NO. 2
PRESSURE TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ROSEMOUNT MODEL 1153AGD9 XM54854
REQUIRED OPERATING TIME: NOT SPECIFIED
TER CHECKSHEET NO. 2
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): REACTOR COOLANT SYSTEM WIDE RANGE PRESSURE (PT-2402; PT-RC-2402-1)
LICENSEE SUBMITTAL: SCEW(S): 6-273, -274

EQUIPMENT ITEM NO. 3
PRESSURE TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
FISCHER AND PORTER MODEL 50EP1041BCXANS
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 3
LICENSEE REFERENCE(S): 1584
FUNCTION (PLANT ID): PRESSURIZER PRESSURE INDICATION AND HIGH/LOW PROTECTION (PT-2455 TO -2457)
LICENSEE SUBMITTAL: SCEW(S): 6-185 TO -187

EQUIPMENT ITEM NO. 4
PRESSURE TRANSMITTER LOCATED IN THE TURBINE BUILDING (TB-35)
FISCHER AND PORTER MODEL 50EP1041BCXANS
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 4
LICENSEE REFERENCE(S): 1584
FUNCTION (PLANT ID): STEAM HEADER PRESSURE (PT-2464, -2466, -2468)
LICENSEE SUBMITTAL: SCEW(S): 6-148 TO -150

EQUIPMENT ITEM NO. 5
PRESSURE TRANSMITTER LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)
FISCHER AND PORTER MODEL 50EP1041BCXANS
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 5
LICENSEE REFERENCE(S): 1584
FUNCTION (PLANT ID): STEAM GENERATOR STEAM PRESSURE (PT-2474 TO -2476, -2484 TO 2486, -2494 TO 2496)
LICENSEE SUBMITTAL: SCEW(S): 6-151 TO -159

EQUIPMENT ITEM NO. 6
PRESSURE TRANSMITTER LOCATED IN THE AUXILIARY BUILDING (AB-13A (N))
FISCHER AND PORTER MODEL 50EN1071BCXA
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 6
LICENSEE REFERENCE(S): 1584
FUNCTION (PLANT ID): REACTOR CONTAINMENT PRESSURE (PT-LM-200A, B, C, D)
LICENSEE SUBMITTAL: SCEW(S): 6-128 TO -131

EQUIPMENT ITEM NO. 7
ELECTRICAL PENETRATION LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
AMPHENOL MODEL TYPE III
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 7
LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 3190, 74
FUNCTION (PLANT ID): SUPPLIES SERVICE TO SAFETY SYSTEM (NUS-41 S.N. 65/1065)
LICENSEE SUBMITTAL: SCEW(S): 6-46

EQUIPMENT ITEM NO. 8
ELECTRICAL PENETRATION LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
AMPHENOL MODEL TYPE 1C
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 8
LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 3190, 74
FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEM (NUS-41 S.N. 65/1065)
LICENSEE SUBMITTAL: SCEW(S): 6-45

EQUIPMENT ITEM NO. 9
ELECTRICAL PENETRATION LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
AMPHENOL MODEL TYPE 1B
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 9
LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 3190, 74
FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEMS (NUS-41 S.N. 65/1065)
LICENSEE SUBMITTAL: SCEW(S): 6-44

EQUIPMENT ITEM NO. 10
ELECTRICAL PENETRATION LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
AMPHENOL MODEL TYPE IA
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 10
LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 3190, 74
FUNCTION (PLANT ID): ELECTRICAL CONTINUITY THROUGH CONTAINMENT WALL (NUS-41 S.N. 65/1065)
LICENSEE SUBMITTAL: SCEW(S): 6-43

EQUIPMENT ITEM NO. 11
ELECTRICAL PENETRATION LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
CONAX, MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 11
LICENSEE REFERENCE(S): 1049, 51
FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEM (NAS-21 NA-313/1313)
LICENSEE SUBMITTAL: SCEW(S): 6-27 TO -31

EQUIPMENT ITEM NO. 12
FLOW TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-27B)
BARTON MODEL 386
REQUIRED OPERATING TIME: NOT SPECIFIED
TER CHECKSHEET NO. 12
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): COLD LEG SAFETY INJECTION (FT-2961 TO -2963)
LICENSEE SUBMITTAL: SCEW(S): 6-280 TO -282

EQUIPMENT ITEM NO. 13
FLOW TRANSMITTER LOCATED IN THE SAFEGUARD 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 (FT-2945, -2946)
LICENSEE SUBMITTAL: SCEW(S): 6-283, -284

EQUIPMENT ITEM NO. 14
FLOW TRANSMITTER LOCATED IN THE AUXILIARY BUILDING (AB-2B)
FISCHER AND PORTER MODEL 10B2496QBNS
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 14
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING FLOW/MINIMUM BORATION (FT-2122)
LICENSEE SUBMITTAL: SCEW(S): 6-11

EQUIPMENT ITEM NO. 15
FLOW TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)
FISCHER AND PORTER MODEL 10B2496PB
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 15
LICENSEE REFERENCE(S): 687
FUNCTION (PLANT ID): AUXILIARY FEEDWATER FLOW (SG1A, B, C) (FT-FW-200A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-87 TO -89

EQUIPMENT ITEM NO. 16
LEVEL TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ROSEMOUNT MODEL 1153ADP5 XM54854
REQUIRED OPERATING TIME: NOT SPECIFIED
TER CHECKSHEET NO. 16
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): STEAM GENERATOR WIDE RANGE LEVEL (LT-2477, -2787, -2497)
LICENSEE SUBMITTAL: SCEW(S): 6-275 TO -277

EQUIPMENT ITEM NO. 17
LEVEL TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL
GEMS MODEL XM54853 XM54854
REQUIRED OPERATING TIME: NOT SPECIFIED
TER CHECKSHEET NO. 17
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT SUMP LEVEL TRANSMITTERS A, B (LT-RS-251A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-271, -272

EQUIPMENT ITEM NO. 18
LEVEL TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
BARTON MODEL 386
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 18
LICENSEE REFERENCE(S): 3836
FUNCTION (PLANT ID): PRESSURIZER LEVEL INDICATION CONTROL AND PROTECTION (LT-2459 TO -2461)
LICENSEE SUBMITTAL: SCEW(S): 6-182 TO -184

EQUIPMENT ITEM NO. 19
LEVEL TRANSMITTER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B, RC-3B)
ROSEMOUNT MODEL 1153DA4
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 19
LICENSEE REFERENCE(S): 1764
FUNCTION (PLANT ID): STEAM GENERATOR (1, 2, 3) NARROW RANGE LEVEL (LT-2474 TO -2476, -2484 TO 2486, -2494 TO 2496)
LICENSEE SUBMITTAL: SCEW(S): 6-90 TO -98

EQUIPMENT ITEM NO. 20
TERMINAL BLOCK LOCATED IN CONTAINMENT (RC-3A)
GENERAL ELECTRIC, MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 20
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL
LICENSEE SUBMITTAL: SCEW(S): 6-267

EQUIPMENT ITEM NO. 21
TERMINAL BLOCK LOCATED IN CONTAINMENT (RC-3A)
BUCHANAN, 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): 6-269

EQUIPMENT ITEM NO. 22
TERMINAL BLOCK LOCATED IN CONTAINMENT (RC-3A)
BURNDY, 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): 6-270

EQUIPMENT ITEM NO. 23
LIMIT SWITCH LOCATED IN CONTAINMENT (RC-3A)
MANUFACTURER AND MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 23
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL
LICENSEE SUBMITTAL: SCEW(S): 6-266

EQUIPMENT ITEM NO. 24
TEMPERATURE ELEMENT LOCATED IN CONTAINMENT, INSIDE CRANEWALL
ROSEMOUNT MODEL 176KS
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 24
LICENSEE REFERENCE(S): 687
FUNCTION (PLANT ID): REACTOR COOLANT SYSTEM TEMPERATURE ELEMENT COLD LEG LOOPS 1, 2, 3 (TE-2410, -2420, -2430)
LICENSEE SUBMITTAL: SCEW(S): 6-188, -192, -196
FUNCTION (PLANT ID): DELTA T/TAVG PROTECTION SYSTEM LOOPS 1, 2, 3/POST-ACCIDENT MONITORING OF LOOP TEMPERATURE (TE-2412B, D; -2422B, D; -2432B, D)
LICENSEE SUBMITTAL: SCEW(S): 6-189, -190, -193, -194, -197, -198
FUNCTION (PLANT ID): REACTOR COOLANT SYSTEM TEMPERATURE ELEMENT HOT LEG LOOPS 1, 2, 3 (TE-2413, -2423, -2433)
LICENSEE SUBMITTAL: SCEW(S): 6-191, -195, -199

EQUIPMENT ITEM NO. 25
ELECTRIC MOTOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
WESTINGHOUSE MODEL PC090WOL
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 25
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHILLED WATER CHILLER (1-VS-E-4A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-114 TO -116

EQUIPMENT ITEM NO. 26
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING VENTILATION (AB-45)
RCS INC. TYPE BL
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 26
LICENSEE REFERENCE(S): 29
FUNCTION (PLANT ID): DAMPER FOR CHARCOAL FILTRATION SYSTEM (DAMPER 3A, B (2))
LICENSEE SUBMITTAL: SCEW(S): 6-112, -113

EQUIPMENT ITEM NO. 27
HYDROGEN RECOMBINER LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)
WESTINGHOUSE MODEL A
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 27
LICENSEE REFERENCE(S): 1571 TO 1578, 39, 40
FUNCTION (PLANT ID): H2 RECOMBINER (2-GW-HC-2A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-105, -106

EQUIPMENT ITEM NO. 28
HYDROGEN ANALYZER LOCATED IN THE AUXILIARY BUILDING, ELEV. 13'0" (AB-13A)(N)
BENDIX MODEL THERMATRON T3
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 28
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): RADIOACTIVE WASTE GAS (2-GW-H2A-203)
LICENSEE SUBMITTAL: SCEW(S): 6-107

EQUIPMENT ITEM NO. 29
I AND C 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
LICENSEE SUBMITTAL: SCEW(S): 6-108, -109

EQUIPMENT ITEM NO. 30
ELECTRICAL THERMOCOUPLE CABLE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
AMPHENOL MODEL TYPE IV
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 30
LICENSEE REFERENCE(S): 5329, 1167, 5288, 4005, 3190, 74
FUNCTION (PLANT ID): SUPPLIES POWER TO SAFETY SYSTEM (NUS-41 SN-65/1065)
LICENSEE SUBMITTAL: SCEW(S): 6-47

EQUIPMENT ITEM NO. 31
FLOW CONTROLLER LOCATED IN THE AUXILIARY BUILDING (AB-2B)
FISCHER AND PORTER MODEL 546
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 31
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING FLOW CONTROL/MINIMUM BORATION (FCV-2122)
LICENSEE SUBMITTAL: SCEW(S): 6-10

EQUIPMENT ITEM NO. 32
ELECTRICAL CABLE LOCATED OUTSIDE CONTAINMENT (AB-27)
KAISER MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 32
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): 5000V POWER CABLE (NUS-217 SN-250)
LICENSEE SUBMITTAL: SCEW(S): 6-60C

EQUIPMENT ITEM NO. 33
ELECTRICAL CABLE LOCATED OUTSIDE CONTAINMENT (AB-27)
OKONITE MODEL EPR/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 33
LICENSEE REFERENCE(S): 2103, 72, 73, 95
FUNCTION (PLANT ID): 5000V POWER CABLE (NUS-364A SN-1443)
LICENSEE SUBMITTAL: SCEW(S): 6-60B

EQUIPMENT ITEM NO. 34
ELECTRICAL CABLE LOCATED OUTSIDE CONTAINMENT
COLLYER INSULATED WIRE MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 34
LICENSEE REFERENCE(S): 4019, 91
FUNCTION (PLANT ID): 5000V POWER CABLE (NUS-364 SN-1250)
LICENSEE SUBMITTAL: SCEW(S): 6-60A

EQUIPMENT ITEM NO. 35
ELECTRICAL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL
CONTINENTAL WIRE MODEL SILICON RUBBER
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 35
LICENSEE REFERENCE(S): 1218
FUNCTION (PLANT ID): SUPPLY POWER TO SAFETY SYSTEM (NUS-326 P.O. NO. 330)
LICENSEE SUBMITTAL: SCEW(S): 6-60

EQUIPMENT ITEM NO. 36
ELECTRICAL INSTRUMENT CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
CONTINENTAL WIRE MODEL XLPE/HYPALON
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 36
LICENSEE REFERENCE(S): 1207, 86
FUNCTION (PLANT ID): 600V INSTRUMENT CABLE (NUS-341A SN-1439; NUS-411 SN-1458; NUS-341 SN-285/1285)
LICENSEE SUBMITTAL: SCEW(S): 6-59A, -59, -58

EQUIPMENT ITEM NO. 37
ELECTRICAL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
OKONITE MODEL OKONITE OKOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 37
LICENSEE REFERENCE(S): 2103, 1339
FUNCTION (PLANT ID): 600V POWER CABLE (NAS-3185 NA-3185/4185, 116A NA-128-1128, NUS-374 SN-375, NUS-365D SN-1417, NUS-365C SN-1392, NUS-365B SN-13800)
LICENSEE SUBMITTAL: SCEW(S): 6-57, -56, -50 TO -53

EQUIPMENT ITEM NO. 38
ELECTRICAL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
ANACONDA WIRE AND CABLE MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 38
LICENSEE REFERENCE(S): 1347, 77, 79, 76
FUNCTION (PLANT ID): 600V POWER CABLE (NUS-365F SN-462)
LICENSEE SUBMITTAL: SCEW(S): 6-55

EQUIPMENT ITEM NO. 39
ELECTRICAL POWER CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
COLLYER INSULATED WIRE MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 39
LICENSEE REFERENCE(S): 4019
FUNCTION (PLANT ID): 600V POWER CABLE (NUS-365E SN-457)
LICENSEE SUBMITTAL: SCEW(S): 6-54

EQUIPMENT ITEM NO. 40
ELECTRICAL CONTROL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
OKONITE MODEL EP/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 40
LICENSEE REFERENCE(S): 1339, 72, 73
FUNCTION (PLANT ID): 1000V CONTROL CABLE (NUS-381B SN-440/1440, NUS-410 SN-1446)
LICENSEE SUBMITTAL: SCEW(S): 6-42B, -41

EQUIPMENT ITEM NO. 41
ELECTRICAL CONTROL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
CONTINENTAL WIRE MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 41
LICENSEE REFERENCE(S): 3582
FUNCTION (PLANT ID): 1000V CONTROL CABLE (NUS-420 SN-1463)
LICENSEE SUBMITTAL: SCEW(S): 6-42

EQUIPMENT ITEM NO. 42
ELECTRICAL CONTROL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
GENERAL ELECTRIC MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 42
LICENSEE REFERENCE(S): 3582
FUNCTION (PLANT ID): 1000V CONTROL CABLE (NUS-381 SN-398)
LICENSEE SUBMITTAL: SCEW(S): 6-40

EQUIPMENT ITEM NO. 43
ELECTRICAL INSTRUMENT CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
RAYCHEM MODEL FLAMTROL
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 43
LICENSEE REFERENCE(S): 1831, 1832, 66
FUNCTION (PLANT ID): 300V INSTRUMENT (NAS-3190 3190/4190)
LICENSEE SUBMITTAL: SCEW(S): 6-36

EQUIPMENT ITEM NO. 44
ELECTRICAL INSTRUMENT CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
CERRO WIRE AND CABLE MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 44
LICENSEE REFERENCE(S): 1110, 65
FUNCTION (PLANT ID): SUPPLY SIGNAL (NAS-430 NAS-392/1392)
LICENSEE SUBMITTAL: SCEW(S): 6-35

EQUIPMENT ITEM NO. 45
ELECTRICAL INSTRUMENT CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
BOSTON INSULATED WIRE MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 45
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): SUPPLY SIGNAL (NAS-128 NA-265/1265)
LICENSEE SUBMITTAL: SCEW(S): 6-34

EQUIPMENT ITEM NO. 46
ELECTRICAL CONTROL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
CERRO WIRE AND CABLE MODEL FIREWALL III
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 46
LICENSEE REFERENCE(S): 3830, 63
FUNCTION (PLANT ID): 600V CONTROL CABLE (NAS-3187 NA-3187/4187; NAS-120 NA-312/1312)
LICENSEE SUBMITTAL: SCEW(S): 6-33, -32

EQUIPMENT ITEM NO. 47
ELECTRIC MOTOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)
GENERAL ELECTRIC MODEL 5KC37JG770X
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 47
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): SERVICE WATER RETURN FROM RECIRCULATION SPRAY HEAT EXCHANGER RADIATION MONITOR (2-SW-P-5A, B, C, D)
LICENSEE SUBMITTAL: SCEW(S): 6-256 TO -259

EQUIPMENT ITEM NO. 48
ELECTRIC MOTOR LOCATED IN SERVICE BUILDING MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
GENERAL ELECTRIC MODEL 5K145DL190KE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 48
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING PUMP COOLING SERVICE WATER PUMP MOTOR (2-SW-P-10A)
LICENSEE SUBMITTAL: SCEW(S): 6-244

EQUIPMENT ITEM NO. 49
ELECTRIC MOTOR LOCATED IN SERVICE BUILDING MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
U.S. ELECTRIC MOTORS MODEL AV9
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 49
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING PUMP COOLING SERVICE WATER PUMP MOTOR (2-SW-P-10B)
LICENSEE SUBMITTAL: SCEW(S): 6-245

EQUIPMENT ITEM NO. 50
ELECTRIC MOTOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
WESTINGHOUSE MODEL ABDP
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 50
LICENSEE REFERENCE(S): 604, 49
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP MOTOR (2-SI-P-1A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-201, -202

EQUIPMENT ITEM NO. 51
ELECTRIC MOTOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
GENERAL ELECTRIC MODEL 5K6287XH41A
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 51
LICENSEE REFERENCE(S): 47, 46
FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP MOTOR (2-RS-P-2A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-167, -168

EQUIPMENT ITEM NO. 52
ELECTRIC MOTOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
GENERAL ELECTRIC MODEL 5K6227XH206A
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 52
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTROL AND RELAY ROOM CONDENSER WATER PUMP MOTOR (1-VS-P-1A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-117 TO -119

EQUIPMENT ITEM NO. 53
ELECTRIC MOTOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
ALLIS CHALMERS MODEL 20783FM28
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 53
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHILLED WATER PUMP MOTOR (1-VS-P-2A)
LICENSEE SUBMITTAL: SCEW(S): 6-120

EQUIPMENT ITEM NO. 54
ELECTRIC MOTOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
ALLIS CHALMERS MODEL 20783FM19
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 54
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHILLED WATER PUMP MOTOR (1-VS-P-2B)
LICENSEE SUBMITTAL: SCEW(S): 6-121

EQUIPMENT ITEM NO. 55
ELECTRIC MOTOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
ALLIS CHALMERS MODEL 20783FM
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 55
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHILLED WATER PUMP MOTOR (1-VS-P-2C)
LICENSEE SUBMITTAL: SCEW(S): 6-122

EQUIPMENT ITEM NO. 56
ELECTRIC MOTOR LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-27A)
GENERAL ELECTRIC MODEL 5K6319XJ1D
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 56
LICENSEE REFERENCE(S): 44, 43, 41
FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP MOTOR (2-RS-P-1A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-123, -124

EQUIPMENT ITEM NO. 57
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING VENTILATION (AB-45)
SIEMENS-ALLIS MODEL 444TS
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 57
LICENSEE REFERENCE(S): 5213
FUNCTION (PLANT ID): AUXILIARY BUILDING VENTILATION (1-VS-F-58A)
LICENSEE SUBMITTAL: SCEW(S): 6-110
FUNCTION (PLANT ID): AUXILIARY BUILDING CONTROL AREA EXHAUST FAN (1-VS-F-58B)
LICENSEE SUBMITTAL: SCEW(S): 6-111

EQUIPMENT ITEM NO. 58
ELECTRIC MOTOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)
MANUFACTURER AND MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 58
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AUXILIARY FEEDWATER PUMP MOTOR (2-FW-P-3A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-104A, B

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 (2-CV-P-1B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-79, -78

EQUIPMENT ITEM NO. 60
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
GENERAL ELECTRIC MODEL 5K182DL1342A
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 60
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING PUMP COOLING MOTOR (2-CC-P-2B)
LICENSEE SUBMITTAL: SCEW(S): 6-62

EQUIPMENT ITEM NO. 61
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
GENERAL ELECTRIC MODEL 5K182DL126
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 61
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CHARGING PUMP COOLING MOTOR (2-CC-P-2A)
LICENSEE SUBMITTAL: SCEW(S): 6-61

EQUIPMENT ITEM NO. 62
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
WESTINGHOUSE MODEL 68F13318
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 62
LICENSEE REFERENCE(S): 604, 33
FUNCTION (PLANT ID): HIGH HEAD SAFETY INJECTION/NORMAL CHARGING (2-CH-P-1C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-7 TO 6-9

EQUIPMENT ITEM NO. 63
ELECTRIC MOTOR LOCATED IN THE AUXILIARY BUILDING CABLE VAULT (AB-13B)
CUTLER HAMMER MODEL UNITROL
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 63
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): SUPPLY POWER TO SAFETY SYSTEMS (2-H1-2 SOUTH, NORTH; 2-J1-2 EAST, WEST)
LICENSEE SUBMITTAL: SCEW(S): 6-23 TO -26

EQUIPMENT ITEM NO. 64
MOTORIZED VALVE ACTUATOR LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-11)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 64
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER SERVICE WATER SUPPLY (MOV-SW-204A, B, C, D; -205A)
LICENSEE SUBMITTAL: SCEW(S): 6-246 TO -250
FUNCTION (PLANT ID): SERVICE WATER OUTLET RECIRCULATION SPRAY HEAT EXCHANGER (MOV-SW-205B)
LICENSEE SUBMITTAL: SCEW(S): 6-251
FUNCTION (PLANT ID): RECIRCULATION SPRAY HEAT EXCHANGER (MOV-SW-205C, D)
LICENSEE SUBMITTAL: SCEW(S): 6-252, -253

EQUIPMENT ITEM NO. 65
MOTORIZED VALVE ACTUATOR LOCATED IN THE SERVICE BUILDING
LIMITORQUE MODEL SMB00
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 65
LICENSEE REFERENCE(S): 29
FUNCTION (PLANT ID): SERVICE WATER (MOV-SW-107B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-254, -255

EQUIPMENT ITEM NO. 66
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL SMB WITH CLASS B INSULATION, SIZE 000, 1, 2; WITH MOTOR-BRAKE ASSEMBLY
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 66
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE VALVE (MOV-2864A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-231, -232
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION STOP VALVE (MOV-2890C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-218 TO -220

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, 29
FUNCTION (PLANT ID): BORON INJECTION TANK BYPASS (MOV-2869B)
LICENSEE SUBMITTAL: SCEW(S): 6-323A

EQUIPMENT ITEM NO. 68
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE, MODEL NOT STATED, PEERLESS MOTOR, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 68
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-2885A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-232B, C, D

EQUIPMENT ITEM NO. 69
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING (AB-13A)(S)
LIMITORQUE MODEL SMB00
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 69
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION DISCHARGE (MOV-2863A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-208, -209

EQUIPMENT ITEM NO. 70
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT, INSIDE CRANEWALL, SUBMERGED (RC-3A)
LIMITORQUE MODEL SMB3
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 70
LICENSEE REFERENCE(S): 45
FUNCTION (PLANT ID): ACCUMULATOR ISOLATION (MOV-2865A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-210, -211, -212

EQUIPMENT ITEM NO. 71
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL SMC04
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 71
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP DISCHARGE (MOV-RS-256A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-171, -172

EQUIPMENT ITEM NO. 72
MOTORIZED VALVE ACTUATOR LOCATED IN MECHANICAL EQUIPMENT ROOM NO. 3 (SB-9B)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 72
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHILLED WATER VALVE CONTROL ROOM HVAC (MOV-PG-107A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-84, -85, -86

EQUIPMENT ITEM NO. 73
ELECTRICAL CABLE, CONTROL LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
CERRO WIRE AND CABLE MODEL PYROTROL III
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 73
LICENSEE REFERENCE(S): 676
FUNCTION (PLANT ID): 1000V CONTROL CABLE (NUS-362 S.N.-1246; NUS-381E S.N.-1447/1246; NUS-381C S.N.-446; NUS-325 SN-246)
LICENSEE SUBMITTAL: SCEW(S): 6-42A, -39, -38, -37

EQUIPMENT ITEM NO. 74
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT SPRAY PUMP HOUSE BELOW EL. 27'6" (CSPH-11)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 74
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHEMICAL ADDITION TANK ISOLATION (MOV-CS-202B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-77, -76

EQUIPMENT ITEM NO. 75
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT SPRAY PUMP HOUSE (CSPH-27)
LIMITORQUE MODEL SMC04
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 75
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (MOV-CS-201D)
LICENSEE SUBMITTAL: SCEW(S): 6-75
FUNCTION (PLANT ID): SPRAY PUMP DISCHARGE ISOLATION (MOV-CS-201C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-74, -73, -72

EQUIPMENT ITEM NO. 76
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
LIMITORQUE MODEL SMB, CLASS B INSULATION, SIZES 00, 000; WITH MOTOR-BRAKE ASSEMBLY
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 76
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHARGING SUMP SUCTION FROM REFUELING WATER STORAGE TANK (MOV-2115D, B)
LICENSEE SUBMITTAL: SCEW(S): 6-15, -13

EQUIPMENT ITEM NO. 77
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
LIMITORQUE, MODEL NOT STATED, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 77
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): REACTOR COOLING PUMP SEAL WATER RETURN (MOV-2381)
LICENSEE SUBMITTAL: SCEW(S): 6-6

EQUIPMENT ITEM NO. 78
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL
ASCO MODEL NP8320179E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 78
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): OUTSIDE BLOWDOWN TRIP VALVE (SOV-BD-200A)
LICENSEE SUBMITTAL: SCEW(S): 6-260
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-200C)
LICENSEE SUBMITTAL: SCEW(S): 6-262

EQUIPMENT ITEM NO. 79
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO, MODEL NOT STATED
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 79
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-200B)
LICENSEE SUBMITTAL: SCEW(S): 6-261

EQUIPMENT ITEM NO. 80
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 8320A102
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 80
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AIR TO BLOWDOWN TRIP VALVE (SOV-BD-200D, F)
LICENSEE SUBMITTAL: SCEW(S): 6-263, -265
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION (SOV-IA-201B)
LICENSEE SUBMITTAL: SCEW(S): 6-127

EQUIPMENT ITEM NO. 81
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL
ASCO MODEL NP8320A179V
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 81
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION (SOV-BD-200E)
LICENSEE SUBMITTAL: SCEW(S): 6-264

EQUIPMENT ITEM NO. 82
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO MODEL 2068323RF
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 82
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER LIQUID SPACE SAMPLE (SOV-SS-200A1, 201A1)
LICENSEE SUBMITTAL: SCEW(S): 6-233, -235
FUNCTION (PLANT ID): PRESSURIZER RELIEF TANK SAMPLE (SOV-SS-204A)
LICENSEE SUBMITTAL: SCEW(S): 6-240
FUNCTION (PLANT ID): PRIMARY COOLANT HOT LEG SAMPLE (SOV-SS-206A)
LICENSEE SUBMITTAL: SCEW(S): 6-242

EQUIPMENT ITEM NO. 83
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 830281RF
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 83
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER LIQUID SPACE SAMPLE (SOV-SS-200B1)
LICENSEE SUBMITTAL: SCEW(S): 6-234
FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-202B1)
LICENSEE SUBMITTAL: SCEW(S): 6-238
FUNCTION (PLANT ID): RESIDUAL HEAT REMOVAL SAMPLE (SOV-SS-203)
LICENSEE SUBMITTAL: SCEW(S): 6-239
FUNCTION (PLANT ID): PRESSURE RELIEF TANK SAMPLE (SOV-SS-204B)
LICENSEE SUBMITTAL: SCEW(S): 6-241
FUNCTION (PLANT ID): PRIMARY COOLANT HOT LEG SAMPLE (SOV-SS-206B)
LICENSEE SUBMITTAL: SCEW(S): 6-243

EQUIPMENT ITEM NO. 84
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 2068323RF
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 84
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER VAPOR SPACE (SOV-SS-201B1)
LICENSEE SUBMITTAL: SCEW(S): 6-236
FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG SAMPLE (SOV-SS-202A1)
LICENSEE SUBMITTAL: SCEW(S): 6-237

EQUIPMENT ITEM NO. 85
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 8320A102
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 85
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): NITROGEN SUPPLY (SOV-SI-200)
LICENSEE SUBMITTAL: SCEW(S): 6-221
FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-201B)
LICENSEE SUBMITTAL: SCEW(S): 6-223
FUNCTION (PLANT ID): REACTOR CONTAINMENT SUMP PUMP DISCHARGE (SOV-DA-200B)
LICENSEE SUBMITTAL: SCEW(S): 6-174
FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-200B)
LICENSEE SUBMITTAL: SCEW(S): 6-179
FUNCTION (PLANT ID): COOLING WATER RETURN FROM RESIDUAL HEAT EXCHANGER ISOLATION (SOV-CC-209A)
LICENSEE SUBMITTAL: SCEW(S): 6-67

EQUIPMENT ITEM NO. 86
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO, MODEL NOT STATED
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 86
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): NITROGEN RELIEF (SOV-SI-201A)
LICENSEE SUBMITTAL: SCEW(S): 6-222
FUNCTION (PLANT ID): REACTOR CONTAINMENT PUMP DISCHARGE (SOV-DA-200A)
LICENSEE SUBMITTAL: SCEW(S): 6-173
FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-209A)
LICENSEE SUBMITTAL: SCEW(S): 6-177
FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-200C)
LICENSEE SUBMITTAL: SCEW(S): 6-180

EQUIPMENT ITEM NO. 87
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
ASCO MODEL 8302C4U
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 87
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY COOLANT COLD LEG (SOV-SI-202A1, B1)
LICENSEE SUBMITTAL: SCEW(S): 6-224, -226
FUNCTION (PLANT ID): REFUELING WATER STORAGE TANK CROSS CONNECT (SOV-SI-202A2, B2)
LICENSEE SUBMITTAL: SCEW(S): 6-225, -227

EQUIPMENT ITEM NO. 88
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL LB831654
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 88
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): BORON INJECTION TANK RECIRCULATION (SOV-2884A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-228 TO -230

EQUIPMENT ITEM NO. 89
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-47A)
ASCO, MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 89
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF (SOV-2455C-1, -2; -2456-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 6-200C, D, F, G

EQUIPMENT ITEM NO. 90
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-47A)
LAWRENCE MODEL 3300WA742DC
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 90
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER POWER OPERATED RELIEF (SOV-24455C-3, -2456-3)
LICENSEE SUBMITTAL: SCEW(S): 6-200E, H

EQUIPMENT ITEM NO. 91
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO MODEL HBX8320A12
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 91
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): NITROGEN SUPPLY LINE (SOV-DG-208A)
LICENSEE SUBMITTAL: SCEW(S): 6-175
FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-250A)
LICENSEE SUBMITTAL: SCEW(S): 6-80

EQUIPMENT ITEM NO. 92
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HBX8320A12
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 92
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER PUMP (SOV-DG-208B)
LICENSEE SUBMITTAL: SCEW(S): 6-176
FUNCTION (PLANT ID): RADIATION MONITORING TRIP VALVE (SOV-RM-200A)
LICENSEE SUBMITTAL: SCEW(S): 6-181
FUNCTION (PLANT ID): CONTAINMENT VACUUM PUMP TRIP VALVE (SOV-CV-250C, D, B)
LICENSEE SUBMITTAL: SCEW(S): 6-81 TO -83
FUNCTION (PLANT ID): COMPONENT COOLING FROM CONTAINMENT COOLER (SOV-CC-210C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-69 TO -71
FUNCTION (PLANT ID): REACTOR COOLANT PUMP THERMAL BARRIER ISOLATION (SOV-CC-207)
LICENSEE SUBMITTAL: SCEW(S): 6-66
FUNCTION (PLANT ID): REACTOR COOLANT PUMP COOLING WATER ISOLATION (SOV-CC-205C, B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-63 TO -65

EQUIPMENT ITEM NO. 93
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HT8316C47E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 93
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-201AA, AB, BA, BB)
LICENSEE SUBMITTAL: SCEW(S): 6-160 TO -163

EQUIPMENT ITEM NO. 94
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL NP8316A76E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 94
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-201CA)
LICENSEE SUBMITTAL: SCEW(S): 6-164

EQUIPMENT ITEM NO. 95
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HT8316CE7E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 95
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM TRIP VALVE (SOV-MS-201CB)
LICENSEE SUBMITTAL: SCEW(S): 6-165

EQUIPMENT ITEM NO. 96
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL NP8320A174E
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 96
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY GRADE WATER TO PRESSURIZER RELIEF TANK (SOV-2519A)
LICENSEE SUBMITTAL: SCEW(S): 6-200

EQUIPMENT ITEM NO. 97
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 80174
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 97
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRIMARY DRAIN TRANSFER TANK VENT (SOV-VG-209B)
LICENSEE SUBMITTAL: SCEW(S): 6-178

EQUIPMENT ITEM NO. 98
SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)
ASCO MODEL 80147
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 98
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): MAIN STEAM LINE DRAINS TO CONDENSER (SOV-MS-209, -210)
LICENSEE SUBMITTAL: SCEW(S): 6-166, -166A

EQUIPMENT ITEM NO. 99
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING (AB-13)(N)
ASCO MODEL 8320A102
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 99
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT LEAKAGE MONITORING (SOV-LM-200A TO H; 201A, B)
LICENSEE SUBMITTAL: SCEW(S): 6-132 TO -138, -140, -141

EQUIPMENT ITEM NO. 100
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL HBX8320A26
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 100
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR DISCHARGE (SOV-IA-200)
LICENSEE SUBMITTAL: SCEW(S): 6-125

EQUIPMENT ITEM NO. 101
SOLENOID VALVE LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-3B)
ASCO MODEL NP8320A179E
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 101
LICENSEE REFERENCE(S): 2850
FUNCTION (PLANT ID): CONTAINMENT INSTRUMENT AIR COMPRESSOR SUCTION (SOV-IA-201A)
LICENSEE SUBMITTAL: SCEW(S): 6-126

EQUIPMENT ITEM NO. 102
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL NP8320A173V
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 102
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): COOLING WATER RETURN FROM RESIDUAL HEAT EXCHANGER ISOLATION (SOV-CC-209B)
LICENSEE SUBMITTAL: SCEW(S): 6-68

EQUIPMENT ITEM NO. 103
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
ASCO MODEL NP831654V
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 103
LICENSEE REFERENCE(S): 2850
FUNCTION (PLANT ID): CHEMICAL VOLUME CONTROL SYSTEM ISOLATION VALVE FOR LETDOWN (SOV-2200A, B, C)
LICENSEE SUBMITTAL: SCEW(S): 6-20 TO -22

EQUIPMENT ITEM NO. 104
SOLENOID VALVE LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
ASCO MODEL 831654
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 104
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): LETDOWN INLET NON-REGENERATIVE HEAT EXCHANGER (SOV-2204)
LICENSEE SUBMITTAL: SCEW(S): 6-19

EQUIPMENT ITEM NO. 105
SOLENOID VALVE LOCATED IN CONTAINMENT, INSIDE CRANEWALL
ASCO MODEL LB831654
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 105
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): PRESSURIZER AUXILIARY SPRAY ISOLATION (SOV-2311)
LICENSEE SUBMITTAL: SCEW(S): 6-12

EQUIPMENT ITEM NO. 106
SOLENOID VALVE LOCATED IN THE MAIN STEAM VALVE HOUSE (MSVH-27)
ASCO MODEL HBX8320A26
REQUIRED OPERATING TIME: 60 SECONDS
TER CHECKSHEET NO. 106
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): AIR REMOVAL TO CONTAINMENT (SOV-SV-202A)
LICENSEE SUBMITTAL: SCEW(S): 6-1

EQUIPMENT ITEM NO. 107
ELECTRICAL CABLE LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-3A)
KAISER MODEL XLPE/NEOPRENE
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 107
LICENSEE REFERENCE(S): 3582
FUNCTION (PLANT ID): 600V POWER CABLE (NUS-225 SN-251)
LICENSEE SUBMITTAL: SCEW(S): 6-48

EQUIPMENT ITEM NO. 108
ELECTRICAL CABLE SPLICE LOCATED IN CONTAINMENT (RC-3A)
MANUFACTURER AND MODEL NOT STATED
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 108
LICENSEE REFERENCE(S): NOT CITED
FUNCTION (PLANT ID): VALVE POSITION INDICATION AND CONTROL
LICENSEE SUBMITTAL: SCEW(S): 6-268

EQUIPMENT ITEM NO. 109
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL H2BC, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 109
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION (MOV-2862B)
LICENSEE SUBMITTAL: SCEW(S): 6-207

EQUIPMENT ITEM NO. 110
MOTORIZED VALVE ACTUATOR LOCATED IN THE SAFEGUARD AREA (SFGD-1)
LIMITORQUE MODEL SMB, CLASS B INSULATION, SIZES 00, 000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 110
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): RECIRCULATION SPRAY PUMP SUCTION (MOV-RS-255B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-170, -169
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION RECIRCULATION WATER (MOV-2860B, A)
LICENSEE SUBMITTAL: SCEW(S): 6-205, -204
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION SUCTION FROM REACTOR WATER STORAGE TANK (MOV-2862A)
LICENSEE SUBMITTAL: SCEW(S): 6-206
FUNCTION (PLANT ID): LOW HEAD SAFETY INJECTION PUMP RECIRCULATION (MOV-2885D)
LICENSEE SUBMITTAL: SCEW(S): 6-232E

EQUIPMENT ITEM NO. 111
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING PENETRATION AREA (AB-2B)
LIMITORQUE MODEL SMB 00, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 111
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): BORIC ACID INJECTION TANK OUTLET VALVE (MOV-2842, -2867B, C, D)
LICENSEE SUBMITTAL: SCEW(S): 6-203, -214 TO -216
FUNCTION (PLANT ID): BORIC ACID INJECTION TANK VALVE (MOV-2867A)
LICENSEE SUBMITTAL: SCEW(S): 6-213

EQUIPMENT ITEM NO. 111 (CONTINUED)
FUNCTION (PLANT ID): SAFETY INJECTION TO REACTOR HOT LEGS ISOLATION (MOV-2869A)
LICENSEE SUBMITTAL: SCEW(S): 6-217
FUNCTION (PLANT ID): CHARGING HEADER ISOLATION VALVE (MOV-2289B)
LICENSEE SUBMITTAL: SCEW(S): 6-18
FUNCTION (PLANT ID): CHARGING TO REGENERATIVE HEAT EXCHANGER STOP VALVE (MOV-2289A)
LICENSEE SUBMITTAL: SCEW(S): 6-17
FUNCTION (PLANT ID): CHARGING PUMP 2-CH-P-1B RECIRCULATION/REFUELING WATER STORAGE TANK HEADER ISOLATION (MOV-2373)
LICENSEE SUBMITTAL: SCEW(S): 6-5

EQUIPMENT ITEM NO. 112
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT, INSIDE CRANEWALL (RC-47A)
LIMITORQUE MODEL SMB000
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 112
LICENSEE REFERENCE(S): 659, 706, 45
FUNCTION (PLANT ID): PRESSURIZER RELIEF BLOCK VALVE (MOV-2535, -2536)
LICENSEE SUBMITTAL: SCEW(S): 6-200A, B

EQUIPMENT ITEM NO. 113
MOTORIZED VALVE ACTUATOR LOCATED IN CONTAINMENT, OUTSIDE CRANEWALL (RC-47B)
LIMITORQUE MODEL SMB00, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 113
LICENSEE REFERENCE(S): 659, 706, 45
FUNCTION (PLANT ID): AUXILIARY FEEDWATER/HELB MITIGATION (MOV-FW-251A TO F)
LICENSEE SUBMITTAL: SCEW(S): 6-99 TO -104

EQUIPMENT ITEM NO. 114
MOTORIZED VALVE ACTUATOR LOCATED IN THE AUXILIARY BUILDING CHARGING PUMP CUBICLE (AB-2C)
LIMITORQUE, MODEL NOT STATED, PEERLESS MOTOR, CLASS B INSULATION
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 114
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHARGING PUMP 2-CH-P-1A RECIRCULATION TO REFUELING WATER STORAGE TANK (MOV-2275A)
LICENSEE SUBMITTAL: SCEW(S): 6-2

EQUIPMENT ITEM NO. 115
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. 115
LICENSEE REFERENCE(S): 662, 659, 29
FUNCTION (PLANT ID): CHARGING PUMP 2-CH-P-1C RECIRCULATION TO REFUELING WATER STORAGE TANK (MOV-2275C, B)
LICENSEE SUBMITTAL: SCEW(S): 6-4, 6-3
FUNCTION (PLANT ID): CHARGING PUMP SUCTION FROM VOLUME CONTROL TANK (MOV-2115E, C)
LICENSEE SUBMITTAL: SCEW(S): 6-16, -14

EQUIPMENT ITEM NO. 116
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-201A, -201B)
LICENSEE SUBMITTAL: SCEW(S): T-1, T-2 [4]

EQUIPMENT ITEM NO. 117
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-203A, B)
LICENSEE SUBMITTAL: SCEW(S): T-3, T-4 [4]

EQIUPMENT ITEM NO. 118
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-251A, B)
LICENSEE SUBMITTAL: SCEW(S): T-30, T-31 [4]

EQUIPMENT ITEM NO. 119
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-210A, B)
LICENSEE SUBMITTAL: SCEW(S): T-5, T-6 [4]

EQUIPMENT ITEM NO. 120
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-203A, B)
LICENSEE SUBMITTAL: SCEW(S): T-7, T-8 [4]

EQUIPMENT ITEM NO. 121
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-200A-1, -2; -200B-1, -2; -200C-1, -2; -201A-1, -2; 201B-1, -2)
LICENSEE SUBMITTAL: SCEW(S): T-9 THROUGH T-18 [4]

EQUIPMENT ITEM NO. 122
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 [4]

EQUIPMENT ITEM NO. 123
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-200A-1, -2; B-1, -2; C-1, -2; -201A-1, -2; B-1, -2)
LICENSEE SUBMITTAL: SCEW(S): T-20 THROUGH T-29 [4]

EQUIPMENT ITEM NO. 124
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-200A, -200B)
LICENSEE SUBMITTAL: SCEW(S): 10.3-38, -39 [15]

EQUIPMENT ITEM NO. 125
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-202A, -206A, -203A; HCV-SS-201D, -202A)
LICENSEE SUBMITTAL: SCEW(S): 10.3-32, -34, -40, -36, -37 [15]

EQUIPMENT ITEM NO. 126
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-200 THROUGH -207; TV-SS-202B, -203B, -206B; S1-XCV-2401A, B; -2422A, B)
LICENSEE SUBMITTAL: SCEW(S): 10.3-76 THROUGH -83; 10.3-33, -35, -41, -62, -63, -64, -65 [15]

EQUIPMENT ITEM NO. 127
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-200A-1, -2; -200B-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 10.3-54, -55, -56, -57 [15]

EQUIPMENT ITEM NO. 128
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-202A-1, -2; -206A-1, -2; -201D-1, -2; 202A-3, -4; 203A-1, -2)
LICENSEE SBUMITTAL: SCEW(S): 10.3-42, -43, -46, -47, -50, -51, -52, -53, -58, -59 [15]

EQUIPMENT ITEM NO. 129
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-202B-2, -1; -206B-1, -2; 203B-1, -2; ZS-XCV-2401A-1, -2; -2401B-1, -2; 2422A-1, -2; -2422B-1, -2; ZS-GW-200-1, -2; -201-1, -2; -202-1, -2; -203-1, -2; -204-1, -2; -205-1, -2; -206-1, -2; -207-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 10.3-45, -44, -48, -49, -60, -61, -66 THROUGH -69, -70 THROUGH -73, -84 THROUGH -99 [15]

EQUIPMENT ITEM NO. 130
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-201-1, -2)
LICENSEE SUBMITTAL: SCEW(S): 10.3-74, -75 [15]

EQUIPMENT ITEM NO. 131
FLOW TRANSMITTER LOCATED INSIDE CONTAINMENT, OUTSIDE CRANEWALL (RC-18B)
FISCHER AND PORTER MODEL 10B2496QB
REQUIRED OPERATING TIME: 120 DAYS
TER CHECKSHEET NO. 131
LICENSEE REFERENCE(S): 687
FUNCTION (PLANT ID): STEAM-FLOW TRANSMITTER (FT-2474, -2475, -2484, -2485, -2494, -2495)
LICENSEE SUBMITTAL: SCEW(S): 6-142 TO -147

APPENDIX C - PLANT SAFETY-RELATED SYSTEMS AND DISPLAY INSTRUMENTATION

C.1 LIST OF SAFETY-RELATED SYSTEMS

In accordance with IE Bulletin 79-01B or NUREG-0588, the Licensee was required to (1) establish a list of systems and equipment required to mitigate the consequences of a loss-of-coolant accident (LOCA) and a high energy line break (HELB) and (2) identify components needed to perform the functions of safety-related display information, post-accident sampling and monitoring, and radiation monitoring.

The list of safety-related systems provided by the Licensee was reviewed by the NRC staff against a staff-developed master list. The NRC staff had developed a generic master list based upon a review of plant safety analyses and emergency procedures. The systems list was established on the basis of functions that must be performed for accident mitigation (without regard to location of equipment relative to hostile environments). The instrumentation selected included that needed to monitor overall plant performance as well as to monitor the performance of systems on the list.

Based upon information in the Licensee's submittal, the equipment location references, and in some cases conversations with the Licensee, the NRC staff verified that the systems included in the Licensee's submittal were those required to achieve or support: (1) emergency reactor shutdown, (2) containment isolation, (3) reactor core cooling, (4) containment heat removal, (5) core residual heat removal, and (6) prevention of significant release of radioactive material to the surrounding environment. With the exception of items deferred for later review (cold-shutdown equipment and TMI Lessons-Learned modifications), the staff concluded that the systems identified by the Licensee were acceptable. The list of systems identified by the Licensee and accepted by the NRC staff is as follows:

Function	System[1]
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.

C.1 SAFETY-RELATED INSTRUMENTATION

In Section 3.1 of the NRC SER [17], 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 18, 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:

<u>LT-RS251A, B</u> <u>Containment Sump Level</u>

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 1E 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 [18]

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)	X	X	191	--
TE-2423	RCS Temperature Element (Wide Range)	X	X	195	--
TE-2433	RCS Temperature Element (Wide Range)	X	X	199	--
PT-LM200A	Containment Pressure (Narrow Range)	X	X	128	--
PT-LM200B	Containment Pressure (Narrow Range)	X	X	129	--
PT-LM200C	Containment Pressure (Narrow Range)	X	X	130	--
PT-LM200D	Containment Pressure (Narrow Range)	X	X	131	--
LT-2459	Pressurizer Level Protection	X	X	182	--
LT-2460	Pressurizer Level Protection	X	X	183	--
LT-2461	Pressurizer Level Protection	X	X	184	--
LT-2474	Steam Generator Narrow Range Protection	X	X	90	--
LT-2484	Steam Generator Narrow Range Protection	X	X	93	--

NOTE: Surry Unit Two mark numbers are provided. Table 1 also applies to Surry Unit 1 equipment.

FIGURE [illegible] PPLIED BY THE LICENSEE

Table C-1 (Cont.)

Surry 1 and 2
August 24, 1981

TABLE 1

CATEGORY A - (Continued)

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
LT-2494	Steam Generator Narrow Range Protection	X	X	96	--
LT-2475	Steam Generator Narrow Range Protection	X	X	91	--
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	X	X	92	--
LT-2486	Steam Generator Narrow Range Protection	X	X	95	--
LT-2496	Steam Generator Narrow Range Protection	X	X	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	X	X	153	--
PT-2484	Steam Generator 2 Pressure	X	X	154	--
PT-2485	Steam Generator 2 Pressure	X	X	155	--

FIGURE SUPPLIED BY THE LICENSEE

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	X	X	156	--
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	X	X	88	--
FT-FW200C	Aux Steam Generator Feed Pump Flow	X	X	89	--

FIGURE SUPPLIED BY THE LICENSEE

TABLE 1

CATEGORY B

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
LT-RS251A	Containment Sump Level	X		10.3-30	TMI Reveiw Supplement 3
LT-RS251B	Containment Sump Level	X		10.3-31	TMI Reveiw Supplement 3
PT-2402	RCS Wide Range Pressure	X		6-273	--
PT-RC2402-1	RCS Wide Range Pressure	X		6-274	--
LT-2477	Steam Generator Wide Range Level	X		6-275	--
LT-2487	Steam Generator Wide Range Level	X		6-276	--
LT-2497	Steam Generator Wide Range Level	X		6-277	--
PT-RS256A	Outside Recirculation Spray Pump Discharge Pressure	X		6-278	--
PT-RS256B	Outside Recirculation Spray Pump Discharge Pressure	X		6-279	--
FT-2961	Clod Leg Safety Injection Flow	X		6-280	--
FT-2962	Clod Leg Safety Injection Flow	X		6-281	--
FT-2963	Clod Leg Safety Injection Flow	X		6-282	--
FT-2945	Low Head Injection Header Flow	X		6-283	--
FT-2946	Low Head Injection Header Flow	X		6-284	--

FIGURE SUPPLIED BY THE LICENSEE

Table C-1 (Cont.)

Surry 1 and 2
August 24, 1981

TABLE 1

CATEGORY C

MARK NUMBER	DESCRIPTION	EXPOSED TO A HARSH ENVIRONMENT	PREVIOUSLY LISTED ON MASTER LIST	WORKSHEET	COMMENT
LT-CS200A	Refueling Water Storage Tank Level			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

1. BACKGROUND

The NRC Safety Evaluation Report (SER) concerning equipment environmental qualification (EEQ) states [17]:

> "Subsection 4.2 identified deficiencies that must be resolved to establish the qualification of the equipment; the staff requires that the information lacking in this category be provided within 90 days of receipt of this SER. Within this period, the licensee should either provide documentation of the missing qualification information which demonstrates that such equipment meets the DOR guidelines or NUREG-0588 or commit to a corrective action (requalification, replacement, relocation, and so forth) consistent with the requirements to establish qualification by June 30, 1982. If the latter option is chosen, the licensee must provide justification for operation until such corrective action is complete."

On January 19, 1982, FRC representatives met with NRC Division of Licensing personnel at NRC offices to discuss the potential for FRC to assist the staff in the technical review of licensees' statements regarding justification for interim plant operation submitted in response to outstanding qualification deficiencies in the NRC EEQ SERs. The results of the meeting were as follows: (1) FRC was requested to proceed immediately with the technical review of licensees' justification for interim operation, (2) the format was established, and (3) the criteria for the review were established. These criteria are presented in Section 2 of this appendix.

On January 21, 1982, the NRC provided the following modification to Final Assignment 13 concerning this subject:

> "The FRC review will consist of:
>
> - 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.

- 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

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* C. J. Crane
Letter to R. A. Clark, NRC. Subject: Transmittal of FRC Review of Licensees' Responses to NRC EEQ SER Concerning Justification for Interim Operation
FRC, 25-Jan-82

** C. J. Crane
Letter to R. A. Clark, NRC. Subject: Transmittal of Actual Examples of Licensees' Responses to NRC EEQ SER Which Provide Adequate Rationale as a Basis for Justification of Interim Operation
FRC, 5-Feb-82

disabling the backup equipment, (2) any major differences in the characteristics of the primary and backup equipment (unless it is obvious that the equipment is essentially identical), (3) the possibility of electrical failure of the primary equipment causing an adverse effect on other safety-related equipment or power supplies, and (4) in the case of display instrumentation, the possibility of an operator being misled by the failed primary equipment. Where equipment has not been demonstrated to be qualified, some justifications discuss administrative procedures or revised operating procedures in effect. Depending upon the specific equipment involved, each of the above considerations need not be discussed in every instance, but, in general, a complete systems discussion would consider the above points.

Where equipment qualification evaluations were used, licensees generally (1) received additional information from manufacturers, (2) applied engineering judgment, (3) performed material analysis, and/or (4) used partial test data in support of the original qualification documentation. Where these evaluations were performed, the licensees determined that, although full qualification was not documented, there was sufficient evidence to suggest that the equipment would perform its intended safety function, thereby justifying interim operation until qualified equipment is installed.

Some licensees provided detailed failure-modes-and-effects analyses of electrical circuitry to demonstrate that, under all identified failure modes, the safety function of the equipment could still be accomplished.

Other justifications involved a combination of qualification information and systems information. For example, if a licensee has qualification information (such as a generic test report or other partial qualification documentation) that tends to confirm the ability of the equipment to remain operable for a specified period of time, justification for interim operation often was based upon a discussion of the required safety function being performed prior to the potential failure. This type of discussion often applies to equipment which performs a short-term trip or isolation function in the early stages of an accident.

3. PLANT-SPECIFIC REVIEW

As a result of the review, this plant was evaluated and the results documented on the "Summary of Review of Licensee's 90-Day Response" form reproduced below:

"EQUIPMENT ENVIRONMENTAL QUALIFICATION (EEQ)
Review of Licensees' Resolution of Outstanding Issues
From NRC Equipment Environmental Qualification
Safety Evaluation Reports

SUMMARY OF REVIEW
OF LICENSEE 90-DAY RESPONSE

Utility: Virginia Electric and Power Company
Plant Name: Surry Unit 2
NRC Docket No. 50-281
NRC TAC No. 42-469
NRC Contract No. NRC-03-79-118
FRC Project No. C5257
FRC Assignment No. 13
FRC Task No. 483

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 No.	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:

1. 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, 2, and 3.

NOTE 1

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 Justification for Continued Operation

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.

NOTE 3

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	6-61
1-CC-P-2B	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 LICENSEES' 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 2

NRC Docket No. 50-281

NRC TAC No. 42469

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, 1981 [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.

<u>On February 8, 1981, 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].</u>(1)**

*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.

In addition to Reference 8, two other submittals were sent on March 9 and February 24, 1982 [9, 10]. These letters concerned replacing the entire complement of terminal blocks for Raychem WCSF-N splice sleeves and the Licensee's justification for interim operations.(1)

By letter dated May 18, 1982, VEPCO submitted information regarding documentation referenced in their EEQ submittal; specifically, a list of references requested and the status of these references were provided. The 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)

A. FRC REVIEW OF THE LICENSEE'S 90-DAY RESPONSE TO THE NRC EEQ SER

INFORMATION REQUESTED	DATE RECEIVED BY FRC***
1. In reference to the Licensee's 90-day response [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.	

***This column will be completed by FRC as the requested information is received.

DATE RECEIVED BY FRC***

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.

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

Received 2/12/82 for Task 495(1)

DATE RECEIVED BY FRC***

	Post-Accident Reactor Containment Service, Cerro Wire and Cable Technical Report NP-04, March 1971.	
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. C19QA061, February 28, 1972.	5/24/82 [12](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)
l(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 [12](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)

		DATE RECEIVED BY FRC***
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 [12](2)
o(40).	Lasky, J. S., Okonite Company, to Bonner, J., Stone & Webster Engineering Corporation, October 15, 1980.	5/24/82 [12](2)
p(42).	Ling, T. H., Anaconda Wire and Cable Company, to Bonner, J., Stone & Webster Engineering Corporation, October 28, 1980.	5/24/82 [12](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 dated October 27, 1980, Zarandi, 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: Qualification Information for Limitorque Actuators - Surry Power Station Units 1 & 2, November 14, 1980. Possible attachments include: MacFarlane, I. S., Stone & Webster Engineering Corporation, to Drab, J. B., Limitorque Corporation, Memo - Subject: 79-01B Environmental Qualification of Equipment, dated November 12, 1980, MacFarlane, I. S., Stone & Webster Engineering

DATE RECEIVED BY FRC***

Corporation, To Whom It May Concern, Memo dated January 28, 1981; MacFarlane, I. S., Stone & Webster Engineering Corporation, to Drab, J. B., Limitorque Corporation, Telephone Memorandum dated December 12, 1980.

v(53). Kuster, J. M., Raychem Corporation, to Barnhart, J. H., Stone & Webster Engineering Corporation, subject: Flamtrol Wire & Cable, North Anna Nuclear Units 3 & 4, Stone & Webster P.O. 3190, November 17, 1980. Possible attachments include: MacFarlane, I. S., Stone & Webster Engineering Corporation, to Kuster, J., Raychem Corporation, Telephone Memorandum dated November 18, 1980.

w(54). Lewicki, R. G., Reliance Electric Company, to Barnhart, J. H., Stone & Webster Engineering Corporation, subject: VEPCO/Surry Power Station Units 1 & 2, Motor Bearing Lubricant, Reliance Part No. 4824-15-A, November 14, 1980.

x(55). Reliance Electric Company, Nuclear Power Motor Systems, Type Test Support Analysis, Random Wound Motors, Summary Report NUC-9, July 1, 1978. Includes Appendix: Seismic Report 78-R-33, Justification for Omission of Routine "End Turn Stress Analysis" for Random Wound Motors, July 10, 1978.

Received for Assignment 13(1)

y(56). Electric Power Research Institute, Evaluation and Test of Improved Fire-Resistant Fluid Lubricants for Water Reactor Coolant Pump Motors, Volume 1: Fluid Evaluation, Bearing Model Tests, Motor Tests, and Fire Test, Interim Report NP-1447, July 1980.

Received for Assignment 13 [12](2)

DATE RECEIVED BY FRC**

z(58). Kuster, J., Raychem Corporation, to MacFarlane, I. S., Stone & Webster Engineering Corporation, subject: IE Bulletin 79-01B, Environmental Qualification of Equipment, Surry Power Station Units 1 & 2, Additional Qualification of Raychem Flamtrol Wire and Cable, Spec. No. NAS-3190, December 2, 1980.

aa(60). McGowan, E. J., Raychem Corporation, Raychem-Flamtrol, Continuation of LOCA Simulation Test, Test Report EM #1403, December 9, 1977. Possible attachments include: Kuster, J., Raychem Corporation, to MacFarlane, I. S., Stone & Webster Engineering Corporation, January 27, 1981.

bb(61). Cardello, P. S., Anaconda Ericsson Incorporated, to Bonner, J., Stone & Webster Engineering Corporation, subject: VEPCO Surry Qualification Data, three letters, October 8, 1980, October 21, 1980, and December 10, 1980.

cc(64). Lasky, J. S., The Okonite Company, to Barnhart, J. H., Stone & Webster Engineering Corporation, subject: Environmental Qualification of Equipment, Surry Power Station Units 1 & 2, December 17, 1980.

dd(68). Lasky, J. S., The Okonite Company, to Barnhart, J. H., Stone & Webster Engineering Corporation, Reference: J. O. No. 12846.44, December 22, 1980. Possible attachments include: Barnhart, J. H., Stone & Webster Engineering Corporation, to Lasky, J. S., Okonite Company, December 17, 1980; MacFarlane, I. S., Stone & Webster Engineering Corporation, To Whom It May Concern, Memo dated February 3, 1981.

ee(69). Tolerico, F. A., Westinghouse Electric Corporation, to Barnhart, 5/24/82 [12](2)

DATE RECEIVED BY FRC***

J. H., Stone & Webster Engineering Corporation, subject: Surry Power Station 1 & 2, Environmental Qualification of Hydrogen Recombiner, December 8, 1980.

ff(72). Cookinham, J. H., Westinghouse Electric Corporation, to Brown, S. C., Virginia Electric and Power Company, subject: North Anna Power Station, NUREG-0588 Equipment Qualification, October 30, 1980. Possible attachments include: Newcomb, R. C., Virginia Electric and Power Company, to MacFarlane, I. S., Stone & Webster Engineering Corporation, Memo dated December 31, 1980. 5/24/82 [12](2)

gg(73). Drab, J. B., Limitorque Corporation, to Reilly, P., Stone & Webster Engineering Corporation, subject: Qualification Information, North Anna Power Station Unit 2, September 19, 1980. Possible attachments include: MacFarlane, I. S., Stone & Webster Engineering Corporation, To Whom It May Concern, Memo dated January 28, 1981, MacFarlane, I. S., Stone & Webster Engineering Corporation, to Drab, J. B., Limitorque Corporation, Telephone Memorandum dated December 12, 1980.

hh(76). Conax Corporation, Design Qualification Test Report for a Conax Low Voltage Control Service Classification Conductor Feedthrough Assembly P/N 7641-21001, Test Report No. IPS-353.2, June 18, 1979. (Proprietary)

ii(77). Federick, W. C., Conax Corporation, to Reilly, P., Stone & Webster Engineering Corporation, subject: Environmental Qualification, Electrical Penetrations, North Anna Units 1 & 2, January 8, 1981.

DATE RECEIVED BY FRC**

jj(79).	Kushner, J. R., Rockbestos Company, to Barnhart, J. H., Stone & Webster Engineering Corporation, subject: S & W letter of 12/12/80, Items 1.a.(1) and 1.a.(2), February 24, 1981.	
kk(80).	Ling, T. H., Anaconda Ericsson, to MacFarlane, I. S., Stone & Webster Engineering Corporation, subject: 600-Volt Power Cable, February 23, 1981.	5/24/82 [12](2)
ll(82).	Pirrong, J. S., Boston Insulated Wire & Cable Co., to Petty, K., Stone & Webster Engineering Corporation, subject: North Anna Cables, P.O. NA-265/1265, April 30, 1981.	
mm(83).	Drab, J., Limitorque Corporation, to Barnhart, J. H., Stone & Webster Engineering Corporation, Telex, May 18, 1981.	
nn(84).	Drab, J. B., Limitorque Corporation, to Barnhart, J. H., Stone & Webster Engineering Corporation, subject: Qualification Information for Surry Power Station - Units 1 & 2, May 19, 1981.	
oo(85).	Technical Report 123-1247 dated April 1973.	5/24/82 [12](2)
pp(86).	Technical Report 123-2045 Rev. A dated March 25, 1975.	5/24/82 [12](2)
qq(87).	Report No. 23-1268 Revs. dated February 26, 1975.	Received 3/11/82 for Task 505(1)
rr(88).	Report No. 123-1269 Rev. dated February 26, 1975.	5/24/82 [12](2)
ss(89).	Amphenol Design Verification Testing (DVT) Report No. 123-1275.	Received 2/8/82 for Task 485(1)
tt(90).	Qualification Report of General Electric Vertical Induction Motors	5/24/82 [12](2)

		DATE RECEIVED BY FRC***
	for Class 1E Outside Recirculation Spray Pumps.	
uu(91).	Siemens-Allis Inc. (Medium Motor Division) Equipment Qualification Random Wound Motors for Class IE Safety Related Service.	Received 3/4/82 for Task 486(1)
vv(93).	Letter dated August 1, 1969 from Robert H. Dubuc of Cerro Wire & Cable Company to Mr. Roger Clark of S & W.	
ww(94).	Cerro Wire & Cable Company Specification No. RSS-3-701 Issue 4, November 1, 1968 on Pyro-TROL III, 600 Volt Control Cables.	5/24/82 [12](2)
xx(96).	NUS-VEPCO QDR Package 5437-96-01.	5/24/82 [12](2)
yy(98).	NUS-VEPCO QDR Package 5437-SOV-02 and changed to 5437-64-01.(2)	5/24/82 [12](2)
zz(100).	NUS-VEPCO QDR Package 5437-122-01.	5/24/82 [12](2)
aaa(102).	NUS-VEPCO QDR Package 5437-121-01.	5/24/82 [12](2)
bbb(104).	NUS-VEPCO QDR Package 5437-124-01.	5/24/82 [12](2)
ccc(106).	NUS-VEPCO QDR Package 5437-119-01.	5/24/82 [12](2)
ddd(108).	NUS-VEPCO QDR Package 5437-125-01.	5/24/82 [12](2)
eee(110).	NUS-VEPCO QDR Package 5437-118-01.	5/24/82 [12](2)
fff(112).	NUS-VEPCO QDR Package 5437-123-01.	5/24/82 [12](2)
ggg(114).	NUS-VEPCO QDR Package 5437-123-02 and changed to 5437-134-01.(2)	5/24/82 [12](2)
hhh(116).	NUS-VEPCO QDR Package 5437-125A-01.	
iii(118).	NUS-VEPCO QDR Package 5437-117-01.	5/24/82 [12](2)
jjj(120).	NUS-VEPCO QDR Package 5437-127-01.	5/24/82 [12](2)

		DATE RECEIVED BY FRC***
kkk(122).	NUS-VEPCO QDR Package 5437-104-01.	5/24/82 [12](2)
lll(124).	NUS-VEPCO QDR Package 5437-MOV-2-01 and changed to 5437-66-01.(2)	5/24/82 [12](2)
nnn(126).	NUS-VEPCO QDR Package 5437-MOV-2-02 and changed to 5437-97-01.(2)	5/24/82 [12](2)
ooo(127).	NUS-VEPCO QDR Package 5437-133-01.	5/24/82 [12](2)
ppp(128).	Automatic Dampers (Safety Related) Qualification Report for Electric Actuators by RCS.	5/24/82 [12](2)
qqq(134).	NUS-VEPCO QDR Package 5437-124-02 and changed to 5437-135-01.(2)	5/24/82 [12](2)
rrr(135).	NUS-VEPCO QDR Package 5437-128-01.	5/24/82 [12](2)
sss(136).	NUS-VEPCO QDR Package 5437-103-15.	
ttt(137).	NUS-VEPCO QDR Package 5437-132-01.	5/24/82 [12](2)
uuu(138).	NUS-VEPCO QDR Package 5437-120-01.	
vvv(139).	NUS-VEPCO QDR Package 5437-130-01.	5/24/82 [12](2)
www(140).	NUS-VEPCO QDR Package 5437-103-02 and changed to 5437-136-01.(2)	5/24/82 [12](2)
yyy)141).	NUS-VEPCO QDR Package 5437-105-01.	5/24/82 [12](2)
xxx(142).	NUS-VEPCO QDR Package 5437-69-01.	5/24/82 [12](2)

B. 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

1. The schedule for completion of the FRC assignment requires that the Licensee provide the requested information within 3 weeks of the date of the RAI.

The Licensee may transmit the requested information as follows:

- o complete package directly to the NRC project manager

  or

- o copy of cover letter to NRC project manager and complete package to FRC.

REFERENCES

1. Surry Unit 1 - IE Bulletin 79-01B,
   TMI Review - Supplement 3, Revision 3 Change Package
   Virginia Electric & Power Co.,
   01-Feb-81

2. 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
   C. J. Crane, J. Murphy (FRC) with D. Nabors (NRC-P.M.),
   R. Newcomb and J. E. Wromiewicz (VEPCO).
   Subject: RFI for Surry Units 1 and 2

4. R. H. Leasburg
   Letter to H. R. Denton and S. A. Varga (NRC)
   Subject IE Bulletin 79-01B Supplement 3
   TMI Review, Surry Power Station
   Unit Nos. 1 and 2
   September 10, 1981

5. 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

6. Office of Nuclear Reactor Regulation
   Safety Evaluation Report for Surry Unit 1
   Environmental Qualification of Safety-Related
   Electrical Equipment
   USNRC, 21-May-81

7. NUREG-0737, "Clarification of TMI Action Plan Requirements"
   NRC, November 1980

8. R. H. Leasburg
   Letter to S. A. Varga, NRC.
   Subject: Request for Additional Information on Environment
   Qualification of Safety-Related Electrical Equipment, Surry Power
   Station Units 1 and 2
   Virginia Electric & Power Co., 08-Feb-82
   Serial No. 043(1)

9. R. H. Leasburg
Letter to H. R. Denton and S. A. Varga, NRC.
Subject: Additional Information Regarding Safety Evaluation Report for Environmental Qualification of Electrical Equipment
Virginia Electric & Power Co., 09-Mar-82(1)

10. R. H. Leasburg
Letter to S. A. Varga, NRC.
Subject: Revision to Response to SER for Environmental Qualification of Electrical Equipment; Cable Terminations and Splices; Surry Unit 2
Virginia Electric & Power Co., 24-Feb-82(1)
329A(1)

11. R. H. Leasburg
Letter to H. R. Denton and S. A. Varga, NRC.
Subject: Additional Information Environmental Qualification of Safety Related Electrical Equipment; Surry 1 and 2
Virginia Electric & Power Co., 18-May-82
Serial No. 282(2)

12. R. C. Wilson
Letter to C. J. Crane, FRC. Subject: Surry 1 and 2; Environmental Qualification of Safety Related Electrical Equipment; Submittal of Additional Information
NUS Corp., 21-May-82(2)

13. Surry Power Station Units 1 and 2; Equipment Qualification Master Lists
Virginia Electric & Power Co., 14-Apr-82(2)