UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

August 22, 2018

Mr. John T. Conway, Senior Vice President
Energy & Supply and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Nuclear Plant
77 Beale Street, Mail Code B32
San Francisco, CA 94105

SUBJECT: DIABLO CANYON POWER PLANT - NRC DESIGN BASIS ASSURANCE INSPECTION (PROGRAMS) 05000275/2018010 AND 05000323/2018010

Dear Mr. Conway:

On June 28, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Diablo Canyon Power Plant. NRC inspectors discussed the results of this inspection with Mr. Adam Peck, Senior Director, Acting Station Director, and other members of the licensee staff. On July 25, 2018, a re-exit teleconference was held with Mr. Mark Sharp, Manager, Design Engineering and other members of the licensee staff, to clarify a change in the characterization of the identified finding. The results of this inspection are documented in the enclosed report.

One finding was identified during this inspection.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Thomas R. Farnholtz, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos: 50-275, 50-323
License Nos: DPR-80 and DPR-82

Enclosure:
Inspection Report 05000275/2018010
and 05000323/2018010
w/Attachment: Documents Reviewed

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000275, 05000323
License Numbers:	DPR-80, DPR-82
Report Numbers:	05000275/2018010, 05000323/2018010
Enterprise Identifier:	I-2018-010-0043
Licensee:	Pacific Gas and Electric Company
Facility:	Diablo Canyon Power Plant, Units 1 and 2
Location:	Avila Beach, California
Inspection Dates:	June 11, 2018 to July 25, 2018
Inspectors:	R. Kopriva, Senior Reactor Inspector W. Cullum, Reactor Inspector N. Okonkwo, Reactor Inspector
Approved By:	Thomas R. Farnholtz, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a baseline inspection at Diablo Canyon Power Plant in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. NRC-identified and self-revealed findings, violations, and additional items are summarized in the table below.

This inspection was performed between June 11, 2018, and July 25, 2018, by three inspectors from the NRC's Region IV office. One finding was identified during this inspection. The significance of inspection finding is indicated by the color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects Within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

List of Findings and Violations

Failure to install conduit to environmentally qualified solenoid valves in a manner to prevent moisture intrusion and accumulation within the solenoid enclosure.			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000275/2018010-1; 05000323/2018010-1 Closed	None	71111.21N
Introduction: The inspectors identified a Green finding and associated Non-cited Violation (NCV) of 10 CFR Part 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants," for failure to install conduit to environmentally qualified solenoid valves in a manner to prevent moisture intrusion and accumulation within the solenoid enclosure in accordance with Environmental Qualification file IH06, Revision 25.			

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.21N—Design Bases Assurance Inspection – (Programs)

The inspectors evaluated the following components and listed applicable attributes, during the weeks of June 11 to June 15, 2018, and June 25 to June 29, 2018:

Components (11 Samples)

(1.) DC-2-10-E-MTR-RHR-P1, Residual Heat Removal Pump 2-1 Motor. The residual heat removal pumps are the fundamental long term means of decay heat removal from the core for any accident or safe shutdown condition. The residual heat removal pump motors are considered to be required for mitigation of all accidents for the full duration of that accident; e.g., two weeks for a main steam line break and one year for a loss of coolant accident.
Attributes reviewed:
a.) System Component Evaluation Worksheet
b.) Test Program Considerations
c.) Thermal Aging Analysis
d.) Post Accident Operability Analysis
e.) Margin Analysis
f.) Test Specimen Accuracy Analysis
g.) IE Information Notices, Part 21 Notifications
h.) Material Procurement And Quality Control Environmental Qualification Requirements
i.) Shelf Life Analysis

(2.) DC-1-09-1-S-POS-633, Position indication for the Containment Recircirculation Sump Outlet Valve B (8982 B). The Instrument Class IA motor operator has position switch POS-633 internal to the motor operator. The containment recirc sump outlet valve 8982B is located in the recirculating water chambers, Area GE-GW, elevation 62' and is subject to a harsh radiation environment. The safety function of this valve is to be capable of remote manual opening when switching from the injection to the recirculation mode so that the residual heat removal pumps can take suction from the recirculation sump.
Attributes reviewed:
a.) Post Accident Operability Analysis
b.) System Component Evaluation Worksheet
c.) Test Program Considerations

d.) Thermal Aging Analysis
e.) Test Specimen Accuracy Analysis
f.) IE Information Notices, Part 21 Notifications
g.) Material Procurement And Quality Control Environmental Qualification Requirements
h.) Shelf Life Analysis

(3.) DC-1-03-P-VOH-FW-1-LCV-113, Auxiliary Feedwater Pump 1-3 Discharge Header Level Control Switch is located in Area GE, elevation 115'. It is subject to Area GE-GW line break conditions and a harsh radiation environment following a loss of coolant accident when the emergency core cooling system is placed on recirculation. The safety function of this valve is to be capable of 1) remote manual operation for maintaining level in the steam generators, and 2) automatic operation to prevent runout of Auxiliary Feedwater Pump 3. The valve could be used following any event that uses the steam generators as the heat sink for decay heat, including essentially all secondary system high energy line breaks and at least some loss of coolant accidents.
Attributes reviewed:
a.) System Component Evaluation Worksheet
b.) Test Program Considerations
c.) Thermal Aging Analysis
d.) Post Accident Operability Analysis
e.) Margin Analysis
f.) Test Specimen Accuracy Analysis
g.) Material Procurement And Quality Control Environmental Qualification Requirements
h.) Shelf Life Analysis

(4.) DC-2-04-I-S-POS-441, Position indication for Flow Control Valve FCV-95 which is the motor operated isolation valve which controls main steam to the turbine driven auxiliary feedwater pump. The instrument Class IA motor operator has position switch POS- 441 internal to the motor operator which controls the opening and closing of the valve and also provides instrument Class II valve position indication.
Attributes reviewed:
a.) Environmental qualification package for the Position Indication Valve (PIV)
b.) Latest (3) Modifications on DC-2-04-I-S-POS-441
c.) Condition reports associated with the PIV
d.) Condition report with Root Cause or Cause Analysis performed on PIV
e.) Last 3 Preventive Maintenance performed of the PIV
f.) Replacement schedule on PIV and components
g.) Vendor Recommended Maintenance on Valve

(5.) DC-2-04-P-VOM-MS-2-FCV-95, Limit switch for Motor Operated Valve FCV-95, which is the motor operated isolation valve which controls main steam to the turbine driven auxiliary feedwater pump. The limit switch is an intrigal part of the motor operated valve and is located in Area GE, elevation 115'. It is subject to Area GE-GW line break conditions and a harsh radiation environment following a loss of coolant accident when the emergency core cooling system is placed on recirculation. The safety function of this valve is to be capable of opening upon receipt of an auxiliary feedwater safeguards start signal (low-low steam generator level or reactor coolant pump bus undervoltage). Once opened, the valve is not required to be repositioned.

Attributes reviewed:

a.) Environmental qualification package for DC-2-04-P-VOM-MS-2-FCV-95
b.) Latest (3) modifications on the motor operated valve for DC-2-04-P-VOM-MS-2-FCV-95
c.) Condition reports on the flow control motor operated valve
d.) Condition reports with Root Cause or Cause Analysis performed on motor operated valve
e.) Last 3 Preventive Maintenance performed of the motor operated valve
f.) Replacement schedule on motor operated valve and components
g.) Vendor Recommended Maintenance on Valve

(6.) DC-2-08-I-I-TI-305, Temperature Indicator TI-305 is the letdown heat exchanger room pipe break temperature sensor for the Chemical Volume and Control System. This valve receives a signal from the letdown pipe break isolation system temperature sensor TI-305 which closes the valve when a high temperature indicative of a line break in the letdown heat exchanger room (Area K, elevation 85') is sensed. The sensor is subject to a harsh radiation environment and letdown line break conditions.
Attributes reviewed:

a.) System Component Evaluation Worksheet
b.) Test Program Considerations
c.) Thermal Aging Analysis
d.) Post-Accident Operability Analysis
e.) Margin Analysis
f.) Test Specimen Accuracy Analysis
g.) Information Notices, Part 21 Notifications
h.) Material Procurement and Quality Control Environmental Qualification Requirements
i.) Shelf Life Analysis
j.) Maintenance Requirements

Components Located within Primary Containment

(7.) DC-1-10-P-VOM-RHR-1-8702, The limit switch for residual heat removal motor operated valve RHR -1-8702 is an intrigal part of the motor operated valve and is located inside-containment and is subject to harsh environmental conditions from inside-containment accident conditions. The RHR-1-8702 valve is the recirculation to residual heat removal pump suction from Reactor Coolant System Loop 4. The safety function of this valve is to be capable of remote manual operation to align the reactor coolant system to the suction of the residual heat removal pumps to attain cold shutdown conditions under non- loss of coolant accident conditions. Reactor coolant system temperature and pressure interlocks preclude opening these valves until reactor coolant system pressure and temperature are below specified limits.
Attributes reviewed:

a.) System Component Evaluation Worksheet
b.) Test Program Considerations
c.) Thermal Aging Analysis
d.) Post Accident Operability Analysis
e.) Margin Analysis
f.) Test Specimen Accuracy Analysis
g.) IE Information Notices, Part 21 Notifications

h.) Material Procurement And Quality Control Environmental Qualification Requirements
i.) Shelf Life Analysis

(8.) DC-1-10-E-MTR-RHR-1-8702, The motor for Motor Operated Valve 8702 is an intrigal part of the valve and is located inside-containment and is subject to harsh environmental conditions from inside-containment accident conditions. The RHR-1-8702 valve is the recirculation to residual heat removal pump suction from Reactor Coolant System Loop 4. The safety function of this valve is to be capable of remote manual operation to align the reactor coolant system to the suction of the residual heat removal pump to attain cold shutdown conditions under non- loss of coolant accident conditions. Reactor coolant system temperature and pressure interlocks preclude opening these valves until reactor coolant system pressure and temperature are below specified limits

Attributes reviewed:

a.) Environmental Qualification package for the RHR MOV
b.) Latest (3) Modifications on MOV CC-1-10-E-MTR-RHR-1-8702
c.) Last 5 Condition Reports on MOV
d.) Condition Report with Root Cause or Cause Analysis performed on MOV
e.) Last 3 Preventive Maintenance performed of the MOV
f.) Replacement schedule for MOV and components
g.) Vendor Recommended Maintenance on Valve

(9.) DC-2-07-I-SV-SV-276, Solenoid valve SV-276 for pressurizer power-operated relief Valve (PORV) PCV-456 is located inside containment and is subject to the harsh environmental conditions resulting from inside containment accident conditions. The solenoid valve for PCV-456 (SV-276) requires an extended term (1 year) environmental qualification in support of the low temperature overpressure function. Solenoid valve SV-276 is Instrument Class IA, because of the low temperature overpressure function.

Attributes reviewed:

a.) Environmental Qualification package for the POV Solenoid valve
b.) Latest (3) Modifications on DC-2-07-I-SV-SV-276
c.) Condition Reports on Solenoid Valve
d.) Condition Report with Root Cause or Cause Analysis performed on Selonoid
e.) Last 3 Preventive Maintenance performed of the Solenoid Valve
f.) Replacement schedule for Solenoid Valve and components
g.) Vendor Recommended Maintenance on Valve

(10.) DC-2-07-I-T-PT-403A, Rosemount Pressure Transmitter PT-403A for Reactor Coolant Hot Leg Loop 4. Pressure transmitter PT-403 is located in the postaccident sample station area (Area GW, elevation 85') which is a mild radiation area but is subject to Area GE-GW line break conditions. The safety function of this component is to provide input to pressurizer power-operated relief valve operation and residual heat removal suction valve opening permissive circuitry.

Attributes reviewed:

a.) System Component Evaluation Worksheet
b.) Test Program Considerations
c.) Thermal Aging Analysis
d.) Post-Accident Operability Analysis
e.) Margin Analysis

f.) Test Specimen Accuracy Analysis
g.) Information Notices, Part 21 Notifications
h.) Material Procurement and Quality Control Requirements
i.) Shelf Life Analysis
j.) Maintenance Requirements

(11.) DC-1-04-I-T-LT-539, Unit 1, Steam Generator #3, Narrow Range Rosemount Level Transmitter. The steam generator narrow range level transmitter is located inside containment and is subject to harsh environmental conditions resulting from inside-containment accidents. The safety function of this instrument is to provide inputs to the solid state protection system for 1) reactor trip and auxiliary feedwater actuation (including steam generator blowdown and sample line isolation) on low-low steam generator level, and 2) turbine trip and feedwater isolation of high-high steam generator level.
Attributes reviewed:
a.) System Component Evaluation Worksheet
b.) Test Program Considerations
c.) Thermal Aging Analysis
d.) Post-Accident Operability Analysis
e.) Margin Analysis
f.) Test Specimen Accuracy Analysis
g.) Information Notices, Part 21 Notifications
h.) Material Procurement and Quality Control Requirements
i.) Shelf Life Analysis
j.) Maintenance Requirements

Findings

Failure to install conduit to environmentally qualified solenoid valves in a manner to prevent moisture intrusion and accumulation within the solenoid enclosure.			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV [05000275, 05000323] / 2018010-1 Closed	None	71111.21N
Introduction: The inspectors identified a Green finding and associated NCV of 10 CFR Part 50.49, “Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants,” for failure to install conduit to environmentally qualified solenoid valves in a manner to prevent moisture intrusion and accumulation within the solenoid enclosure in accordance with Environmental Qualification file IH06, Revision 25.			
Description: The team identified a Green, NCV of 10 CFR Part 50.49, Environmental Qualification, which states, in part, “(f) Each item of electric equipment important to			

safety must be qualified by one of the following methods: (1) Testing an identical item of equipment under identical conditions or under similar conditions with a supporting analysis to show that the equipment to be qualified is acceptable." Prior to June 18, 2018 the licensee failed to install four solenoids (1-SV-474, 1-SV-455C, 1-SV-276, and 2-SV-276) associated with power-operated relief Valves, as required by the Environment Qualification Binder IH-06, ASCO Catalog NP Solenoid Valves. Specifically, the installed configuration did not match the tested configuration. The conduit connected to the solenoid housing must be oriented such that it prevents moisture intrusion and accumulation within the solenoid enclosure. If the solenoid fails to energize, the power-operated relief valves would not function as required during a feedwater break or low temperature overpressure transient. This would cause a challenge to the pressurizer safety valves to relieve pressure in a feedwater line break accident or exceeding the pressure/temperature limits for a low temperature overpressure event. The licensee failed to correctly evaluate improper installation of the solenoids in 1995 when a walkdown was performed on the power-operated relief valve solenoids. Based on the walkdown observations, engineering concluded that the existing configuration was acceptable to prevent water intrusion into the solenoid valve enclosure. Based on questions asked during the environmental qualification inspection, the licensee re-evaluated the conduit installation, and determined that the configuration did not comply with Equipment Qualification Binder IH-06, ASCO Catalog NP Solenoid Valves.

Corrective Action(s): To gather more information as an input to the operability determination, the licensee performed a containment entry to physically walkdown the affected solenoid valves. The walkdown confirmed that the orientation of the solenoids was not in accordance with Environmental Qualification Binder IH-06. The licensee has generated SAPN 50985639 to document the deficiency in the corrective action program. The licensee has also performed an operability determination in which they found the solenoid valves operable.

Corrective Action Reference(s): SAPN 50985639, DA 50985639, AR A0374492, SAPN 50986204, SAPN 50986202, SAPN 50986203, SAPN 50986200

Performance Assessment:

Performance Deficiency: The licensee failed to install equipment in the as-tested configuration to demonstrate qualification as required by 10 CFR Part 50.49, Environmental Qualification.

Screening: The inspectors determined the performance deficiency was more than minor because was associated with the Design attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective. The objective of the Mitigating Systems cornerstone is to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The performance deficiency adversely affected the cornerstone because the initially installed orientation of the environmentally qualified solenoid valves allowed them to be susceptible to moisture intrusion and therefore affected the availability, reliability, and capability of systems to respond to initiating events.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination

Process for Findings At-Power," dated June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions." The issue screened as having very low safety significance (Green) because it was a design or qualification deficiency that did not represent a loss of operability or functionality.

Cross-cutting Aspect: A cross-cutting aspect was not assigned for this violation because it is not indicative of current plant performance. The only time the licensee specifically evaluated the orientation of conduit to these solenoid valves was in 1995.

Enforcement:

Violation: 10 CFR Part 50.49, Environmental Qualification, states, in part, "(f) Each item of electric equipment important to safety must be qualified by one of the following methods: (1) Testing an identical item of equipment under identical conditions or under similar conditions with a supporting analysis to show that the equipment to be qualified is acceptable."

Contrary to the above, prior to June 18, 2018, the licensee had not installed the conduit to the solenoids in a configuration for which testing of an identical item of equipment under identical conditions or under similar conditions with a supporting analysis to show that the equipment to be qualified was acceptable." Specifically, the licensee failed to install four solenoids (1-SV-474, 1-SV-455C, 1-SV-276, and 2-SV-276) associated with power operated relief valves, as required by the Environment Qualification Binder IH-06, ASCO Catalog NP Solenoid Valves. The installed configuration did not match the tested configuration and would not have maintained equipment qualification against water intrusion. The conduit connected to the solenoid housing must be oriented such that it prevents moisture intrusion and accumulation within the solenoid enclosure. If the solenoid fails to energize, the power operated relief valve would not function as required during a feedwater break or low temperature overpressure transient. This would cause a challenge to the pressurizer safety valves to relieve pressure in a feedwater line break accident or exceeding the pressure/temperature limits for an low temperature overpressure event.

Disposition: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS DEBRIEFS

On June 29, 2018, the inspectors presented the inspection results to Mr. Adam Peck, Senior Director, Acting Station Director, and other members of the licensee staff. The licensee acknowledged the issues presented. On July 25, 2018, a re-exit teleconference exit was held with Mr. Mark Sharp, Manager, Design Engineering and other members of the licensee staff, to clarify a change in the characterization of the identified finding. The inspectors verified no proprietary information was retained or documented in this report.

DOCUMENTS REVIEWED

Calculations

Number	Title	Revision Or Date
9000013911	Evaluate total thermal energy imparted by LOCA, MSLBIC, and HELBOC	0
9000013911-006	Evaluate Total Thermal Energy impacted by LOCA, MSLB-IC and HELB-OC	00
9000013911-006-00	Evaluate Total Thermal Energy Inparted by the LOCA Temperature Profile bounds MSLB IC. EZ001	00
9000013922	EZ-002 Environmental Qualification Requirements	12
9000019779-0-1	RSG MSLBOC GE/GW Compartment Temperature profile	March 3, 2011
9000019779-0-1	RSG MSLCOC – GE/GW compartment temperature profiles	0
9000042398	ABVS, FHBVS, CRVS, TSC Ventilation System	April 10, 2018
J-152	IH-32 panel heat rise for energized panel heater	0
STA-232	Thermal response of Rosemount/Barton EQ components in the GE/GW area	0

Condition Reports (SAPN-)

50476158	50810068	50985362*	50986200*	50986342
50602780	50812831	50985638*	50986203*	A0331690
50666628	50920430	50985639*	50986204*	A0374492
50671218	50985298*			

Condition Reports Generated During the Inspection (SAPN-)

50984877	DA 50985467	DN 50984724	DN 50984944	DN 50986202
50985638	DA 50985639	DN 50984803	DN 50985298	DN 50986203
50986342	DA 50986638	DN 50984877	DN 50985362	DN 50986204
DA 50984918	DN 50984478	DN 50984904	DN 50986200	DN 50986476
DA 50985332	DN 50984699			

Design Basis Documents

Number	Title	Revision
DCM No. T-12	Units 1 and 2 Design Criteria Memorandum T-12, Pipe Break (HELB/MELB), Flooding and Missiles	23A
9000008191	EQ File IH-32 Rosemount Transmitters	35
9000008281	EQ File IH36 Conax RTDs and Thermocouples	12

Drawings

Number	Title	Revision or Date
15-477-4035-3	Limitorque Wiring Diagram	December 29, 1971
102004	Turbine Steam Supply System Sheet 3	109
102010, sht. 3	Residual Heat Removal System	52
102036	Multivariable Instrument Systems Sheet 40	97
102032, sht. 32b	Flow Instrument P&ID, Residual Heat Removal system	118
106710, Sht.2	Operating Valve Identification Diagram, Residual Heat Removal system	42
106733	Steam Generator Level P&ID Sheet 11	17
108004, Sht. 3	Turbine Steam Supply System	86
108004, Sht. 5	Turbine Steam Supply System	10
108032, Sht. 6	Flow Instrument Systems	82
108036, Sht. 7F	Multivariable Instrument Systems	76
437592, sht. 1	Electrical Schematic Diagram, Residual Heat Removal Flow Control Valves	38
437592 Sht. 1	Electrical Schematic Diagram Residual Heat Removal Flow Control Valves	38
441306, Sht. 1	Schematic Diagram, Reactor Coolant Motor Operated Valves	17
441309 Sht. 1	Electrical Schematic Diagram Risidual Heat Removal Pumps	24
455097, Sht. 1	Schematic Diagram, Auxiliary Feed water Pump Turbine Control	16

Drawings

Number	Title	Revision or Date
455098, Sht. 1	Diagram of Connection, Auxiliary Feed water Pump Turbine motor operated valve	11
500001	Piping and Mechanical Area Location Plan	11
501712	Electrical Diagram of Connections, Below Elev. 117' – 0", Area "G"	29
501712	Electrical – Diagram of Connections Below Elev.117'-0", Area "G"	29
515939 Sht. 1	HELB Compartment Pressurization Study, Plan At Elev. 85'-0" Turbine Building	4
515943	HELB Compartment Pressurization Study, Plan at Elev. 60'-0" Auxiliary and Containment Buildings	2
515944	Fire Protection HELB Compartment Pressurization Study, Plat at Elevatoin 73:-0" Auxiliary and Containment Buildings	3
515945	Mechanical HELB Comparment Pressurization Study, Plan at Elev. 85'-0" Auxiliary and Containment Buildings	4
515949	HELB Compartment Pressurization Study Equipment Location, Section A-A-Auxiliary Building	2

Environmental Qualification Design Inputs

Number	Title	Revision or Date
9000007087-018-00	EQ File EH04- Rockbestors Firewall Cables	18
9000007764-025-00	EQ File IH06 ASCO Catalog NP Solenoid Valves	25
9000007805-011-00	EQ File IH-07 Limitorque Valve Actuators	11
AQS-21678/TR	ASCO Qualification Test Report	B
DCM No. T-20	Design Criteria Memorandum T-20 Environmental Qualification Appendix A	12
EQ File EH10	Raychem Stilan Cable	11

Environmental Qualification Design Inputs

Number	Title	Revision or Date
EQ File EH-11	Raychem Cable Splice Assemblies, Termination Kits & Jacket Repair Tape	29
EQ File EH-14	Westinghouse Centrifugal Charging And Residual Heat Removal Pump Motors - 9000007358 015 00	15
EQ FILE IH06 Reference #7	Excerpts From Commonwealth Edison System Materials Analysis Department Report M3305-92, June 1, 1991"Determination Of Heat Rise And Activation Energy Valves Of Coils And Elastomers For Asco NP Series Solenoid Valves".	June 9, 1992
EQ FILE IH-06 Reference #6	Asco Letter To Catalog NP-1 Valve Users, Dated 10/27/89 "U.S. NRC Information Notice # 89-66	October 27, 1989
EQ File IH-07	Limitorque Valve Actuators - 9000007805-011-00	11
REQ FILE IH-07-Report #B0058	“Limitorque Valve Actuator Qualification For Nuclear Power Station Service”", REPORT # B0058, Tests Conducted Per IEEE 382-1972,323-1974,344-1975, DATED 1/11/80	January 11, 1980

Procedures

Number	Title	Revision
CF3.ID3	Environmental Qualification (EQ) Procedure	9A
CF5.ID2	Control of Material in Storage	14
DCM No. S-67	Design Criteria Memorandum S67, 125V and 250V DC System	17
DCM No. T-23	Design Criteria Memorandum T-23 (DCM T-23) Miscellaneous Electrical Devices	5A
MA1.DC54	Conduct of Maintenance	15
MP E-53.10A	Preventive Maintenance of Limitorque Motor Operators	43
MP E-53.10S	Limitorque Swap-out and Switch Settings	16
MP E-53.10V1	MOV Diagnostic Testing	14
MP E-53.10V1	MOV Diagnostic Testing	19

Procedures

Number	Title	Revision
OP J-9:I	125/250V DC System – Placing in-Service	17
OP J-9:IV	125/250V DC System – Performing a Battery Equalizing	10A
STP I-1C	Routine Weekly Checks Required by Licenses	95
STP I-36-PORVEPT	PORV PCV -445C, PCV-456, PVC-474 Actuation Logic	6
STP M-105	Test of BU N2 Accumulator for PCV-455C, Pressurizer Power Operated Valve	29
STP M-106	Test of BU N2 Accumulator for PCV-456, Pressurizer Power Operated Valve	30
STP M-11B	Station Battery Condition Monitoring	34
STP V-2D3	Exercising and Position Verification of Valve 8701 and 8702	8
STP V-2T1	Pressurizer Power-Operated Valves	13
STP V-2U5B	Exercising AFW Steam Supply Valves FCV-95 and FCV-152	4B
STP V-3J2	Exercising Pressurizer Power-Operated Relief Valves PCV-455C, 456 and 474	13
STP V-3M5	Exercising Valves RHR-8701 and RHR-8702 Reactor Coolant Loop 4 to RHR Pump Suction	15
STP V-3R5	Exercising Steam Supply to Auxiliary Feedwater Pump Turbine Stop Valve, FCV-95	21

Vendor Technical Document

Number	Title	Revision
DC-663219-629	Limitorque Type SMB/SB/SBD/HBC Valve Actuator Maintenance Manual	36

Work Orders

C0072987	R0311652	64033345	64093175	64134928
C0187014	60005323	64033852	64101909	64140463
C0189745	60046014	64033961	64103626	64150960

R0018953	60073643	64043362	64116716	64155680
R0071536	60096938	64045821	64127369	64169246
R0287615	60100785	64047485	64132725	64181947
R0289136	64027077	64091368	64134218	

Miscellaneous

Number	Title	Revision Or Date
01-0170-1097	EDS Nuclear Inc., Radiation Shielding Review	3
061808	NUCLEAR CABLE SPLICE I&C & ~ TERMINATION	31
061808	Nuclear cable splice and termination details	31
663217-103	Instructions For Life Line D Vertical Induction Motor With ODP Enclosure	4
D8300040	Qualification report for pressure transmitters Rosemount model 1153 Series D	July 13, 2000
D8300131	Type test report for pressure transmitters Rosemount models 1153 series B and D output code “R”	B
D8400102	Qualification report for pressure transmitter model 1154	F
D8400323	Test report for submersion testing of model 1153 and 1154 transmitters	A
D8400336	Test report for submersion testing of model 353C conduit seal	A
D8700096	Qualification report for Rosemount model 1154 series H pressure transmitter	I
D8800077	Qualification report for Rosemount conduit elbow adapter	A
D9100062	Qualification report R output code electronics with N53304 operational amplifier	A
DIT 1000025198-008	Design Input Transmittal for EQ File IH-06 Revision	0
ECC-0001	Critical Components List (ECC-0001), SMB-1, Reference Drawings 01-408-0013-4, 01-408-0073-4, and 01-408-0074-4	7
PO # 3500911771	Refurbish, Testing and Shipping of Hydramotors	3

Miscellaneous

Number	Title	Revision Or Date
	Safety Evaluation Report	October 16, 1974
Supplement 11	Safety Evaluation Report	
Supplement 13	Safety Evaluation Report	
Supplement 14	Safety Evaluation Report	
Supplement 15	Safety Evaluation Report	
Supplement 18	Safety Evaluation Report	
Supplement 20	Safety Evaluation Report	
Supplement 33	Safety Evaluation Report	May 1986
Supplement 7	Safety Evaluation Report	May 26, 1978
Supplement 9	Safety Evaluation Report	

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ADAMS ACCESSION NUMBER: ML18234A112

☒ SUNSI Review By: RAK | ADAMS: ☒ Yes ☐ No | ☐ Non-Publicly Available ☒ Publicly Available | ☒ Non-Sensitive ☐ Sensitive | Keyword: NRC-002

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