

UNITED STATES
NUCLEAR REGULATORY COMMISSION
DOCKET NO. 50-325
LICENSE NO. DPR-71

CAROLINA POWER & LIGHT COMPANY
RALEIGH, NORTH CAROLINA

LICENSING SUPPORT INFORMATION
FOR
PROPOSED CHANGES TO TECHNICAL SPECIFICATION
PRESSURE SWITCH TO ANALOG REPLACEMENT

BRUNSWICK STEAM ELECTRIC PLANT
UNIT NO. 1

POOR ORIGINAL

OCTOBER 12, 1979

144 109

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PRESSURE SWITCH TO ANALOG REPLACEMENT

BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1

PREPARED BY:

UNITED ENGINEERS & CONSTRUCTORS INC.

PHILADELPHIA, PA.

OCTOBER 12, 1979

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1. BACKGROUND

1.1 For each device (a) being replaced, this modification consists of removing one existing device and replacing it with one or two channels (b) to perform the same function or functions. Replacing certain devices with two channels (See Section II for tabulation and Section I, 5.3 for discussion) provides additional redundancy and system separation - but does not change the logic or protective functions of the systems.

(a) Device - pressure or differential pressure switch

(b) Channel - a pressure or differential pressure transmitter and one or more trip units

1.2 This document references, and the modifications meet, the requirements outlined in General Electric Licensing Topical Report NEDO 21617-A as applicable. (NEDO 21617-A was accepted for reference in license applications by NRC to G.E. letter dated June 27, 1978.) This document also covers the following areas:

1.2.1 Differences and justifications for differences between this specific plant system and the systems covered by NEDO 21617-A.

1.2.2 Interface information specific to this installation.

2. SYSTEM DESIGN

The system design parameters are essentially the same as the NEDO report with the following exceptions:

2.1 Power Source for the RPS Channels A1, B1, A2 and B2

The change consists of obtaining power from the 125 volts D-C batteries similar to the ECCS systems. The change from 115 volt A-C RPS distribution power to 125 volt D-C battery power was based on the negative effect that an A.C. voltage decay would have on the RPS trip units in the event of a BOP power loss and the subsequent transfer to the diesel generators. Power source availability is assured through power supply redundancy for both the ECCS and RPS systems, (see Figure 5-1 for redundant power supply layout for ECCS and RPS systems).

2.2 Effects of Addition of Trip Calibration Cabinets on DC Load Study

2.2.1 For Unit No. 1 the Trip Calibration Cabinets have been connected to Distribution Panels 3A and 11A which are fed from Battery 1A-1 and to Distribution Panels 3B and 11B which are fed from Battery 1B-2. Review of the expected loads of the Trip Calibration Cabinets by calculation and by observation of ammeters during functional test indicates the following loads for the equipment:

- 2.2.1.1 ECCS cabinet power supply - 6 amps
- 2.2.1.2 ECCS cabinet standby power supply - 2 amps
- 2.2.1.3 RPS cabinet power supply - 4 amps
- 2.2.1.4 RPS cabinet standby power supply - 2 amps

2.2.2 As there are four (4) power supplies on a battery, the total load would be approximately 14 amps per hour or 112 amp-hours over an eight hour time period. Addition of this load to the loads calculated in the D.C. Load Study of May 9, 1975 causes the following changes:

- 2.2.2.1 Time to Discharge to 1.75 volt/cell for Normal Operation for Battery 1A-1 is reduced from 38 hours to 27 hours.
- 2.2.2.2 Time to Discharge to 1.75 volt/cell for Normal Operation for Battery 1B-2 is reduced from 24 hours to 19 hours.
- 2.2.2.3 Time to Discharge to 1.75 volt/cell for Normal Operation plus UPS and 1A, 1B Lighting Inverter is reduced from 5.5 hours to approximately 5 hours.

2. SYSTEM DESIGN (cont'd)

2.2 Effects of Addition of Trip Calibration Cabinets on DC Load Study (cont'd)

- 2.2.2.4 Design Basis Accident (DBA) with no DC Failures would require a total of 809 amp-hours on Battery 1A-1 and 687.64 amp-hours on Battery 1B-2. This is below the 960 amp-hours (80% of 1200 amp-hours) rated end of life capacity for batteries.
- 2.2.2.5 DBA with 1A Battery failure would require a total of 856.35 amp-hours on Battery 1B-2. This is below the 960 amp-hours rated end of life capacity for the battery.
- 2.2.2.6 DBA with 1B Battery failure would require a total of 1011.92 amp-hours on Battery 1A-1. This is above the 960 amp-hours rated end of life for battery; however, the 1011.92 amp-hours will be reduced to within rating if non-essential loads (for example: Reactor Building Emergency Lighting) are disconnected.

NOTE: The Reactor Building Emergency Lighting (DC) was considered in the DC Load Study as a constant load during the eight hours that the supply to the battery charger would be considered out of service. A recent review has determined the following:

- a. The emergency lighting (DC) is controlled by a contactor which is energized by the Reactor Building Standby Lighting system (AC) such that if the Standby Lighting system is in operation the emergency lighting (DC) will be de-energized.
- b. The Standby Lighting system (AC) is fed from the Div. II emergency bus which is fed from either the off site power system or a diesel generator.
- c. It is highly unlikely that a Div. II battery would be out of service along with the loss of a Div. II emergency bus.

Therefore, under the conditions hypothesized, the Reactor Building Emergency Lighting (DC) would not be required and is automatically disconnected without creating an unsafe condition.

- 2.2.2.7 DBA with 2A Battery failure would require a total of 814.90 amp-hours on Battery 1A-1 and 687.64 amp-hours on Battery 1B-2. This is below the 960 amp-hours rated end of life capacity for the batteries.
- 2.2.2.8 DBA with 2B Battery failure would require a total of 809 amp-hours on Battery 1A-1 and 789.86 amp-hours on Battery 1B-2. This is below the 960 amp-hours rated end of life capacity for the batteries.

2. SYSTEM DESIGN (cont'd)

2.2 Effects of Addition of Trip Calibration Cabinets on DC Load Study (cont'd)

2.2.3 The information in Section 3.2.2 was determined on the basis of a D.C. Load Study performed on the Unit No. 2 batteries. Since the loads on the Unit No. 1 batteries are similar to the loads on the Unit No. 2 batteries, the study is also valid for the Unit No. 1 batteries.

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3. SYSTEM COMPONENTS

The system components are the same as outlined in NEDO 21617-A report except for the power supplies and transmitters.

- 3.1 This exception consists of a redundant power supply system using two Lambda LXS-EE-24R regulated power supplies with overvoltage protection and diode isolation instead of an Elma ferroresonant power supply. The Lambda redundant power supply system was selected to assure very high availability and good output voltage stability against input voltage, input frequency, load, and ambient temperature variations.

3.1.1 Subjective comparisons of the failure modes of the two power supply systems - redundant series regulated with overvoltage protection versus ferroresonant (Lambda versus Elma) - indicate that the "Conclusions of System Availability Analysis" (NEDO 21617-A, paragraph 3.4.4) are applicable when the redundant Lambda power supply system is used.

3.1.2 The Lambda overvoltage protectors are specified to operate in a voltage range of 27.3 ± 0.8 volts. When actuated the individual Lambda power supply overvoltage protector will short circuit its current limited power supply output and drive and hold the output voltage to near zero initiating an alarm.

Note: The maximum specified operating voltage of the overvoltage protector, 28.1 volts, exceeds the maximum input voltage of the trip units (28 volts) and the maximum continuous voltage of the trip relays (27 volts). The individual power supply isolating diode forward voltage drop (approximately 0.6 volts) reduces the maximum power supply system bus voltage (after the isolating diodes) to an acceptable value.

3.1.3 Redundant Lambda power supplies, each with a MTBF (mean time between failures) rate of 100,000 hours; annunciated failures; and early replacement of failed supplies with spare supplies provide very high power supply system availability.

3.1.4 Periodic tests of the power supplies can be conducted to detect non-annunciated failures and further improve power system availability. Suggested test and test intervals are listed:

<u>TEST</u>	<u>TEST INTERVAL</u>
Power Supply Output Voltage:	
Before Diode	M (once per 31 days)
After Diode	M (once per 31 days)
Overvoltage Protector	R (once per 18 months)

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3. SYSTEM COMPONENTS (cont'd)

3.1.5 The redundant Lambda power supply system discussed above is to be compared to the Elma power supply referenced in NEDO 21617-A, paragraphs 1.3.5, 2.3.1.1, and 3.1.1.

3.2 Transmitters

This installation utilizes Rosemount Model 1152 transmitters instead of the Rosemount Model 1151 transmitters referenced in NEDO 21617-A.

3.2.1 The Model 1152 has been qualified and exceeds the requirements for this installation as noted in Section I, 4 Equipment Qualifications.

3.2.2 Rosemount transmitter Models 1151 and 1152 response times are the same. This makes the Response Time conclusions (NEDO 21617-A, paragraph 3.3.2) applicable to this installation.

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4. EQUIPMENT QUALIFICATIONS

4.1 Qualification Summary

All Class 1E equipment was specified to meet, and does meet or exceed, applicable environmental service conditions. Environmental qualification documentation is on file and is available at the plant.

An "Environmental Interface Comparison Chart" (Figure 4-1 this section) compares the NEDO 21617-A equipment maximum environments to the normal and accident environments for this installation.

4.2 Service Environment

The environmental service conditions were defined in Design Report No. 12 and have been summarized in the "Service Environment Chart - Normal and Accident Conditions - Units No. 1 and No. 2" FSAR FIGURE NO. M7.9-1. A copy of the chart is included in this section of the report.

The environmental parameters applied to the pressure switch to analog replacement safety system transmitters are for "Reactor Building - Other" and "Turbine Building" as applicable. "Reactor Building, -17' Level" parameters are applicable to two non-safety transmitters. The environmental parameters applied to the trip calibration system components; trip units, trip relays, inverters, power supplies and cabinets are for the "Control Building, Control Room".

4.3 Qualification Documentation

Environmental qualification documentation is available at the plant for all equipment except inverters and trip relays which are covered by NEDO 21617-A. (Trip unit documentation supplements coverage by NEDO 21617-A.)

4.3.1 Trip Unit Documentation List

<u>F.P. NO.</u> <u>(BPO/252-55)</u>	<u>REPORT NO.</u>	<u>DESCRIPTION</u>
9527-70271 (2 volumes)	127531	Qualification test report for trip/ calibration system - Rosemount Model 510DU
9527-70274	6453C	Qualification test procedure for trip/calibration system - Rosemount Model 510DU
9527-70275	12777D	Qualified life test report for trip/ calibration system - Rosemount Model 510DU

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4.3.1 Trip Unit Documentation List (cont'd)

<u>F.P. NO.</u> <u>(BPO/252-55)</u>	<u>REPORT NO.</u>	<u>DESCRIPTION</u>
9527-70295	3768A	Qualification test summary for the trip/calibration system - Rosemount Model 510DU
9527-70296	27723	Qualified life test procedure for the trip/calibration system - Rosemount Model 510DU
9527-70254	510DUA010	Product specification for the trip/calibration system - Rosemount Model 510DU

4.3.2 Transmitter Documentation List

<u>F.P. NO.</u> <u>(BPO/252-51)</u>	<u>REPORT NO.</u>	<u>DESCRIPTION</u>
9527-70298	67710A	Environmental qualification test report for 1151 and 1152 pressure transmitters
9527-70300	117415	Qualification tests summary for 1152 pressure transmitters
9527-70301	127516	Seismic simulation test report for 1151 and 1152 pressure transmitters
9527-70299	10763	Radiation qualification test report for 1152 pressure transmitters
9527-LL-7044 Sheet 174 (Seismic Analyzed and Approved)	UE&C Internal Memo: M. M. Tahara to B. J. Huselton Nov. 17, 1978	New Local Transmitter Mountings - Seismic Evaluation
	UE&C Internal Memo: T. C. Chang to E. R. Forman (Seismic Analyzed and Approved)	New Transmitters Mounted on Existing G.E. Design Racks

4.3.3 Power Supply Documentation List

<u>F.P. NO.</u>	<u>REPORT NO.</u>	<u>DESCRIPTION</u>
9527-70303	DTB04R75 dated 22 March 1975	Dayton T. Brown Report tested per MIL-STD-810B "Environmental Test Methods" (by similarity to tested equipment) (Lambda LXS-EE-24R is fungus inert Model LXS-EE-24)
N.A.	N.A.	Tested to MIL-I-6181D 25 Nov. 1959 "Interference Control Requirements, Aircraft Equipment"

4.3.4 Trip Calibration Cabinets (Includes Inverters, Power Supplies Trip Units, Trip Relays and Cabinets)

<u>F.P. NO.</u> (BPO/252-56)	<u>REPORT NO.</u>	<u>DESCRIPTION</u>
9527-70292	14660 dated May 7, 1979	Seismic Vibration Testing of One RPS Trip Calibration Cabinet
9527-70293	14660-1 dated May 7, 1979	Seismic Vibration Testing of One RPS Trip Calibration Cabinet

4.4 Electromagnetic Interference (EMI)

All system components are the same as referenced in NEDO 21617-A (equivalent transmitters) except for the 24 volt D-C power supplies.

- 4.4.1 The susceptibility of this installation to EMI effects is evaluated to be equal to or less than the susceptibility of the NEDO 21617-A reference system.
- 4.4.2 The Lambda Model LXS-EE-24R power supply meets the requirements of MIL-I-6181D, 25 Nov. 1959, "Interference Control Requirements, Aircraft Equipment".
- 4.4.3 The NEDO 21617-A instrumentation susceptibility tests were based on worst-case transient and radio frequency tests in and around nuclear control rooms (see NEDO paragraph 4.4) for 24 volt D-C power supplies located in the reactor building (125 volt A-C lines exposed for EMI pickup), and for interpanel 24 volt D.C. buses.
- 4.4.4 This installation utilizes inverters and 24 volt D-C power supplies located in the same cabinets and in the control room environment for the ECCS and RPS systems - reducing the exposure to EMI pickup in the A-C power lines. The 24 volt D-C buses are not interpanel - again reducing the exposure to EMI pickup.

4.4.5 The 24 volt D.C. power supply pass-through of EMI is judged to be equivalent for the Lambda series regulated power supply and the Elma ferroresonant power supply referenced in NEDO 21617-A.

ENVIRONMENTAL INTERFACE COMPARISON CHART

DEVICE	QUALIFICATION LOCATION	TEMPERATURE (°F)			HUMIDITY			PRESSURE			RADIATION (AUC)			SEISMIC (g)			EMC	REMARKS
		G.E. SPEC.	TEST	ACCIDENT	G.E. SPEC.	TEST	ACCIDENT	G.E. SPEC.	TEST	ACCIDENT	G.E. SPEC.	TEST	ACCIDENT	G.E. SPEC.	TEST	ACCIDENT		
TRANSMITTERS	EL. 20'-0" & 50'-0" REACTOR BUILDING	212	303 to 104	40 to 104	STREAM 90% to 100%	20% to 90%	15 PSIG to 60 PSIG	14.66 PSIG to 14.70 PSIG	14.66 PSIG to 14.70 PSIG	14.70 PSIG	1.7 x 10 ⁵	5 x 10 ⁶	3 x 10 ³	3.0	3.0	1 x 10 ⁵	SEE SECTION 4.4	
TRANSMITTERS	EL. -17'-0" REACTOR BUILDING	212	303 to 104	40 to 104	STREAM 90% to 100%	20% to 90%	15 PSIG to 60 PSIG	14.66 PSIG to 14.70 PSIG	14.66 PSIG to 14.70 PSIG	14.70 PSIG	1.7 x 10 ⁵	5 x 10 ⁶	3 x 10 ³	3.0	3.0	1 x 10 ⁷	SEE SECTION 4.4	These are SPEC 4.4 RCIC drain pot level which are not safety related
TRANSMITTERS	TURBINE BUILDING	212	303 to 104	40 to 104	STREAM 90% to 100%	20% to 90%	15 PSIG to 60 PSIG	14.70 PSIG	14.70 PSIG	14.70 PSIG	1.7 x 10 ⁵	5 x 10 ⁶	2 x 10 ² to 3 x 10 ⁴	3.0	3.0	1.3 x 10 ²	SEE SECTION 4.4	
TRIP UNITS	EL. 49'-0" CONTROL BUILDING (TRIP CALIBRATION CABINET)	148	171 to 120	40 to 120	100% to 90%	30% to 60%	7 IN. W.C. (14.95) PSIG	14.70 PSIG to 14.74 PSIG	14.70 PSIG to 14.74 PSIG	14.74 PSIG	350	N/A	200	10	11	200	SEE SECTION 4.4	
POWER SUPPLY	EL. 5'-0" C-AREA BUILDING (TRIP CALIBRATION CABINET)	120	132 to 120	40 to 120	90% to 100%	30% to 60%	1 IN. W.C. (14.74) PSIG	14.70 PSIG to 14.74 PSIG	14.70 PSIG to 14.74 PSIG	14.74 PSIG	350	N/A	200	5	5.5	200	SEE SECTION 4.4	
INVERTER	EL. 49'-0" CONTROL BUILDING (TRIP CALIBRATION CABINET)	120	135 to 120	40 to 120	90% to 100%	30% to 60%	1 IN. W.C. (14.74) PSIG	14.70 PSIG to 14.74 PSIG	14.70 PSIG to 14.74 PSIG	14.74 PSIG	350	N/A	200	5	5.5	200	SEE SECTION 4.4	
TRIP RELAY	EL. 49'-0" CONTROL BUILDING (TRIP CALIBRATION CABINET)	120	120 to 120	40 to 120	90% to 100%	30% to 60%	1 IN. W.C. (14.74) PSIG	14.70 PSIG to 14.74 PSIG	14.70 PSIG to 14.74 PSIG	14.74 PSIG	350	N/A	200	6.7	6.7	200	SEE SECTION 4.4	

* MAXIMUM DESIGN BASE EVENT (DBE) INPUT ACCELERATION TO CABINET OR RACK ON WHICH THE DEVICE IS MOUNTED

CARLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT
UNITS NOS. 1 and 2
ENVIRONMENTAL INTERFACE
COMPARISON CHART
FIGURE 4-1

144-127

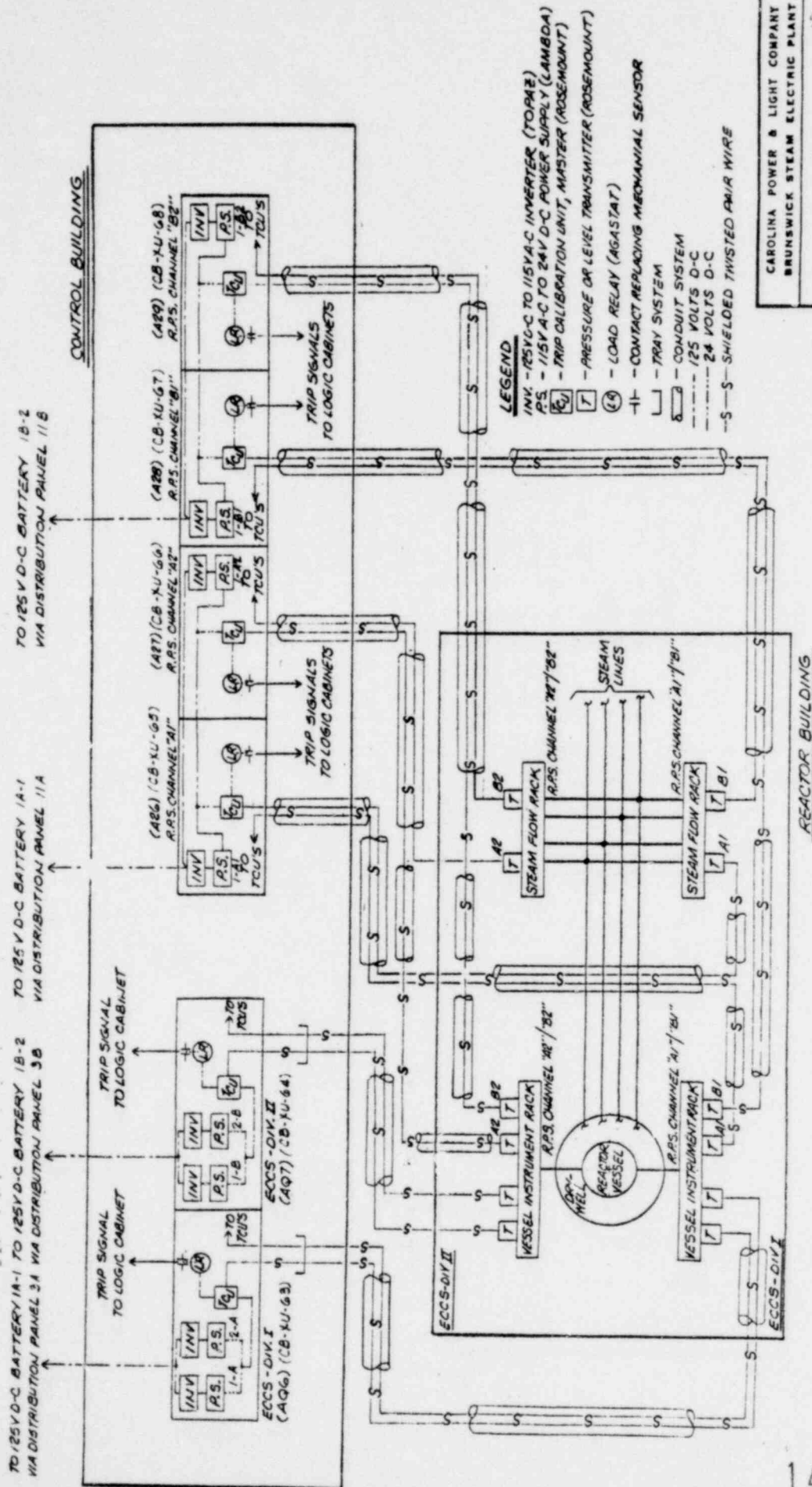
5. INTERCONNECTIONS

5.1 Refer to chart shown in Section II for a complete list of pressure and level switches which were replaced with analog transmitter devices and to Figure 5-1 for conduit and cable routing.

5.2 The original plant separation criteria has been followed in routing of new cables and the location of new equipment. All transmitters, with the exception of ten (10) local transmitters which are mounted on new steel supports, are mounted on existing instrument racks in the same approximate location as the devices which they replaced. (See Section I, 4 for seismic qualification of supports.)

5.3 Separation of ECCS and RPS Circuits

Eight (8) pressure switches (B21-LS-N017A, B, C, D; B21-LS-N024A, B; and B21-LS-N025A, B) were utilized for both ECCS and RPS circuitry. These pressure switches have been replaced by sixteen (16) transmitters. Eight (8) of the transmitters (B21-LT-N017A-2, B-2, C-2, D-2; B21-LT-N024A-2, B-2; and B21-LT-N025A-2, B-2) are utilized in the ECCS system logic and eight (8) of the transmitters (B21-LT-N017A-1, B-1, C-1, D-1; B21-LT-N024A-1, B-1; and B21-LT-N025A-1, B-1) are utilized in the RPS system logic. This increases the separation between systems and assures that a failure of the above transmitters or its respective trip calibration unit in the ECCS system does not affect the RPS system and vice-versa.



CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
PRESSURE SWITCH TO ANALOG CHANGEOUT
CONDUIT/TRAY & CABLE ROUTING
INTERCONNECTIONS
TYPICAL FOR "ECCS" & "RPS" SYSTEMS

ATTACHMENT "A" FIGURE 5-1

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6. SURVEILLANCE TEST INTERVALS

6.1 This modification requires changes to the surveillance requirements as noted below and in the revised Technical Specification pages in Section VI.

6.2 The recommended surveillance intervals listed, either simultaneous or staggered, are based on the following: (NEDO 21617-A paragraphs are referenced)

6.2.1 NEDO 3.4.2, "Mean-Time-Between-Failures (MTBF) Analysis", the MTBF conservatism indicated in paragraph 3.4.2, and on the low trip unit stress level in the control room environment of this installation.

6.2.2 NEDO 3.4.4, "Conclusion of System Availability Analysis".

6.3 Recommended surveillance intervals for all instrument channels which are being changed - and are also covered by Technical Specifications:

	<u>TRANSMITTER</u>	<u>TRIP UNIT</u>
Channel Check	N. A. *	D
Channel Functional Test	N. A. *	M
Channel Calibration	R **	M

N. A. - not applicable

R - at least once per 18 months (550 days)

D - at least once per 24 hours

M - at least once per 31 days

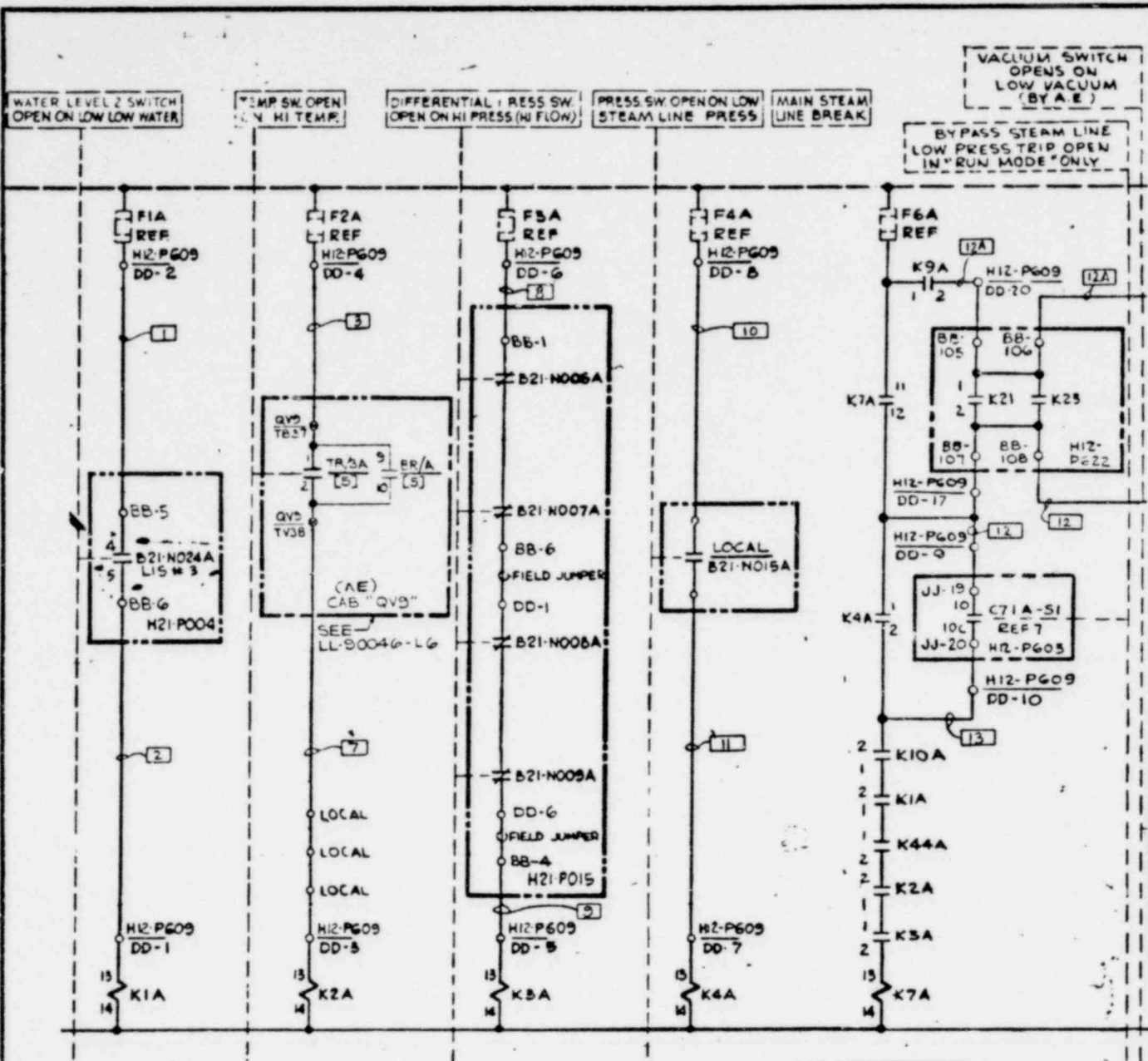
* the transmitter channel is satisfied by the trip unit channel check. A separate transmitter check is not required.

** transmitters are exempted from the monthly channel calibration.

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7. CONTROL WIRING DIAGRAMS - TYPICAL (BEFORE/AFTER)

Refer to Figures 7-1, 7-2 and 7-3 which show changes introduced to the logic input circuit for specific loops B21-N006A, 7A, 8A and 9A.



CAROLINA-22
AS BUILT
DATED 2-7-78

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

GE DRAWING
REVISED
TO
INCORPORATE UE&C
WIRE NUMBERS

UNITED ENGINEERS & CONSTRUCTORS INC.

EP DWG NO. 9527-55109

1. All interconnecting wires to be provided with "UE&C" except as noted.
2. All wire numbers are shown within this symbol.
3. CABLED ON E-9527-55109 #17 UNLESS NOTED.

T-1246
F.P. 9527-55109

REVISIONS						PRINTS TO					
12	12-1-77 T.K. PERROS	CHG PER ECN NE 81993 A- FDDR-KB2-KB B- FDDR-KB2-KB REV 1 C- RECORD CHG	11	11-1-76 V. SALMASSIAN	CHG PER ECN NE 69124 FDDR-KB2-HS RUL RUL 4-21-76	6	6-15-77 R.J.L.	5	5-1-77 R.J.L.	FDI-RMDE, F	6/27/74
7 MAY 77						7-7-77		791E401RM		6 5	
SAN JOSE, CALIF.											

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
CONTROL WIRING DIAGRAM
BEFORE CHANGES
FOR
LOOPS B21-N006A, 7A, 8A AND 9A
TYPICAL

ATTACHMENT "A"

FIGURE 7-1

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

TRIP CALIBRATION CABINET "A26"
RPS CHANNEL A1 CB-XU-65
CONTROL WIRING DIAGRAM
UNIT 1
UNITED ENGINEERS & CONSTRUCTORS INC.

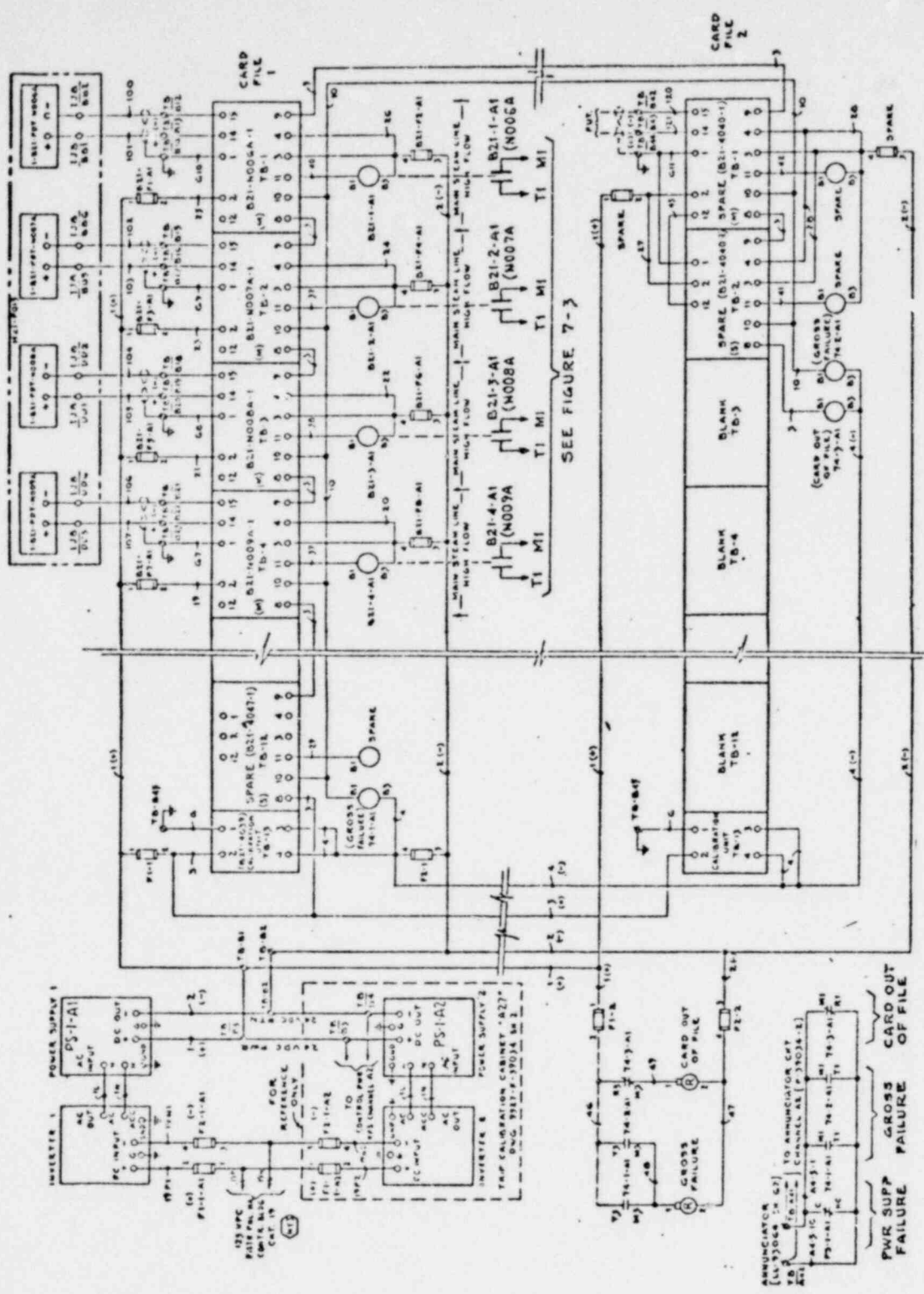
SCALE: 2" = 1' 9527-F-39033 SH 2

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
TRIP CALIBRATION CABINET
RPS CHANNEL "A1" CB-XU-65
PARTIAL CONTROL WIRING DIAGRAM
TYPICAL

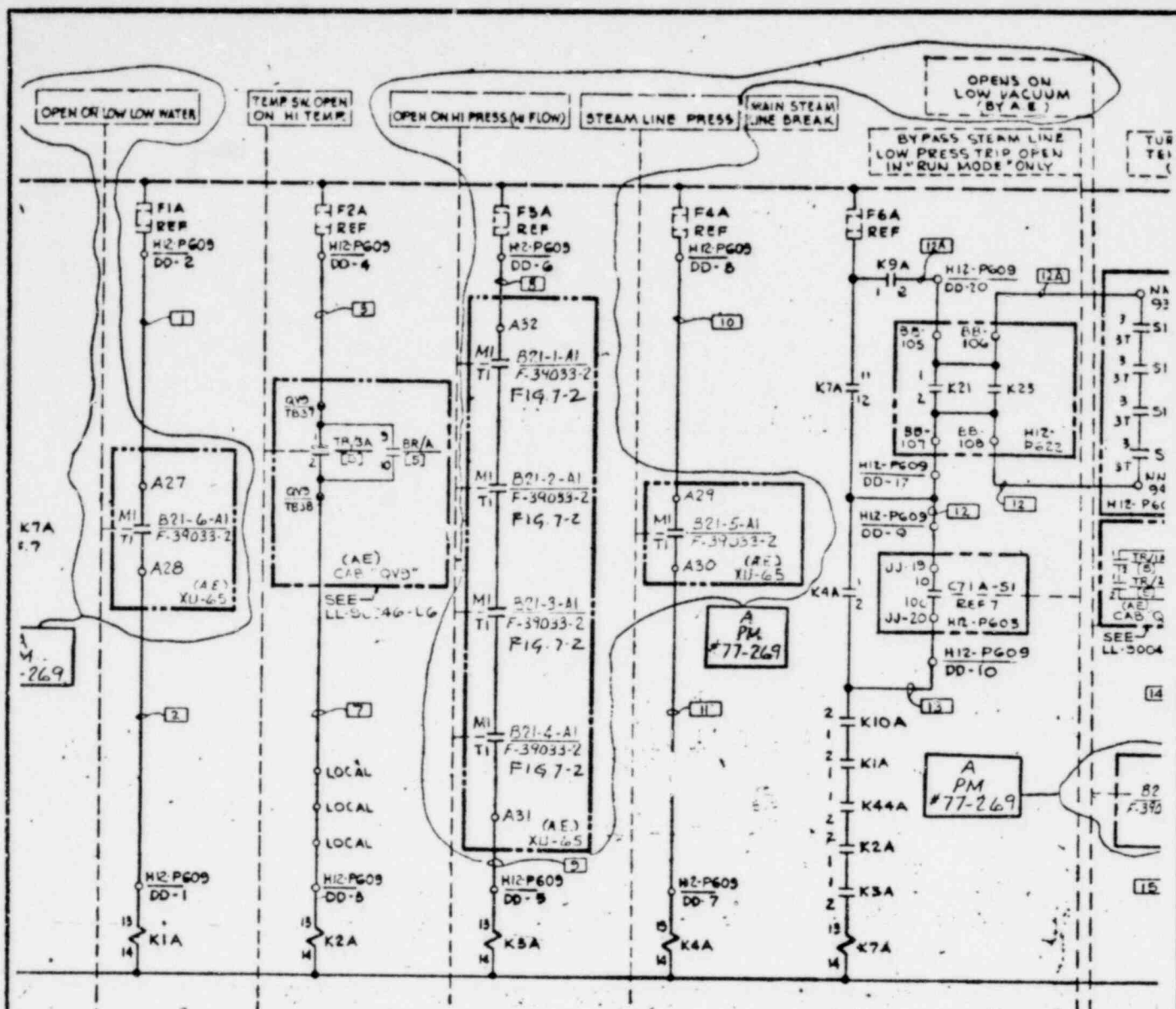
ATTACHMENT "A"

FIGURE 7-2



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F.P. 9527-55109

12	11	10	9	8	7	6	5	4	3	2	1
CHG PERECN NE B-943 a-FOOR-KB1-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG	CHG PERECN IE 6-9-74 a-FOOR-KB2-KB b-FOOR-KB2-KB c-RECORD CHG

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CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT	
GE DRAWING REVISED TO INCORPORATE UE&C WIRE NUMBERS	
UNITED ENGINEERS & CONSULTANTS INC.	
DRAWING NO. 9527-55109	
DATE: 12-1-73	
BY: [Signature]	
CHECKED: [Signature]	
APPROVED: [Signature]	
NOTES: 1. All interconnecting wires to be profiled with "A" except as noted. 2. All U&C wire numbers are shown within this symbol. 3. CABLED ON F-9000 (U) #1 UNLESS NOTED.	

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
CONTROL WIRING DIAGRAM
AFTER CHANGES
FOR
LOOPS B21-PTM-N006A, 7A, 8A AND 9A
TYPICAL

ATTACHMENT "A"

FIGURE 7-3

POOR ORIGINAL

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT
PRESSURE SWITCH TO ANALOG CHANGEOUT
LICENSING TECHNICAL REPORT INFORMATION

NOTES:

1. For more detailed information on transmitters (*) see Specification No. 9527-01-252-51, page XXA as noted and on trip calibration units (#) see Specification No. 9527-01-252-55, page XXA as noted.
2. Symbol shown thus (**) in column calls attention to (M) = master trip unit and (S) = slave trip unit, both of which are located in card files at the trip calibration cabinets.
3. Under the column heading for schematic data the complete drawing number and cabinet designation consists of the heading and the data listed below the column, e.g.

<u>Drawing No.</u>	<u>Cabinet No.</u>
9527-3903, Sh. 2	CB-XU-65
9527-39034, Sh. 2	CB-XU-66
9527-39035, Sh. 2	CB-XU-67
etc.	etc.

4. Instrument Number Corelation with Technical Specifications

The change from mechanical sensors to analog transmitters requires a re-definition of instrument numbers. The following examples will meet the requirements between transmitters and master/slave trip units:

B21-PT-N023A, pressure transmitter located at instrument rack
B21-PTM-N023A-1, master trip unit, located in card file in trip calibration cabinet
B21-PTS-N023A-2, slave trip unit, located in card file in trip calibration cabinet
B21-LT-N017A-1, level transmitter, located at instrument rack
B21-LT-N017A-2, level transmitter, located at instrument rack
B21-LTM-N017A-1, master trip unit, located in card file in trip calibration cabinet
B21-LTM-N017A-2, master trip unit, located in card file in trip calibration cabinet

Unit No. 1
ATTACHMENT "A"
Date: August 15, 1979
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CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT
PRESSURE SWITCH TO ANALOG CONVERTER
LICENSING TECHNICAL REPORT INFORMATION

UNIT NO. 1
ATTACHMENT "A"
DATE: AUGUST 15, 1979
SHEET 2 OF 4

J.O. 9527-018

DEVICE BEING REPLACED			SERVICE	G.E. BACK NO. B21-1	DIFFERENTIAL PRESSURE TRANSMITTER				TRIP CALIBRATION UNIT				SCHEMATIC DATA			
TAG NUMBER	TYPE	UNIT NO.			TAG NUMBER	ROSENBLUM NO.	PAGE NO.	UNIT NO.	TAG NUMBER	TRIP SET-POINT	ROSENBLUM NO.	PAGE NO.	REMARKS	TRIPPING NO. 9527-P-130000	RELAY NUMBER	
1	B21-PDS-N006A	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N006A	1152DP7E22T0280FB	24A	1	B21-N006A-1(M)	115PSID	40A	RPS, "A1"	033, Sh. 2	65	B21-1-A1
2	B21-PDS-N006B	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N006B	1152DP7E22T0280FB	24A	1	B21-N006B-1(M)	115PSID	40A	RPS, "A1"	033, Sh. 2	67	B21-1-B1
3	B21-PDS-N006C	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N006C	1152DP7E22T0280FB	24A	1	B21-N006C-1(M)	115PSID	42A	RPS, "A2"	036, Sh. 2	66	B21-1-C1
4	B21-PDS-N006D	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N006D	1152DP7E22T0280FB	24A	1	B21-N006D-1(M)	115PSID	42A	RPS, "A2"	036, Sh. 2	68	B21-1-D1
5	B21-PDS-N007A	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N007A	1152DP7E22T0280FB	24A	1	B21-N007A-1(M)	115PSID	40A	RPS, "A1"	033, Sh. 2	65	B21-1-E1
6	B21-PDS-N007B	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N007B	1152DP7E22T0280FB	24A	1	B21-N007B-1(M)	115PSID	40A	RPS, "A1"	033, Sh. 2	65	B21-1-F1
7	B21-PDS-N007C	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N007C	1152DP7E22T0280FB	24A	1	B21-N007C-1(M)	115PSID	44A	RPS, "A2"	036, Sh. 2	69	B21-1-G1
8	B21-PDS-N007D	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N007D	1152DP7E22T0280FB	24A	1	B21-N007D-1(M)	115PSID	44A	RPS, "A2"	036, Sh. 2	69	B21-1-H1
9	B21-PDS-N008A	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N008A	1152DP7E22T0280FB	24A	1	B21-N008A-1(M)	115PSID	42A	RPS, "A2"	036, Sh. 2	66	B21-1-I1
10	B21-PDS-N008B	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N008B	1152DP7E22T0280FB	24A	1	B21-N008B-1(M)	115PSID	42A	RPS, "A2"	036, Sh. 2	66	B21-1-J1
11	B21-PDS-N008C	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N008C	1152DP7E22T0280FB	24A	1	B21-N008C-1(M)	115PSID	44A	RPS, "A2"	036, Sh. 2	67	B21-1-K1
12	B21-PDS-N008D	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N008D	1152DP7E22T0280FB	24A	1	B21-N008D-1(M)	115PSID	44A	RPS, "A2"	036, Sh. 2	67	B21-1-L1
13	B21-PDS-N009A	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N009A	1152DP7E22T0280FB	24A	1	B21-N009A-1(M)	115PSID	40A	RPS, "A1"	033, Sh. 2	65	B21-1-M1
14	B21-PDS-N009B	BARTON 288	MR. STM. FLOW HIGH	P015	1	B21-PT-N009B	1152DP7E22T0280FB	24A	1	B21-N009B-1(M)	115PSID	40A	RPS, "A1"	033, Sh. 2	65	B21-1-N1
15	B21-PDS-N009C	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N009C	1152DP7E22T0280FB	24A	1	B21-N009C-1(M)	115PSID	42A	RPS, "A2"	036, Sh. 2	66	B21-1-O1
16	B21-PDS-N009D	BARTON 288	MR. STM. FLOW HIGH	P025	1	B21-PT-N009D	1152DP7E22T0280FB	24A	1	B21-N009D-1(M)	115PSID	42A	RPS, "A2"	036, Sh. 2	68	B21-1-P1
17	B21-PDS-N015A	BARKSDALE B2T-C125S	MR. STM. PRESS. LOW	LOCAL	1	B21-PT-N015A	1152GP7E22T0280FB	21A	1	B21-N015A-1(M)	825PSIG	40A	RPS, "A1"	033, Sh. 2	65	B21-1-Q1
18	B21-PDS-N015B	BARKSDALE B2T-C125S	MR. STM. PRESS. LOW	LOCAL	1	B21-PT-N015B	1152GP7E22T0280FB	21A	1	B21-N015B-1(M)	825PSIG	44A	RPS, "A1"	036, Sh. 2	67	B21-1-R1
19	B21-PDS-N015C	BARKSDALE B2T-C125S	MR. STM. PRESS. LOW	1-KAL	1	B21-PT-N015C	1152GP7E22T0280FB	21A	1	B21-N015C-1(M)	825PSIG	42A	RPS, "A2"	036, Sh. 2	66	B21-1-S1
20	B21-PDS-N015D	BARKSDALE B2T-C125S	MR. STM. PRESS. LOW	LOCAL	1	B21-PT-N015D	1152GP7E22T0280FB	21A	1	B21-N015D-1(M)	825PSIG	44A	RPS, "A2"	036, Sh. 2	68	B21-1-T1
21	B21-LS-N017A	YAWAY 441BC-CE	Rx LEVEL LOW	P004-002	1	B21-LT-N017A-1	1152DP7E22T0280FB	24A	1	B21-N017A-1(M)	12.5 in. H ₂ O	40A	RPS, "A1"	033, Sh. 2	65	B21-1-U1
22	B21-LS-N017B	YAWAY 441BC-CE	Rx LEVEL HIGH	P004-002	1	B21-LT-N017B-2	1152DP7E22T0280FB	24A	1	B21-N017B-2(M)	58.0 in. H ₂ O	35A	ECOS, DIV.1	031, Sh. 2	63	B21-1-V1
23	B21-LS-N017C	YAWAY 441BC-CE	Rx LEVEL HIGH	P004-002	1	B21-LT-N017B-2	1152DP7E22T0280FB	24A	1	B21-N017B-2(M)	58.0 in. H ₂ O	35A	ECOS, DIV.1	031, Sh. 2	67	B21-1-W1
24	B21-LS-N017D	YAWAY 441BC-CE	Rx LEVEL HIGH	P005-002	1	B21-LT-N017C-2	1152DP7E22T0280FB	24A	1	B21-N017C-2(M)	12.5 in. H ₂ O	42A	RPS, "A2"	033, Sh. 2	66	B21-1-X1
25	B21-LS-N017D	YAWAY 441BC-CE	Rx LEVEL LOW	P005-002	1	B21-LT-N017D-2	1152DP7E22T0280FB	24A	1	B21-N017D-2(M)	58.0 in. H ₂ O	38A	ECOS, DIV.1	032, Sh. 2	64	B21-1-Y1
26	B21-PS-N021A	BARKSDALE B2T-C125S	Rx PRESS. LOW	P004	1	B21-PT-N021A	1152GP7E22T0280FB	24A	1	B21-N021A-1(M)	12.5 in. H ₂ O	46A	RPS, "A2"	036, Sh. 2	68	B21-1-Z1
27	B21-PS-N021B	BARKSDALE B2T-C125S	Rx PRESS. LOW	P005	1	B21-PT-N021B	1152GP7E22T0280FB	21A	1	B21-N021B-1(M)	310PSIG	34A	ECOS, DIV.1	031, Sh. 2	64	B21-1-AA1
28	B21-PS-N021C	BARKSDALE B2T-C125S	Rx PRESS. LOW	P009	1	B21-PT-N021C	1152GP7E22T0280FB	21A	1	B21-N021C-1(M)	310PSIG	37A	ECOS, DIV.1	032, Sh. 2	64	B21-1-AB1
29	B21-PS-N021D	BARKSDALE B2T-C125S	Rx PRESS. LOW	P010	1	B21-PT-N021D	1152GP7E22T0280FB	21A	1	B21-N021D-1(M)	310PSIG	34A	ECOS, DIV.1	031, Sh. 2	63	B21-1-AC1
30	B21-PS-N021E	BARKSDALE B2T-C125S	Rx PRESS. HIGH	P004	1	B21-PT-N021E	1152GP7E22T0280FB	21A	1	B21-N021E-1(M)	310PSIG	37A	ECOS, DIV.1	032, Sh. 2	64	B21-1-AD1
31	B21-PS-N021F	BARKSDALE B2T-C125S	Rx PRESS. HIGH	P004	1	B21-PT-N021F	1152GP7E22T0280FB	21A	1	B21-N021F-1(M)	310PSIG	40A	RPS, "A1"	033, Sh. 2	66	B21-1-AE1
32	B21-PS-N021G	BARKSDALE B2T-C125S	Rx PRESS. HIGH	P005	1	B21-PT-N021G	1152GP7E22T0280FB	21A	1	B21-N021G-1(M)	310PSIG	40A	RPS, "A1"	033, Sh. 2	65	B21-1-AF1
33	B21-PS-N021H	BARKSDALE B2T-C125S	Rx PRESS. HIGH	P005	1	B21-PT-N021H	1152GP7E22T0280FB	21A	1	B21-N021H-1(M)	310PSIG	44A	RPS, "A2"	036, Sh. 2	68	B21-1-AG1
34	B21-PS-N021I	BARKSDALE B2T-C125S	Rx PRESS. HIGH	P005	1	B21-PT-N021I	1152GP7E22T0280FB	21A	1	B21-N021I-1(M)	310PSIG	44A	RPS, "A2"	036, Sh. 2	68	B21-1-AH1

POOR ORIGINAL

CAROLINA POWER & LIGHT COMPANY
BROWNSWICK STEAM ELECTRIC PLANT
PRESSURE SWITCH TO ANALOG CHANGENT
PROCESSING TECHNICAL REPORT INFORMATION

UNIT NO. 1
ATTACHMENT "A"
DATE: AUGUST 15, 1979
SHEET 3 OF 4

REQ. NO.	DEVICE BEING REPLACED		G.E. BACK NO. B21-1	DIFFERENTIAL PRESSURE TRANSMITTER				TRIP CALIBRATION UNIT				SCHEMATIC DATA			
	TAG NUMBER	TYPE		SERVICE	UNIT NO.	TAG NUMBER	ROSEMOUNT NO.	PAGE NO.	UNIT NO.	TAG NUMBER	TRIP SET POINT	ROSEMOUNT NO.	PAGE NO.	REMARKS	TRIP NO. 5021-F-39
33	B21-L5-N024A	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N024A-1	11520P5E22T0280PB	24A	1	B21-N024A-1 (M) -38 in. H ₂ O	510002A010	40A	RPS, "A1"	031, Sh. 2	65	B21-6-A1
					B21-LT-N024A-2	11520P5E22T0280PB	24A	1	B21-N024A-2 (M) -38 in. H ₂ O	510002A010	35A	ECOS, DIV. I	031, Sh. 2	63	B21-15-A
34	B21-L5-N024B	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N024B-1	11520P5E22T0280PB	24A	1	B21-N024B-1 (M) -38 in. H ₂ O	510002A010	44A	RPS, "B1"	031, Sh. 2	67	B21-6-B1
					B21-LT-N024B-2	11520P5E22T0280PB	24A	1	B21-N024B-2 (M) -38 in. H ₂ O	510002A010	38A	ECOS, DIV. II	031, Sh. 2	64	B21-15-B
35	B21-L5-N025A	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N025A-1	11520P5E22T0280PB	24A	1	B21-N025A-1 (M) -38 in. H ₂ O	510002A010	42A	RPS, "A2"	034, Sh. 2	66	B21-6-A2
					B21-LT-N025A-2	11520P5E22T0280PB	24A	1	B21-N025A-2 (M) -38 in. H ₂ O	510002A010	35A	ECOS, DIV. I	031, Sh. 2	63	B21-16-A
36	B21-L5-N025B	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N025B-1	11520P5E22T0280PB	24A	1	B21-N025B-1 (M) -38 in. H ₂ O	510002A010	46A	RPS, "B2"	036, Sh. 2	68	B21-6-B2
					B21-LT-N025B-2	11520P5E22T0280PB	24A	1	B21-N025B-2 (M) -38 in. H ₂ O	510002A010	38A	ECOS, DIV. II	032, Sh. 2	64	B21-16-B
37	B21-L5-N031A	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N031A	11520P5E22T0280PB	25A	1	B21-N031A-1 (M) -38 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-5-A
					B21-LT-N031A-2	11520P5E22T0280PB	25A	1	B21-N031A-2 (S) -38 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-5-A
					B21-LT-N031A-3	11520P5E22T0280PB	25A	1	B21-N031A-3 (S) -147.5 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-7-A
					B21-LT-N031A-4	11520P5E22T0280PB	25A	1	B21-N031A-4 (S) -147.5 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-8-A
38	B21-L5-N031B	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N031B	11520P5E22T0280PB	25A	1	B21-N031B-1 (M) -38 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-5-B
					B21-LT-N031B-2	11520P5E22T0280PB	25A	1	B21-N031B-2 (S) -38 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-5-B
					B21-LT-N031B-3	11520P5E22T0280PB	25A	1	B21-N031B-3 (S) -147.5 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-7-B
					B21-LT-N031B-4	11520P5E22T0280PB	25A	1	B21-N031B-4 (S) -147.5 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-8-B
39	B21-L5-N031C	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N031C	11520P5E22T0280PB	25A	1	B21-N031C-1 (M) -38 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-9-A
					B21-LT-N031C-2	11520P5E22T0280PB	25A	1	B21-N031C-2 (S) -38 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-10-A
					B21-LT-N031C-3	11520P5E22T0280PB	25A	1	B21-N031C-3 (S) -147.5 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-11-A
					B21-LT-N031C-4	11520P5E22T0280PB	25A	1	B21-N031C-4 (S) -147.5 in. H ₂ O	510007A010	34A	ECOS, DIV. I	031, Sh. 2	63	B21-12-A
40	B21-L5-N031D	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N031D	11520P5E22T0280PB	25A	1	B21-N031D-1 (M) -38 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-9-B
					B21-LT-N031D-2	11520P5E22T0280PB	25A	1	B21-N031D-2 (S) -38 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-9-B
					B21-LT-N031D-3	11520P5E22T0280PB	25A	1	B21-N031D-3 (S) -147.5 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-10-B
					B21-LT-N031D-4	11520P5E22T0280PB	25A	1	B21-N031D-4 (S) -147.5 in. H ₂ O	510007A010	37A	ECOS, DIV. II	032, Sh. 2	64	B21-11-B
41	B21-L5-N036	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N036	11520P5E22T0280PB	25A	1	B21-N036-1 (M) -39 in. H ₂ O	510002A010	36A	ECOS, DIV. I	031, Sh. 2	63	B21-18-A
					B21-LT-N036	11520P5E22T0280PB	25A	1	B21-N036-1 (M) -39 in. H ₂ O	510002A010	39A	ECOS, DIV. I	032, Sh. 2	64	B21-18-B
42	B21-L5-N037	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N037	11520P5E22T0280PB	25A	1	B21-N037-1 (M) -39 in. H ₂ O	510002A010	39A	ECOS, DIV. I	031, Sh. 2	63	B21-17-A
43	B21-L5-N042A	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N042A	11520P4E22T0280PB	25A	1	B21-N042A-1 (M) 12.5 in. H ₂ O	510007A010	36A	ECOS, DIV. I	031, Sh. 2	63	B21-17-A
44	B21-L5-N042B	YARMAY 4418C-CE	Rx LEVEL LOW	1	B21-LT-N042B	11520P4E22T0280PB	25A	1	B21-N042B-1 (M) 12.5 in. H ₂ O	510007A010	39A	ECOS, DIV. I	032, Sh. 2	64	B21-17-B
45	B21-P5-N056A	BARSDALE B21-M1855-46	COND., VACUUM LOW	1	B21-PT-N056A	1152QP5E22T0280PB	21A	1	B21-N056A-1 (M) 7 in. Hg VAC	510002A010	40A	RPS, "A1"	032, Sh. 2	65	B21-7-A1
46	B21-P5-N056B	BARSDALE B21-M1855-46	COND., VACUUM LOW	1	B21-PT-N056B	1152QP5E22T0280PB	21A	1	B21-N056B-1 (M) 7 in. Hg VAC	510002A010	44A	RPS, "B1"	035, Sh. 2	67	B21-7-B1
47	B21-P5-N056C	BARSDALE B21-M1855-46	COND., VACUUM LOW	1	B21-PT-N056C	1152QP5E22T0280PB	21A	1	B21-N056C-1 (M) 7 in. Hg VAC	510002A010	32A	RPS, "A2"	034, Sh. 2	66	B21-7-A2
48	B21-P5-N056D	BARSDALE B21-M1855-46	COND., VACUUM LOW	1	B21-PT-N056D	1152QP5E22T0280PB	21A	1	B21-N056D-1 (M) 7 in. Hg VAC	510002A010	46A	RPS, "B2"	036, Sh. 2	68	B21-7-B2

POOR ORIGINAL

1444

J.O. 9537/016

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT
PRESSURE SWITCH TO ANALOG CHANGEOUT
LICENSING TECHNICAL REPORT INFORMATION

UNIT NO. 1
ATTACHMENT "A"
DATE: AUGUST 15, 1979
SHEET 4 OF 4

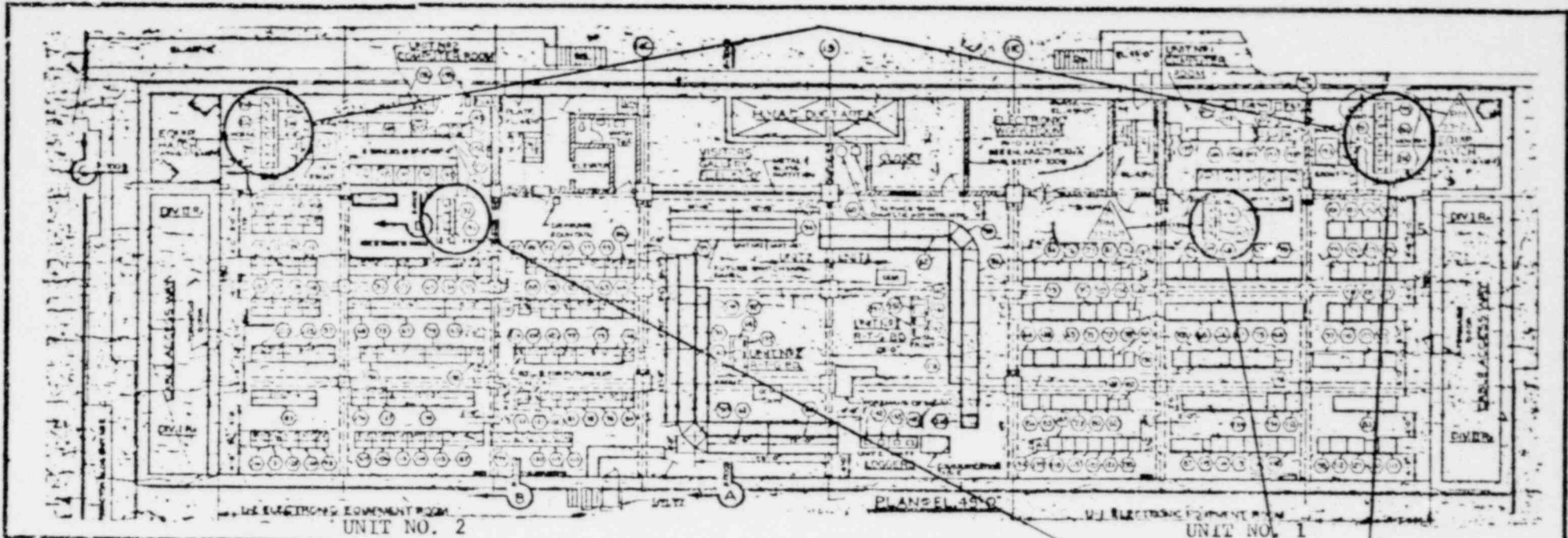
CON NO.	DEVICE BEING REPLACED		C.E. RACK NO.	SERVICE	DIFFERENTIAL PRESSURE TRANSMITTER			TRIP CALIBRATION UNIT			SCHEMATIC DATA		
	TAG NUMBER	TYPE			UNIT NO.	TAG NUMBER	ROSEOUNT NO.	PAGE NO.	UNIT NO.	TAG NUMBER	TRIP SET-POINT	ROSEOUNT NO.	PAGE NO.
49	C71-PS-N002A	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	C71-PT-N002A	1152QP4E22T0280PB	22A	1	C71-N002A-1 (M)	2PSIG	5100U2A010	40A
50	C71-PS-N002B	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	C71-PT-N002B	1152QP4E22T0280PB	22A	1	C71-N002B-1 (M)	2PSIG	5100U2A010	44A
51	C71-PS-N002C	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	C71-PT-N002C	1152QP4E22T0280PB	22A	1	C71-N002C-1 (M)	2PSIG	5100U2A010	42A
52	C71-PS-N002D	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	C71-PT-N002D	1152QP4E22T0280PB	22A	1	C71-N002D-1 (M)	2PSIG	5100U2A010	46A
53	E11-PS-N010A	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	E11-PT-N010A	1152QP4E22T0280PB	21A	1	E11-N010A-1 (M)	2PSIG	5100U2A010	36A
54	E11-PS-N010B	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	E11-PT-N010B	1152QP4E22T0280PB	21A	1	E11-N010B-1 (M)	2PSIG	5100U2A010	39A
55	E11-PS-N010C	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	E11-PT-N010C	1152QP4E22T0280PB	21A	1	E11-N010C-1 (M)	2PSIG	5100U2A010	36A
56	E11-PS-N010D	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	E11-PT-N010D	1152QP4E22T0280PB	21A	1	E11-N010D-1 (M)	2PSIG	5100U2A010	39A
57	E11-PS-N011A	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	E11-PT-N011A	1152QP4E22T0280PB	22A	1	E11-N011A-1 (M)	2PSIG	5100U2A010	35A
58	E11-PS-N011B	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	E11-PT-N011B	1152QP4E22T0280PB	22A	1	E11-N011B-1 (M)	2PSIG	5100U2A010	38A
59	E11-PS-N011C	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	E11-PT-N011C	1152QP4E22T0280PB	22A	1	E11-N011C-1 (M)	2PSIG	5100U2A010	35A
60	E11-PS-N011D	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	E11-PT-N011D	1152QP4E22T0280PB	22A	1	E11-N011D-1 (M)	2PSIG	5100U2A010	38A
61	E11-PS-N019A	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	E11-PT-N019A-1	1152QP4E22T0280PB	22A	1	E11-N019A-1 (M)	2.5PSIG	5100U2A010	36A
62	E11-PS-N019B	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	E11-PT-N019B-1	1152QP4E22T0280PB	22A	1	E11-N019B-1 (M)	2.5PSIG	5100U2A010	39A
63	E11-PS-N019C	STAT-O-RING 12N-AA4	P004	DRYWELL PRESS. HIGH	1	E11-PT-N019C-1	1152QP4E22T0280PB	22A	1	E11-N019C-1 (M)	2.5PSIG	5100U2A010	36A
64	E11-PS-N019D	STAT-O-RING 12N-AA4	P005	DRYWELL PRESS. HIGH	1	E11-PT-N019D-1	1152QP4E22T0280PB	22A	1	E11-N019D-1 (M)	2.5PSIG	5100U2A010	39A
65	E41-PDS-N004	BARTON 288	P016	HPCI STM. LINE PRESS. HIGH	1	E41-PDT-N004	1152DP5E22T0280PB	25A	1	E41-N004-1 (M)	-230 in. H ₂ O	5100U2A010	35A
66	E41-PDS-N005	BARTON 288	P036	HPCI STM. LINE PRESS. HIGH	1	E41-PDT-N005	1152DP5E22T0280PB	25A	1	E41-N005-1 (M)	-230 in. H ₂ O	5100U2A010	35A
67	E41-LSH-N014	ROBERT SUAW 83844-81	LOCAL	HPCI DRAIN POT LEVEL HIGH	1	E41-LT-N014	1152DP3E22T0280PB	26A	1	E41-N014-1 (M)	+230 in. H ₂ O	5100U2A010	36A
68	E51-PDS-N017	BARTON 288	P035	RCIC STM. LINE PRESS. HIGH	1	E51-PDT-N017	1152DP6E22T0280PB	25A	1	E51-N017-1 (M)	-412 in. H ₂ O	5100U2A010	35A
69	E51-PDS-N018	BARTON 288	P038	RCIC STM. LINE PRESS. HIGH	1	E51-PDT-N018	1152DP6E22T0280PB	25A	1	E51-N018-1 (M)	-412 in. H ₂ O	5100U2A010	38A
70	E51-LSH-N010	ROBERT SUAW 83844-81	LOCAL	RCIC DRAIN POT LEVEL HIGH	1	E51-LT-N010	1152DP3E22T0280PB	26A	1	E51-N010-1 (M)	+412 in. H ₂ O	5100U2A010	39A

POOR ORIGINAL

III

1444 144

1444 145



NO.	TITLE	TAG	FUNCTION
199	Trip Calibration Cab.	XU-65	RPS CH. "A1"
200	Trip Calibration Cab.	XU-66	RPS CH. "A2"
201	Trip Calibration Cab.	XU-67	RPS CH. "B1"
202	Trip Calibration Cab.	XU-68	RPS CH. "B2"
191	Trip Calibration Cab.	XU-63	ECCS-DIV. I
192	Trip Calibration Cab.	XU-64	ECCS-DIV. II

144 146

REF. DWG. 9527-F-7008
POOR ORIGINAL

LICENSE NO. DPR-71, DOCKET NO. 50-325

PLANT MODIFICATION 77-269

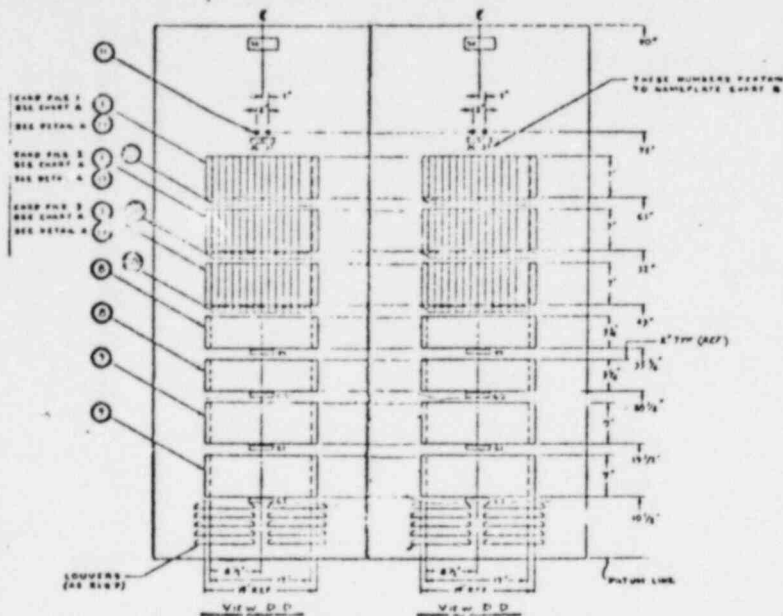
CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1

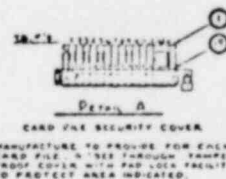
CONTROL BUILDING
TRIP CALIBRATION CABINETS
"ECCS" AND "RPS"
GENERAL ARRANGEMENT

ATTACHMENT "A"

SHEET 1 OF 19



TRIP CALIBRATION CABINET 'AQS' TRIP CALIBRATION CABINET 'AQT'
ECCS DIV I CU-XU-63 ECCS DIV II CH-XU-64
CABINET ARRANGEMENT CABINET ARRANGEMENT



ITEM	QTY	DESCRIPTION
21	25	NAME PLATES--IN ACCORDANCE WITH CHART 'B'
20	25	NAME PLATES--IN ACCORDANCE WITH CHART 'A'
19	3	SECURITY COVER (SEE DETAIL A)
18	1	INCANDESCENT LIGHT FIXTURE
17	1	BOXES COVERPLATES, 115VAC DUPLEX OUTLET AND TWO ON OFF SWITCHES
16	2	FAN, ROTRON, MODEL NO. SU-1A1, PART NO. 08867, WITH SUITABLE COVER AND SCREEN
15	13	TERMINAL BOARD, 12 POINT, 30 AMP, G.E. CAT. NO. ER15A12W
14	2	PULLOUT FUSE BLOCK, DOUBLE POLE, 1-30 AMP, PER SPEC. 9527-01-252-56
13	23	CARTRIDGE FUSEHOLDER, DOUBLE POLE, 1-30 AMP, PER SPEC. 9517-01-252-56
12		UNASSIGNED
11	2	INDICATING LAMP, G.E. TYPE ET-3, 84VDC, RED COLOR CAP, G.E. CAT. NO. 8108700
10	56	RELAY, 24VDC, 4PDT AGASTAT CAT # 65PB, WITH SOCKET # P/N CRO002 & LOCKING SPRING # P/N CRO133
9	2	INVERTER FORAT ELECTRONICS PER SPEC 9527-01-252-56
8	2	POWER SUPPLY LAMBDA ELECTRONICS PER SPEC 9527-01-252-56
7	2	BLANK PANEL (15 1/2 WIDE) ROSEMOUNT INC. PER SPEC. 9527-01-252-55
6	1	BLANK PANEL (17 1/2 WIDE) ROSEMOUNT INC. PER SPEC. 9527-01-252-55
5	1	READOUT ASSEMBLY, ROSEMOUNT INC. PER SPEC. 9527-01-252-55
4	1	CALIBRATION UNIT, ROSEMOUNT INC. PER SPEC. 9527-01-252-55
3	14	SLAVE TRIP UNIT, ROSEMOUNT INC. PER SPEC. 9527-01-252-55
2	21	MASTER TRIP UNIT, ROSEMOUNT INC. PER SPEC. 9527-01-252-55
1	3	CARD FILE, ROSEMOUNT INC. PER SPEC. 9527-01-252-55
ITEM QTY		DESCRIPTION
		BILL OF MATERIAL

REF. DWGS. 9527-F-39031, SH. 1
9527-F-39032, SH. 1

POOR ORIGINAL

LICENSE NO. DPR-71, DOCKET NO. 50-325

PLANT MODIFICATION 77-269

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
EMERGENCY CORE COOLING SYSTEM
TRIP CALIBRATION CABINETS
DIVISIONS I & II
CABINET GENERAL ARRANGEMENT
ELEVATION

REV. NO.

DATE

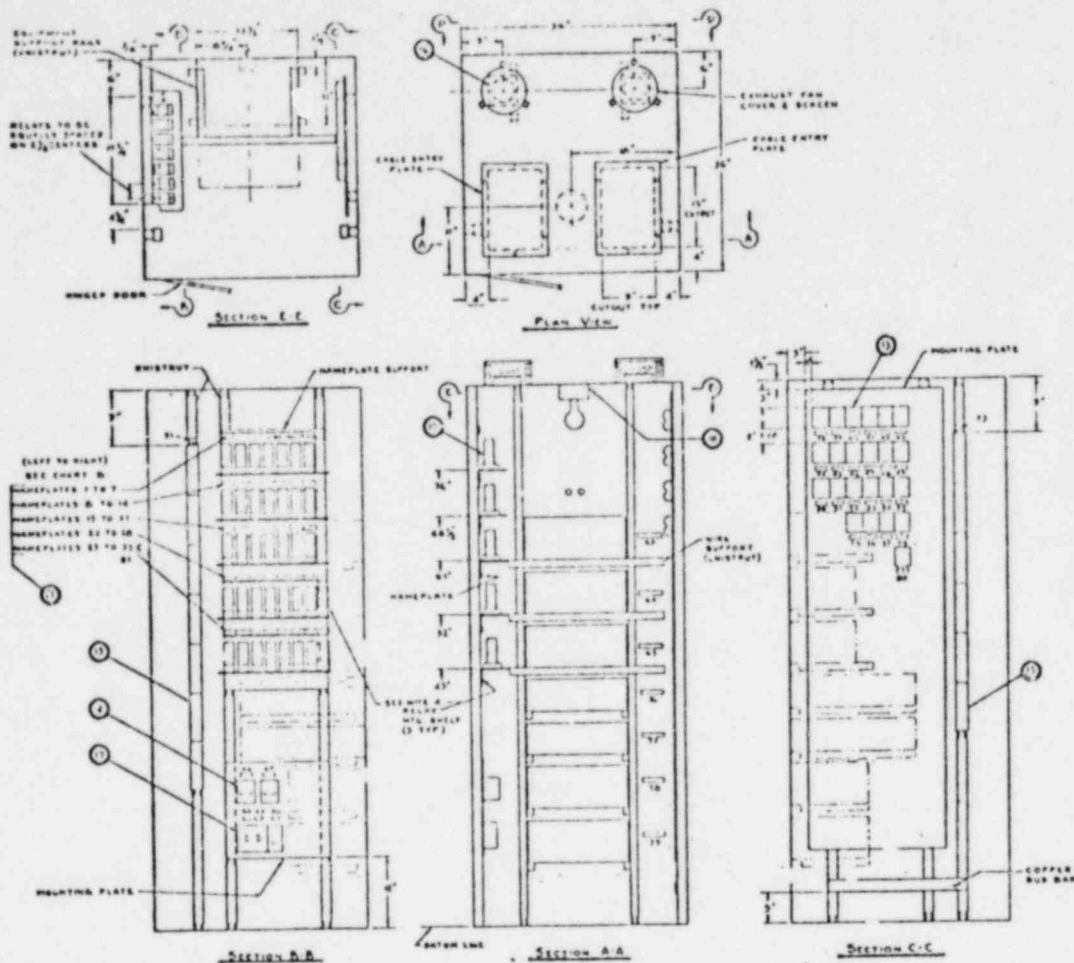
DESCRIPTION

ENGR.

SUP'NG.

ATTACHMENT "A"

SHEET 2 OF 19



1444 148

REF. DWG. 9527-F-39031, SH. 1

POOR ORIGINAL

REV. NO.					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1 EMERGENCY CORE COOLING SYSTEM TRIP CALIBRATION CABINETS DIVISIONS I & I. CABINET GENERAL ARRANGEMENT PLANS & SECTIONS
	DATE	DESCRIPTION	ENGR	SUP'NG	ATTACHMENT "A" SHEET 3 OF 19

NAMEPLATE CHART B		
NO	NAMEPLATE NOMENCLATURE	CHAR. SIZE
1	SPARE	
2	SPARE	
3	EII-4-A	
4	EII-3-A	
5	EII-2-A	
6	EII-1-A	
7	E51-2-A	
8	B21-B-A	
9	B21-12-A	
10	B21-11-A	
11	B21-10-A	
12	B21-9-A	
13	74-2-A	
14	74-1-A	
15	B21-7-A	
16	B21-6-A	
17	B21-5-A	
18	B21-4-A	
19	B21-3-A	
20	B21-2-A	
21	B21-1-A	
22	E51-1-A	
23	E41-2-A	
24	E41-1-A	
25	B21-16-A	
26	B21-15-A	
27	B21-14-A	
28	B21-13-A	
29	B21-18-A	
30	B21-17-A	
31	EII-8-A	
32	EII-7-A	
33	EII-6-A	
34	EII-5-A	
35	74-3-A	
36	GROSS FLOW	
37	CARD OUT OF FILE	
38	B21-F12-A B21-F11-A	
39	B21-F10-A B21-F9-A	
40	B21-F8-A B21-F7-A	
41	B21-F6-A B21-F5-A	
42	B21-F4-A B21-F3-A	
43	B21-F2-A B21-F1-A	
44	B21-F18-A B21-F17-A	
45	B21-F16-A B21-F15-A	
46	F41-F2-A E41-F1-A	

CHART A						
CARD POSITION	CARD FILE 1		CARD FILE 2		CARD FILE 3	
	S/M ITEM NO.	NAMEPLATE	S/M ITEM NO.	NAMEPLATE	S/M ITEM NO.	NAMEPLATE
1	2	REACTOR PRESSURE LOW B21-NOTIC-1	2	REACTOR PRESSURE HIGH B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3
2	3	REACTOR PRESSURE LOW B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3	2	REACTOR PRESSURE HIGH B21-NOTIC-4
3	2	REACTOR PRESSURE LOW B21-NOTIC-1	2	REACTOR PRESSURE HIGH B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3
4	3	REACTOR PRESSURE LOW B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3	2	REACTOR PRESSURE HIGH B21-NOTIC-4
5	2	REACTOR PRESSURE LOW B21-NOTIC-1	2	REACTOR PRESSURE HIGH B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3
6	3	REACTOR PRESSURE LOW B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3	2	REACTOR PRESSURE HIGH B21-NOTIC-4
7	3	REACTOR PRESSURE LOW B21-NOTIC-1	2	REACTOR PRESSURE HIGH B21-NOTIC-2	2	SPARE
8	3	REACTOR PRESSURE LOW B21-NOTIC-2	3	REACTOR PRESSURE HIGH B21-NOTIC-3	3	SPARE
9	2	REACTOR PRESSURE LOW B21-NOTIC-1	2	REACTOR PRESSURE HIGH B21-NOTIC-2	2	REACTOR PRESSURE HIGH B21-NOTIC-3
10	3	REACTOR PRESSURE LOW B21-NOTIC-2	3	REACTOR PRESSURE HIGH B21-NOTIC-3	3	SPARE
11	3	REACTOR PRESSURE LOW B21-NOTIC-1	2	REACTOR PRESSURE HIGH B21-NOTIC-2	2	SPARE
12	3	REACTOR PRESSURE LOW B21-NOTIC-2	3	REACTOR PRESSURE HIGH B21-NOTIC-3	6	SPARE
13	445	CALIBRATION UNIT	7	CALIBRATION UNIT	7	CALIBRATION UNIT

(XU-3897)

(XU-3898)

(XU-3899)

47	E51-F2-A	E51-F1-A		
48	B21-F10-A	B21-F9-A		
49	B21-F18-A	B21-F17-A		
50	EII-F12-A	EII-F11-A		
51	EII-F10-A	EII-F9-A		
52	EII-F8-A	EII-F7-A		
53	EII-F6-A	EII-F5-A		
54	EII-F4-A	EII-F3-A		
55	EII-F2-A	EII-F1-A		
56	F2-3	F2-4		
57	F2-2	F1-2		
58	F2-1	F1-1		
59	POWER SUPPLY 1			
60	POWER SUPPLY 2			
61	INVERTER 1			
62	INVERTER 2			
63	CARD FILE 1 CB-XU-63			
64	CARD FILE 2 CB-XU-63			
65	CARD FILE 3 CB-XU-63			
66	F1-1-A	F2-1-A		

67	F1-2-A	F2-2-A		
68	LIGHT SW			
69	FAN SW			
70	115 VAC			
71	TB-A			
72	UNASSIGNED			
73	TB-B			
74	TRIP CALIBRATION CABINET AQ6 ECCS DIVISION I CB-XU-63 UNIT 1			
75	SPARE			
80	E41-F4-A	E41-F3-A		
81	E41-3-A			

REF. DWG. 9527-F-39031, SH. 1

					LICENSE NO. DPR-71, DOCKET NO. 50-325	
					PLANT MODIFICATION 77-269	
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT	
					UNIT NO. 1 EMERGENCY CORE COOLING SYSTEM TRIP CALIBRATION CABINETS DIVISION I, CB-XU-63 CARD FILE & NAMEPLATE DATA	
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENGR.	ATTACHMENT "A"	
					SHEET 4 OF 19	

NAMEPLATE CHART B		
NO.	NAMEPLATE NOMENCLATURE	CHAR. SIZE
1	SPARE	
2	SPARE	
3	EII-4-B	
4	EII-3-B	
5	EII-2-B	
6	EII-1-B	
7	E51-2-B	
8	B21-8-B	
9	B21-12-B	
10	B21-11-B	
11	B21-10-B	
12	B21-9-B	
13	74-2-B	
14	74-1-B	
15	B21-7-B	
16	B21-6-B	
17	B21-5-B	
18	B21-4-B	
19	B21-3-B	
20	B21-2-B	
21	B21-1-B	
22	E51-1-B	
23	E41-2-B	
24	E41-1-B	
25	B21-16-B	
26	B21-15-B	
27	B21-14-B	
28	B21-13-B	
29	B21-15-B	
30	B21-17-B	
31	EII-8-B	
32	EII-7-B	
33	EII-6-B	
34	EII-5-B	
35	74-3-B	
36	WROGS FAILURE	
37	CARD OUT OF FILE	
38	B21-F12-B B21-F11-B	
39	B21-F10-B B21-F9-B	
40	B21-F8-B B21-F7-B	
41	B21-F6-B B21-F5-B	
42	B21-F4-B B21-F3-B	
43	B21-F2-B B21-F1-B	
44	B21-F14-B B21-F15-B	
45	B21-F16-B B21-F15-B	
46	E41-F2-B E41-F1-B	

CHART A						
CARD POSITION	CARD FILE 1		CARD FILE 2		CARD FILE 3	
	B/M ITEM NO.	NAMEPLATE	B/M ITEM NO.	NAMEPLATE	B/M ITEM NO.	NAMEPLATE
1	2	REACTOR PRESSURE LOW B21-N021B-1	2	REACTOR LEVEL HIGH B21-N021B-2	2	REACTOR PRESSURE HIGH B21-N021B-1
2	3	REACTOR PRESSURE LOW B21-N021B-2	2	REACTOR LEVEL HIGH B21-N021B-2	2	REACTOR PRESSURE HIGH B21-N021B-1
3	2	REACTOR PRESSURE LOW B21-N021B-1	2	REACTOR LEVEL HIGH B21-N021B-2	2	REACTOR PRESSURE HIGH B21-N021B-1
4	3	REACTOR PRESSURE LOW B21-N021B-2	2	REACTOR LEVEL HIGH B21-N021B-2	2	REACTOR PRESSURE HIGH B21-N021B-1
5	2	REACTOR LEVEL LOW B21-N031B-1	2	RCIC STEAMLINE HIGH DP E51-N005-1	2	REACTOR LEVEL LOW B21-N031B-1
6	3	REACTOR LEVEL LOW B21-N031B-2	3	RCIC STEAMLINE HIGH DP E51-N005-2	2	REACTOR LEVEL LOW B21-N031B-1
7	3	REACTOR LEVEL LOW B21-N031B-3	2	RCIC STEAMLINE HIGH DP E51-N005-1	2	SPARE
8	3	REACTOR LEVEL LOW B21-N031B-4	3	RCIC STEAMLINE HIGH DP E51-N005-2	3	SPARE
9	2	REACTOR LEVEL LOW B21-N031B-1	2	DRYWELL PRESSURE HIGH EII-N010B-1	2	RCIC DRAIN PVT LEV HI E51-N010
10	3	REACTOR LEVEL LOW B21-N031B-2	3	DRYWELL PRESSURE HIGH EII-N010B-2	3	SPARE
11	3	REACTOR LEVEL LOW B21-N031B-3	2	DRYWELL PRESSURE HIGH EII-N010B-1	2	SPARE
12	3	REACTOR LEVEL LOW B21-N031B-4	3	DRYWELL PRESSURE HIGH EII-N010B-2	6	
13	645	CALIBRATION UNIT	7	CALIBRATION UNIT	7	CALIBRATION UNIT

(XU-3900)

(XU-3901)

(XU-3902)

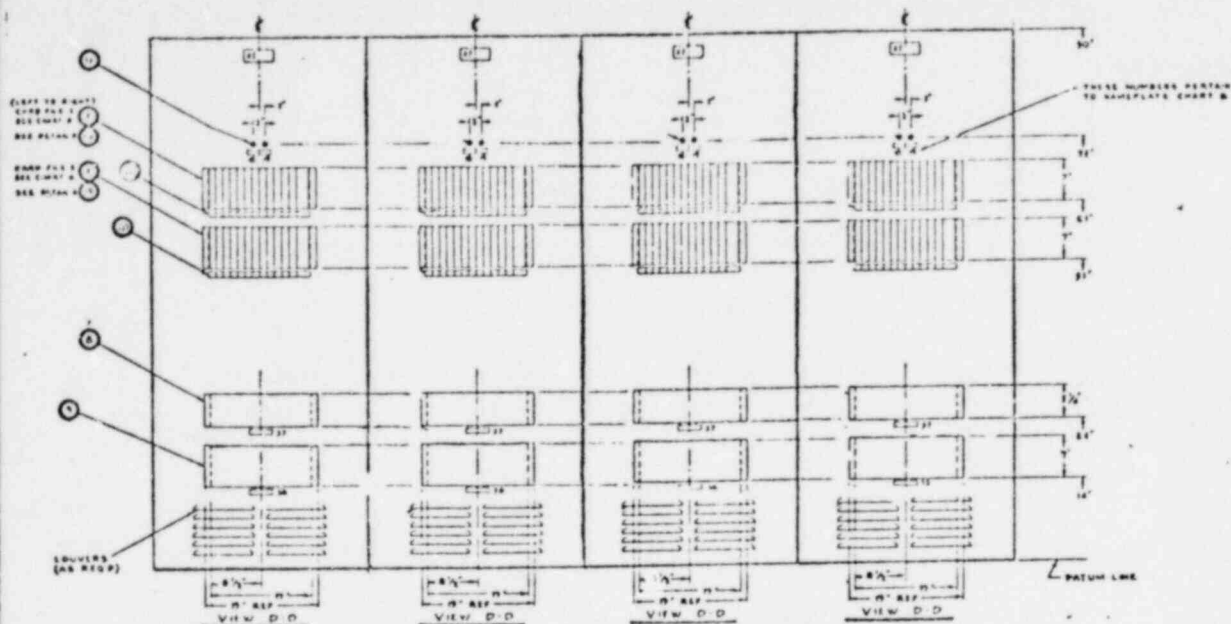
47	LS1-F2-B	E51-F1-B		
48	B21-F20-B	B21-F19-B		
49	B21-F18-B	B21-F17-B		
50	EII-F12-B	EII-F11-B		
51	EII-F10-B	EII-F9-B		
52	EII-F8-B	EII-F7-B		
53	EII-F6-B	EII-F5-B		
54	EII-F4-B	EII-F3-B		
55	EII-F2-B	EII-F1-B		
56	F2-3	F2-4		
57	F2-2	F1-2		
58	F2-1	F1-1		
59/60	POWER SUPPLY 1			
60/71	POWER SUPPLY 2			
61/72	INVERTER 1			
62/73	INVERTER 2			
63	CARD FILE 1 CB-XU-3900			
64	CARD FILE 2 CB-XU-3901			
65	CARD FILE 3 CB-XU-3902			
66	F1-1-B	F2-1-B		

67	F1-2-B	F2-2-B		
68	LIGHT SW			
69	FAN SW			
70	HIS VAC			
71	TE-A			
72	PHONE JACK			
73	TB-B			
74	TRIP CALIBRATION CABINET AQ7 ECCS DIVISION II CB-AUG4 UNIT 1			
75	SPARE			
80	E51-F4-B	E51-F3-B		
81	E51-3-B			

REF. DWG. 9527-F-39032, SH. 1

POOR ORIGINAL

					LICENSE NO. DPR-71, DOCKET NO. 50-325	
					PLANT MODIFICATION 77-269	
					CAROLINA POWER & LIGHT COMPANY	
					BRUNSWICK STEAM ELECTRIC PLANT	
					UNIT NO. 1	
					EMERGENCY CORE COOLING SYSTEM	
					TRIP CALIBRATION CABINETS	
					DIVISION II, CB-XU-64	
					CARD FILE & NAMEPLATE DATA	
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENR.	ATTACHMENT "A"	
					SHEET 5 OF 19	



TRIP CALIBRATION CABINET "A25"
RPS CHANNEL A1 CB XU 65
CABINET ARRANGEMENT

TRIP CALIBRATION CABINET "A28"
RPS CHANNEL B1 CB XU 67
CABINET ARRANGEMENT

TRIP CALIBRATION CABINET "A27"
RPS CHANNEL A2 CB XU 66
CABINET ARRANGEMENT

TRIP CALIBRATION CABINET "A29"
RPS CHANNEL B2 CB XU 68
CABINET ARRANGEMENT

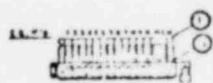


FIG. 1
CARD FILE SECURITY COVER
MANUFACTURED TO PROVIDE FOR EACH
CARD FILE A "SEE THROUGH" TAMPER
PROOF COVER WITH PRO LUCH FACILITY
TO PROTECT AREA INDICATED

REF. DWGS. 9527-F-39033, SH. 1
9527-F-39034, SH. 1
9527-F-39035, SH. 1
9527-F-39036, SH. 1

POOR ORIGINAL

ITEM	QTY	DESCRIPTION
21	25	NAMEPLATES - IN ACCORDANCE WITH CHART "B"
20	25	NAMEPLATES - IN ACCORDANCE WITH CHART "A"
19	2	SECURITY COVER (SEE DETAIL A)
18	1	INCANDESCENT LIGHT FIXTURE
17	1	BOXES, COVERPLATES, 115 VAC DUPLEX OUTLET AND TWO ON/OFF SWITCHES
16	2	FAN, ROTRON MODEL NO. 3U 3AT PART NO. 030267, WITH SUITABLE COVER AND SCREEN
15	6	TERMINAL BOARD, 12 POINT, 30 AMP, G.E. CAT NO. E85A12W
14	1	PULLOUT FUSE BLOCK, DOUBLE POLE, 1-30 AMP, PER SPEC 9527-01-252-56
13	13	CARTRIDGE FUSEHOLDERS, DOUBLE POLE, 1-30 AMP, PER SPEC 9527-01-252-56
12		UNASSIGNED
11	2	INDICATING LAMP, G.E. TYPE ET-5, 24VDC, RED COLOR CAP, G.E. CAT NO. 6108700
10	17	RELAY, 24VDC, 4PDT, ADJUST CAT # GFB, WITH SOCKET # R/N CROD02 & LOCKING SPRING # R/N CRO133
9	1	INVERTER, TOPAZ ELECTRONICS, PER SPEC 9527-01-252-56
8	1	POWER SUPPLY, LAMBDA ELECTRONICS, PER SPEC 9527-01-252-56
7	1	BLANK PANEL (15 1/2" WIDE), ROSEMOUNT INC., PER SPEC 9527-01-252-55
6	10	PER SPEC 9527-01-252-55
5	1	READOUT ASSEMBLY, ROSEMOUNT INC., PER SPEC 9527-01-252-55
4	1	CALIBRATION UNIT, ROSEMOUNT INC., PER SPEC 9527-01-252-55
3	3	SLAVE TRIP UNIT, ROSEMOUNT INC., PER SPEC 9527-01-252-55
2	11	MASTER TRIP UNIT, ROSEMOUNT INC., PER SPEC 9527-01-252-55
1	2	CARD FILE, ROSEMOUNT INC., PER SPEC 9527-01-252-55
ITEM QTY		ASSEMBLY
		BILL OF MATERIAL

1444 51

LICENSE NO. DPR-71, DOCKET NO. 50-325

PLANT MODIFICATION 77-269

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1

REACTOR PROTECTION SYSTEM
TRIP CALIBRATION CABINETS
CHANNELS A1, A2, B1 & B2
CABINET GENERAL ARRANGEMENT

REV. NO.

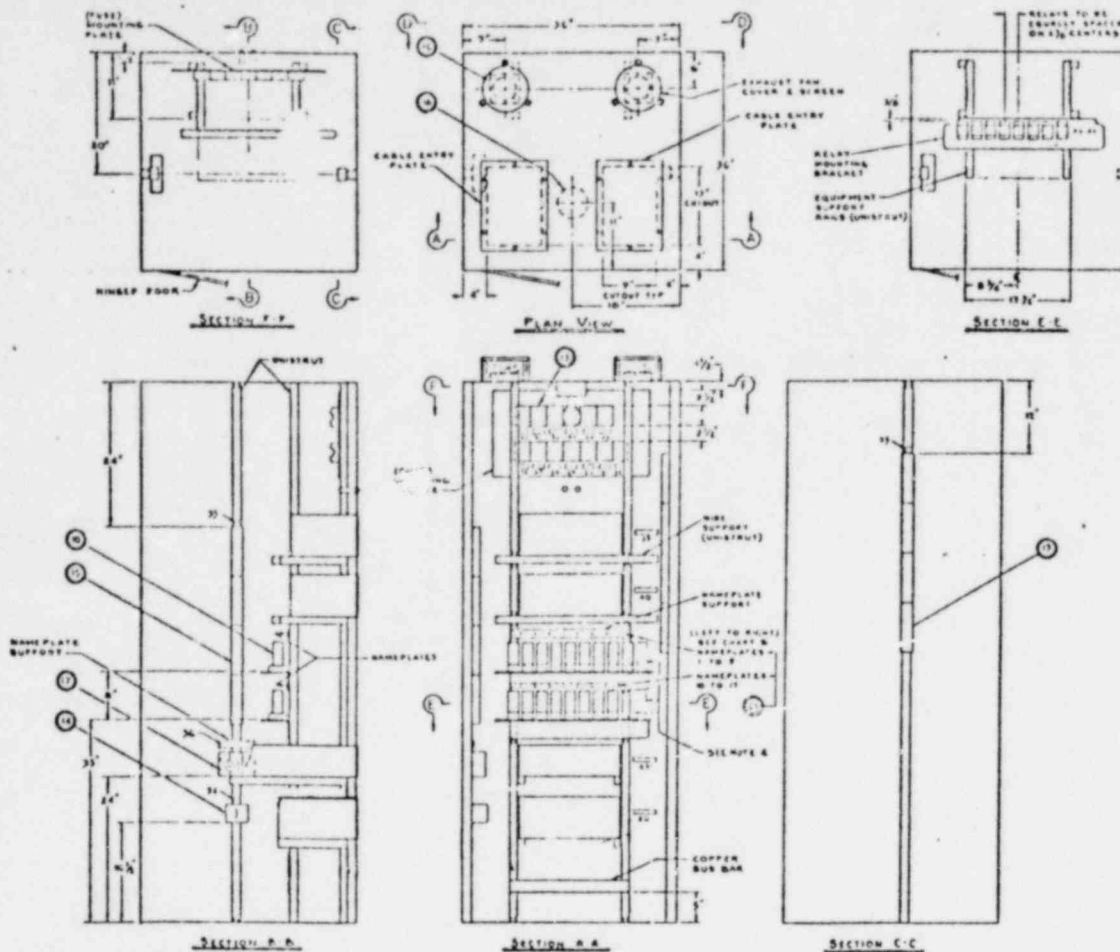
DATE

DESCRIPTION

ENCR. SUP. ENG.

ATTACHMENT "A"

SHEET 6 OF 19



REF. DWG. 9527-F-39033, SH. 1

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1 REACTOR PROTECTION SYSTEM TRIP CALIBRATION CABINETS CHANNELS A1, A2, B1 & B2 CABINET GENERAL ARRANGEMENT PLAN & SECTIONS
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPV.	ATTACHMENT "A" SHEET 7 OF 19

1444 152

NAMEPLATE CHART B			
NO.	NAMEPLATE NOMENCLATURE	CHAR. SIZE	
1	B21-B-A1		
2	C71-1-A1		
3	B21-7-A1		
4	B21-6-A1		
5	B21-5-A1		
6	B21-4-A1		
7	B21-3-A1		
8	B21-2-A1		
9	B21-1-A1		
10	B21-9-A1		
11	B21-10-A1		
12	SPARE		
13	SPARE		
14	SPARE		
15	74-1-A1		
16	74-2-A1		
17	74-3-A1		
18	GROSS FAILURE		
19	CARD OUT OF FILE		
20	F2-1 F1-1		
21	B21-F10-A1 B21-F9-A1		
22	B21-F8-A1 B21-F7-A1		
23	B21-F6-A1 B21-F5-A1		
24	B21-F4-A1 B21-F3-A1		
25	B21-F2-A1 B21-F1-A1		
26	SPARE		
27	B21-F18-A1 B21-F17-A1		
28	B21-F16-A1 B21-F15-A1		
29	C71-F2-A1 C71-F1-A1		
30	B21-F14-A1 B21-F13-A1		
31	B21-F12-A1 B21-F11-A1		
32	F2-2 F1-2		
33	TB-A		
34	F1-1-A1 F2-1-A1		
35	TB-B		
36	115 LIGHT FAN VDC SW SW		
43	POWER SUPPLY 1		
44	INVERTER 1		
39	CARD FILE 1 CB-XU-3903		
40	CARD FILE 2 CB-XU-3904		
41	UNASSIGNED		
42	TRIP CALIBRATION CABINET A2G RPS CHANNEL A1 CB-XU-65 UNIT 1		

CHART A				
CARD POSITION	CARD FILE 1		CARD FILE 2	
	B/M ITEM NO.	NAMEPLATE	B/M ITEM NO.	NAMEPLATE
1	2	STEAMLINE FLOW HIGH B21-NO09A-1	2	SPARE
2	2	STEAMLINE FLOW HIGH B21-NO07A-1	3	SPARE
3	2	STEAMLINE FLOW HIGH B21-NO08A-1	6	
4	2	STEAMLINE FLOW HIGH B21-NO09A-1	6	
5	2	STEAMLINE PRESS LOW B21-NO08A-1	6	
6	2	REACTOR LEVEL LOW B21-NO14A-1	6	
7	1	CONDENSER VACUUM LOW B21-NO05A-1	6	
8	2	DRY-CELL PRESSURE HIGH C71-NO02A-1	6	
9	2	REACTOR LEVEL LOW B21-NO17A-1	6	
10	2	REACTOR PRESSURE HIGH B21-NO03A-1	6	
11	3	REACTOR PRESSURE HIGH B21-NO03A-2	6	
12	3	SPARE	6	
13	4&5	CALIBRATION UNIT	7	CALIBRATION UNIT

(XU-3903)

(XU-3904)

POOR ORIGINAL

REF. DWG. 9527-F-39033, SH. 1

1444-153

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					REACTOR PROTECTION SYSTEM TRIP CALIBRATION CABINETS CHANNEL A1 - CB-XU-65 CARD FILE & NAMEPLATE DATA
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPV. ENGR.	ATTACHMENT "A"
					SHEET 8 OF 19

NAMEPLATE CHART B			
NO.	NAMEPLATE NOMENCLATURE	CHAR SIZE	
1	B21-B-A2		
2	C71-1-A2		
3	B21-7-A2		
4	B21-6-A2		
5	B21-5-A2		
6	B21-4-A2		
7	B21-3-A2		
8	B21-2-A2		
9	B21-1-A2		
10	B21-9-A2		
11	B21-10-A2		
12	SPARE		
13	SPARE		
14	SPARE		
15	74-1-A2		
16	74-2-A2		
17	74-3-A2		
18	GROSS FAILURE		
19	CARD OUT OF FILE		
20	F2-1 F1-1		
21	B21-F10-A2 B21-F9-A2		
22	B21-F8-A2 B21-F7-A2		
23	B21-F6-A2 B21-F5-A2		
24	B21-F4-A2 B21-F3-A2		
25	B21-F2-A2 B21-F1-A2		
26	SPARE		
27	B21-F18-A2 B21-F17-A2		
28	B21-F16-A2 B21-F15-A2		
29	C71-F2-A2 C71-F1-A2		
30	B21-F14-A2 B21-F13-A2		
31	B21-F12-A2 B21-F11-A2		
32	F2-2 F1-2		
33	TB-A		
34	F1-1-A2 F2-1-A2		
35	TB-B		
36	115 LIGHT FAN VAC SW 5A		
43	37 POWER SUPPLY 2		
44	38 INVERTER 2		
39	CARD FILE 1 CB-XU-3905		
40	CARD FILE 2 CB-XU-3906		
41	PHONE JACK		
42	TRIP CALIBRATION CABINET A27 RPS CHANNEL A2 CB-XU-66 UNIT 1		

CHART A				
CARD POSITION	CARD FILE 1		CARD FILE 2	
	B/M ITEM NO.	NAMEPLATE	B/M ITEM NO.	NAMEPLATE
1	2	MAIN STEAMLINE FLOW HIGH B21-ND05C-1	2	SPARE
2	2	MAIN STEAMLINE FLOW HIGH B21-ND07C-1	3	SPARE
3	2	MAIN STEAMLINE FLOW HIGH B21-ND08C-1	6	
4	2	MAIN STEAMLINE FLOW HIGH B21-ND09C-1	6	
5	2	MAIN STEAMLINE PRESS LOW B21-ND10C-1	6	
6	2	REACTOR LEVEL LOW B21-ND06A-1	6	
7	2	CONDENSER VACUUM LOW B21-ND12C-1	6	
8	2	REACTOR PRESSURE HIGH C71-ND02C-1	6	
9	2	REACTOR LEVEL LOW B21-ND17C-1	6	
10	2	REACTOR PRESSURE HIGH B21-ND03C-1	6	
11	3	REACTOR PRESSURE HIGH B21-ND03C-2	6	
12	3	SPARE	6	
13	4&5	CALIBRATION UNIT	7	CALIBRATION UNIT

(XU-3905)

(XU-3906)

POOR ORIGINAL

REF. DWG. 9527-F-39034, SH. 1

1444 154

					LICENSE NO. DPR-17, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					REACTOR PROTECTION SYSTEM TRIP CALIBRATION CABINETS CHANNEL A2 - CB-XU-66 CARD FILE & NAMEPLATE DATA
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENGR.	ATTACHMENT "A"
					SHEET 9 OF 19

NAMEPLATE CHART B			
NO.	NAMEPLATE NOMENCLATURE	CHAR.	SIZE
1	B21-B-B1		
2	C71-1-B1		
3	B21-7-B1		
4	B21-6-B1		
5	B21-5-B1		
6	B21-4-B1		
7	B21-3-B1		
8	B21-2-B1		
9	B21-1-B1		
10	B21-9-B1		
11	B21-10-B1		
12	SPARE		
13	SPARE		
14	SPARE		
15	74-1-B1		
16	74-2-B1		
17	74-3-B1		
18	CROSS FAIR WIRE		
19	CARD OUT OF FILE		
20	F2-1 F1-1	BY VENDOR	
21	B21-F10-B1 B21-F9-B1		
22	B21-F8-B1 B21-F7-B1		
23	B21-F6-B1 B21-F5-B1		
24	B21-F4-B1 B21-F3-B1		
25	B21-F2-B1 B21-F1-B1		
26	SPARE		
27	B21-F16-B1 B21-F17-B1		
28	B21-F16-B1 B21-F15-B1		
29	C71-F2-B1 C71-F1-B1		
30	B21-F14-B1 B21-F13-B1		
31	B21-F12-B1 B21-F11-B1		
32	F2-2 F1-2		
33	TB-A		
34	F1-1-B1 F2-1-B1		
35	TB-B		
36	HIS LIGHT FAN VAC SW SW		
37	POWER SUPPLY 1		
38	INVERTER 1		
39	CARD FILE 1 CB-XU-3907		
40	CARD FILE 2 CB-XU-3908		
41	UNASSIGNED		
42	TRIP CALIBRATION CABINET A28 EPS CHANNEL B1 CB-XU-67 UNIT 1		

CHART A				
CARD POSITION	CARD FILE 1		CARD FILE 2	
	B/M ITEM NO.	NAMEPLATE	B/M ITEM NO.	NAMEPLATE
1	2	STEAMLINE FLOW HIGH B21-NO00B-1	2	SPARE
2	2	STEAMLINE FLOW HIGH B21-NO07B-1	3	SPARE
3	2	STEAMLINE FLOW HIGH B21-NO08B-1	6	
4	2	STEAMLINE FLOW HIGH B21-NO09B-1	6	
5	2	STEAMLINE PRESS LOW B21-NO15B-1	6	
6	2	REACTOR LEVEL LOW B21-NO28B-1	6	
7	2	CONDENSER VACUUM LOW B21-NO29B-1	6	
8	2	REACTOR PRESSURE HIGH C71-NO02B-1	6	
9	2	REACTOR LEVEL LOW B21-NO17B-1	6	
10	2	REACTOR PRESSURE HIGH B21-NO23B-1	6	
11	3	REACTOR PRESSURE HIGH B21-NO23B-2	6	
12	3	SPARE	6	
13	4&5	CALIBRATION UNIT	7	CALIBRATION UNIT

(XU-3907)

(XU-3908)

POOR ORIGINAL

REF. DWG. 9527-F-39035, SH. 1

				LICENSE NO. DPR-71, 1444-155 DOCKET NO. 50-325	
				PLANT MODIFICATION 77-269	
				CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT	
				UNIT NO. 1	
				REACTOR PROTECTION SYSTEM TRIP CALIBRATION CABINETS CHANNEL "B1" - CB-XU-67 CARD FILE & NAMEPLATE DATA	
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPENS.	ATTACHMENT "A"
					SHEET 10 OF 19

NAMEPLATE CHART B			
NO.	NAMEPLATE NOMENCLATURE	CHAR SIZE	
1	B21-B-B2		
2	C71-1-B2		
3	B21-7-B2		
4	B21-6-B2		
5	B21-5-B2		
6	B21-4-B2		
7	B21-3-B2		
8	B21-2-B2		
9	B21-1-B2		
10	B21-9-B2		
11	B21-10-B2		
12	SPARE		
13	SPARE		
14	SPARE		
15	74-1-B2		
16	74-2-B2		
17	74-3-B2		
18	GROSS FAILURE		
19	CARD OUT OF FILE		
20	F2-1 F1-1		
21	B21-F10-B2 B21-F9-B2		
22	B21-F8-B2 B21-F7-B2		
23	B21-F6-B2 B21-F5-B2		
24	B21-F4-B2 B21-F3-B2		
25	B21-F2-B2 B21-F1-B2		
26	SPARE		
27	B21-F18-B2 B21-F17-B2		
28	B21-F16-B2 B21-F15-B2		
29	C71-F2-B2 C71-F1-B2		
30	B21-F14-B2 B21-F13-B2		
31	B21-F12-B2 B21-F11-B2		
32	F2-2 F1-2		
33	TB-A		
34	F1-1-B2 F2-1-B2		
35	TB-B		
36	HIS LIGHT PAN VAC SW SW		
37	POWER SUPPLY 2		
38	INVERTER 2		
39	CARD FILE 1 CB-XU-3909		
40	CARD FILE 2 CB-XU-3910		
41	UNASSIGNED		
42	TRIP CALIBRATION CABINET A29 RPS CHANNEL B2 CB-XU-68 UNIT 1		

CHART A				
CARD POSITION	CARD FILE 1		CARD FILE 2	
	S/M ITEM NO.	NAMEPLATE	S/M ITEM NO.	NAMEPLATE
1	2	STEAMLINE FLOW HIGH B21-NC50-1	2	SPARE
2	2	STEAMLINE FLOW HIGH B21-NC50-1	3	SPARE
3	2	STEAMLINE FLOW HIGH B21-NC50-1	6	
4	2	STEAMLINE FLOW HIGH B21-NC50-1	6	
5	2	STEAMLINE PRESS LOW B21-NC55-1	6	
6	2	REACTOR LEVEL LOW B21-NC25B-1	6	
7	2	CONDENSER VACUUM LOW B21-NC60-1	6	
8	2	CRYSTALL PRESSURE HIGH C71-NC02D-1	6	
9	2	REACTOR LEVEL LOW B21-NC17D-1	6	
10	2	REACTOR PRESSURE HIGH B21-NC33D-1	6	
11	3	REACTOR PRESSURE HIGH B21-NC33D-2	6	
12	3	SPARE	6	
13	445	CALIBRATION UNIT	7	CALIBRATION UNIT

(XU-3909)

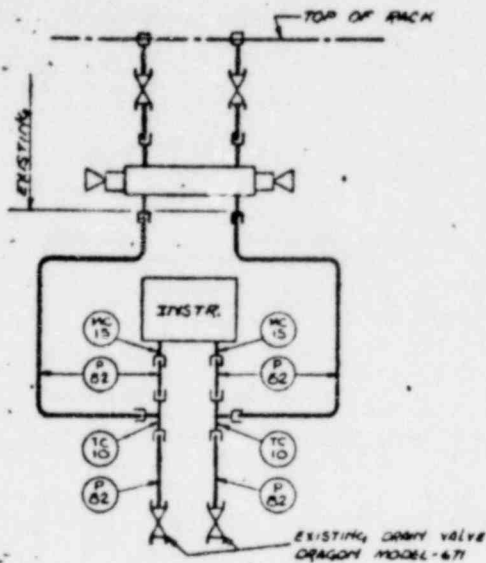
(XU-3910)

POOR ORIGINAL

REF. DWG. 9527-F-39036, SH. 1

1444-156

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					REACTOR PROTECTION SYSTEM TRIP CALIBRATION CABINETS CHANNEL "B2" - CB-XU-68 CARD FILE & NAMEPLATE DATA
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPRNG.	ATTACHMENT "A"
					SHEET 11 OF 19

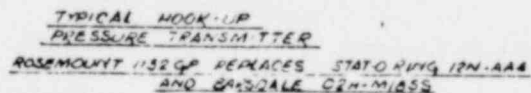


TYPICAL HOOK-UP
PRESS. DIFF. TRANSMITTER
ROSEMOUNT 1152DP REPLACES BARTON 288

INSTR. TAG NO.	REPLACES	G. E. RACK NO.
E41-PDT-N004	E41-PDS-N004	H21-P014
E41-PDT-N005	E41-PDS-N005	H21-P034
B21-PDT-N006A	B21-PDS-N006A	H21-P015
B21-PDT-N006B	B21-PDS-N006B	H21-P015
B21-PDT-N006C	B21-PDS-N006C	H21-P015
B21-PDT-N006D	B21-PDS-N006D	H21-P015
B21-PDT-N007A	B21-PDS-N007A	H21-P015
B21-PDT-N007B	B21-PDS-N007B	H21-P015
B21-PDT-N007C	B21-PDS-N007C	H21-P015
B21-PDT-N007D	B21-PDS-N007D	H21-P015
B21-PDT-N008A	B21-PDS-N008A	H21-P015
B21-PDT-N008B	B21-PDS-N008B	H21-P015
B21-PDT-N008C	B21-PDS-N008C	H21-P015
B21-PDT-N008D	B21-PDS-N008D	H21-P015
B21-PDT-N009A	B21-PDS-N009A	H21-P015
B21-PDT-N009B	B21-PDS-N009B	H21-P015
B21-PDT-N009C	B21-PDS-N009C	H21-P015
B21-PDT-N009D	B21-PDS-N009D	H21-P015
E51-PDT-N017	E51-PDS-N017	H21-P035
E51-PDT-N018	E51-PDS-N018	H21-P035

POOR ORIGINAL
1444 157

					LICENSE NO. DPR-17, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					PIPING HOOK-UP AT INSTRUMENT RACK FOR PRESSURE DIFFERENTIAL TRANSMITTERS ROSEMOUNT 1152DP REPLACES BARTON 288
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENGR.	ATTACHMENT "A"
					SHEET 12 OF 19

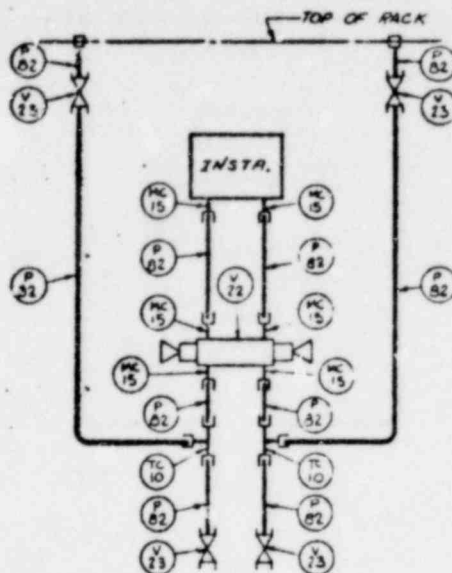


INST. TAG. NO.	REPLACES	G. E. BACK NO.
E11-PT-NO10A	E11-PS-NO10A	H21-PO04
E11-PT-NO10B	E11-PS-NO10B	H21-PO05
E11-PT-NO10C	E11-PS-NO10C	H21-PO06
E11-PT-NO10D	E11-PS-NO10D	H21-PO05
E11-PT-NO11A	E11-PS-NO11A	H21-PO06
E11-PT-NO11B	E11-PS-NO11B	H21-PO05
E11-PT-NO11C	E11-PS-NO11C	H21-PO04
E11-PT-NO11D	E11-PS-NO11D	H21-PO05
E11-PT-NO12A	E11-PS-NO12A	H21-PO04
E11-PT-NO12B	E11-PS-NO12B	H21-PO05
E11-PT-NO12C	E11-PS-NO12C	H21-PO04
E11-PT-NO12D	E11-PS-NO12D	H21-PO05
E11-PT-NO13A	E11-PS-NO13A	H21-PO04
E11-PT-NO13B	E11-PS-NO13B	H21-PO05
E11-PT-NO13C	E11-PS-NO13C	H21-PO04
E11-PT-NO13D	E11-PS-NO13D	H21-PO05
E11-PT-NO14A	E11-PS-NO14A	H21-PO04
E11-PT-NO14B	E11-PS-NO14B	H21-PO05
E11-PT-NO14C	E11-PS-NO14C	H21-PO04
E11-PT-NO14D	E11-PS-NO14D	H21-PO05
E11-PT-NO15A	E11-PS-NO15A	H21-PO04
E11-PT-NO15B	E11-PS-NO15B	H21-PO05
E11-PT-NO15C	E11-PS-NO15C	H21-PO04
E11-PT-NO15D	E11-PS-NO15D	H21-PO05
E11-PT-NO16A	E11-PS-NO16A	H21-PO04
E11-PT-NO16B	E11-PS-NO16B	H21-PO05
E11-PT-NO16C	E11-PS-NO16C	H21-PO04
E11-PT-NO16D	E11-PS-NO16D	H21-PO05
E11-PT-NO17A	E11-PS-NO17A	H21-PO04
E11-PT-NO17B	E11-PS-NO17B	H21-PO05
E11-PT-NO17C	E11-PS-NO17C	H21-PO04
E11-PT-NO17D	E11-PS-NO17D	H21-PO05

POOR ORIGINAL

1444 158

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY
					BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					PIPING HOOK-UP AT INSTRUMENT RACK
					FOR
					PRESSURE TRANSMITTERS
					ROSEMOUNT 1152DP REPLACES STAT-O-RING 12N-AA4
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENGR.	ATTACHMENT "A"
					SHEET 13 OF 19



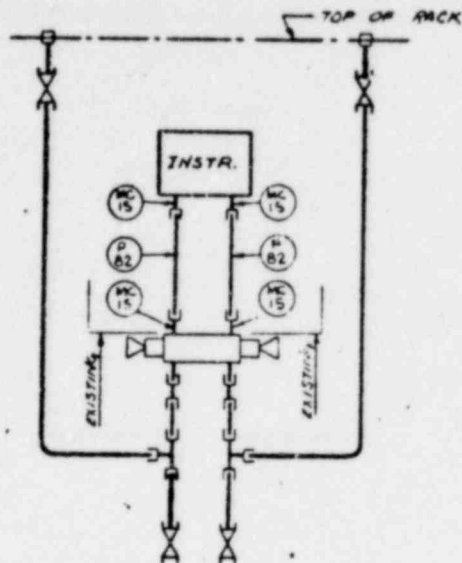
TYPICAL HOOK-UP
LEVEL TRANSMITTER
ROSEMOUNT 1152DP REPLACES G.E. INSTR
AND YARWAY 4418C-CE

INSTR. TAG. NO.	REPLACES	G.E. RACK NO.
B21-LT-NO17A-1	B21-LS-NO17A	H21-P004-002
B21-LT-NO17A-2		H21-P004-002
B21-LT-NO17B-1	B21-LS-NO17B	H21-P004-002
B21-LT-NO17B-2		H21-P004-002
B21-LT-NO17C-1	B21-LS-NO17C	H21-P005-002
B21-LT-NO17C-2		H21-P005-002
B21-LT-NO17D-1	B21-LS-NO17D	H21-P005-002
B21-LT-NO17D-2		H21-P005-002
B21-LT-NO31A	B21-LS-NO31A	H21-P004
B21-LT-NO31B	B21-LS-NO31B	H21-P005
B21-LT-NO31C	B21-LS-NO31C	H21-P004
B21-LT-NO31D	B21-LS-NO31D	H21-P005

POOR ORIGINAL

1444 159

					LICENSE NO. DPR-71, DOCKET NO. 50-325	
					PLANT MODIFICATION 77-269	
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT	
					UNIT NO. 1	
					PIPING HOOK-UP AT INSTRUMENT RACK FOR LEVEL TRANSMITTER ROSEMOUNT 1152DP REPLACES YARWAY 4418C-CE	
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPERS.	ATTACHMENT "A"	
					SHEET 14 OF 19	

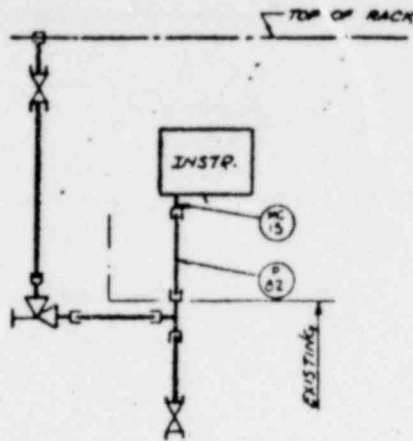


TYPICAL HOOK-UP
LEVEL TRANSMITTER
ROSEMOUNT 1152DP REPLACES YARWAY 4418C-CE

INSTR. TAG NO.	REPLACES	G.E. RACK NO.
B21-LT-N024A-1	B21-LT-N024A	H21-P004
B21-LT-N024A-2		H21-P004
B21-LT-N024B-1	B21-LT-N024B	H21-P004
B21-LT-N024B-2		H21-P005
B21-LT-N025A-1	B21-LT-N025A	H21-P005
B21-LT-N025A-2		H21-P004
B21-LT-N025B-1	B21-LT-N025B	H21-P005
B21-LT-N025B-2		H21-P005
B21-LT-N036	B21-LT-N036	H21-P009
B21-LT-N037	B21-LT-N037	H21-P010
B21-LT-N042A	B21-LT-N042A	H21-P004
B21-LT-N042B	B21-LT-N042B	H21-P005

POOR ORIGINAL

					LICENSE NO. DOR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					PIPING HOOK-UP AT INSTRUMENT RACK FOR LEVEL TRANSMITTER ROSEMOUNT 1152DP REPLACES YARWAY 4418C-CE
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENG.	ATTACHMENT "A"
					SHEET 15 OF 19

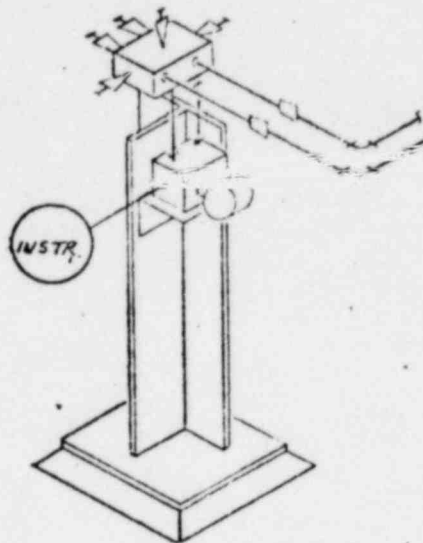


TYPICAL HOOK-UP
PRESSURE TRANSMITTER
ROSEMOUNT 1152DP REPLACES BARKSDALE B2T-C12SS

INST. TAG NO.	REPLACES	GP RACK NO.
B21-PT-N021A	B21-PS-N021A	H21-P004
B21-PT-N021B	B21-PS-N021B	H21-P005
B21-PT-N021C	B21-PS-N021C	H21-P009
B21-PT-N021D	B21-PS-N021D	H21-P010
B21-PT-N023A	B21-PS-N023A	H21-P004
B21-PT-N023B	B21-PS-N023B	H21-P004
B21-PT-N023C	B21-PS-N023C	H21-P005
B21-PT-N023D	B21-PS-N023D	H21-P005

POOR ORIGINAL

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					PIPING HOOK-UP AT INSTRUMENT RACK FOR PRESSURE TRANSMITTER
					ROSEMOUNT 1152DP REPLACES BARKSDALE B2T-C12SS
REV. NO.	DATE	DESCRIPTION	ENGR.	SUP. ENG.	ATTACHMENT "A" SHEET 16 OF 19

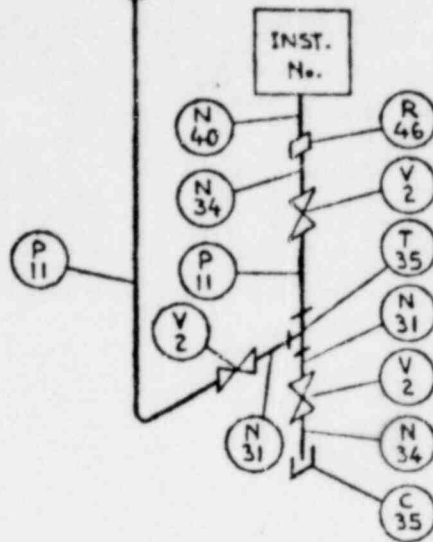


TYPICAL HOOK-UP
ROSEMOUNT 1152 TRANSMITTER REPLACES
ROBERT SHAW 83844-B1

INSTR. TAG NO.	REPLACES	LOCATED
E41-LT-N014	E41-LSH-N014	LOCAL
E51-LT-N010	E51-LSH-N010	LOCAL

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY
					BRUNSWICK STEAM ELECTRIC PLANT
					UNIT NO. 1
					PIPING HOOK-UP AT LOCAL STATIONS
					FOR
					LEVEL TRANSMITTERS
					ROSEMOUNT 1152DP REPLACES
					ROBERT SHAW 83844-B1
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPENS.	ATTACHMENT "A" SHEET 17 OF 19

TO MAIN
STEAM LINE

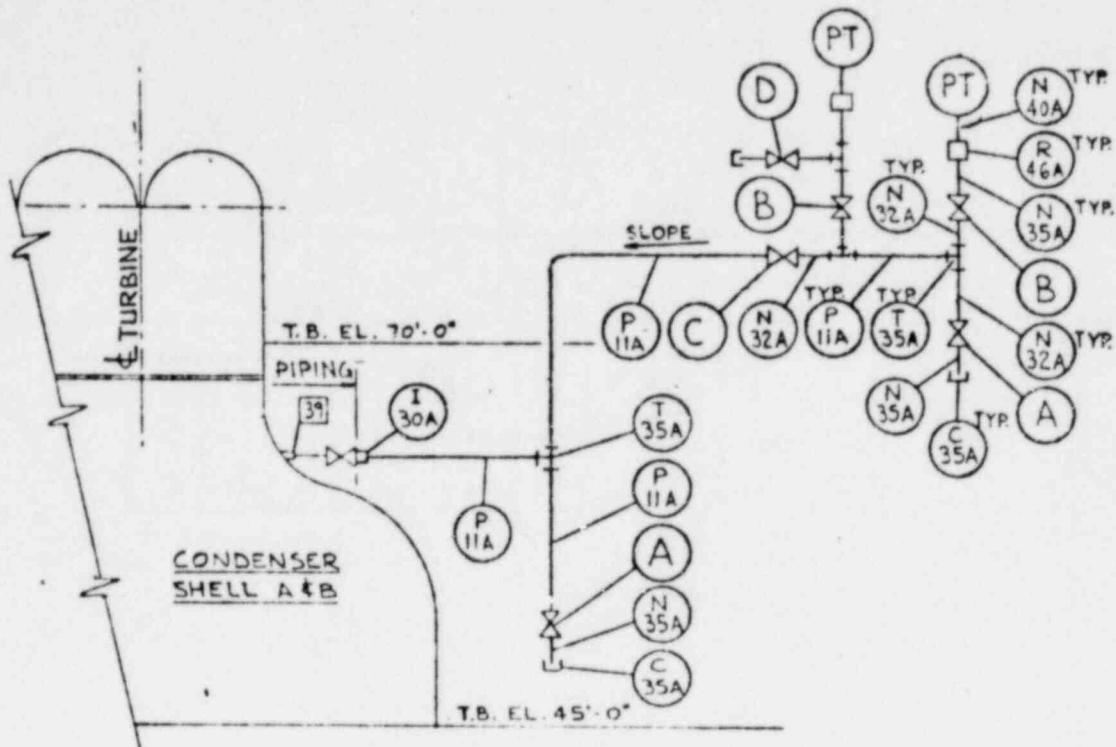


TYPICAL HOOK-UP
ROSEMOUNT 1152 TRANSMITTER REPLACES
BARKSDALE B2T-C12SS

INSTR.	TAG NO.	REPLACES	LOCATED
B21-PT-N015A		B21-PS-N015A	LOCAL
B21-PT-N015B		B21-PS-N015B	LOCAL
B21-PT-N015C		B21-PS-N015C	LOCAL
B21-PT-N015D		B21-PS-N015D	LOCAL

					LICENSE NO. DPR-71, DOCKET NO. 50-325
					PLANT MODIFICATION 77-269
					CAROLINA POWER & LIGHT COMPANY
					BRUNSWICK STEAM ELECTRIC PLANT
					<u>UNIT NO. 1</u>
					PIPING HOOK-UP AT LOCAL STATIONS FOR PRESSURE TRANSMITTERS ROSEMOUNT 1152DP REPLACES BARKSDALE B2T-C12SS
REV. NO.	DATE	DESCRIPTION	ENGR.	SUPERV.	ATTACHMENT "A" SHEET 18 OF 19

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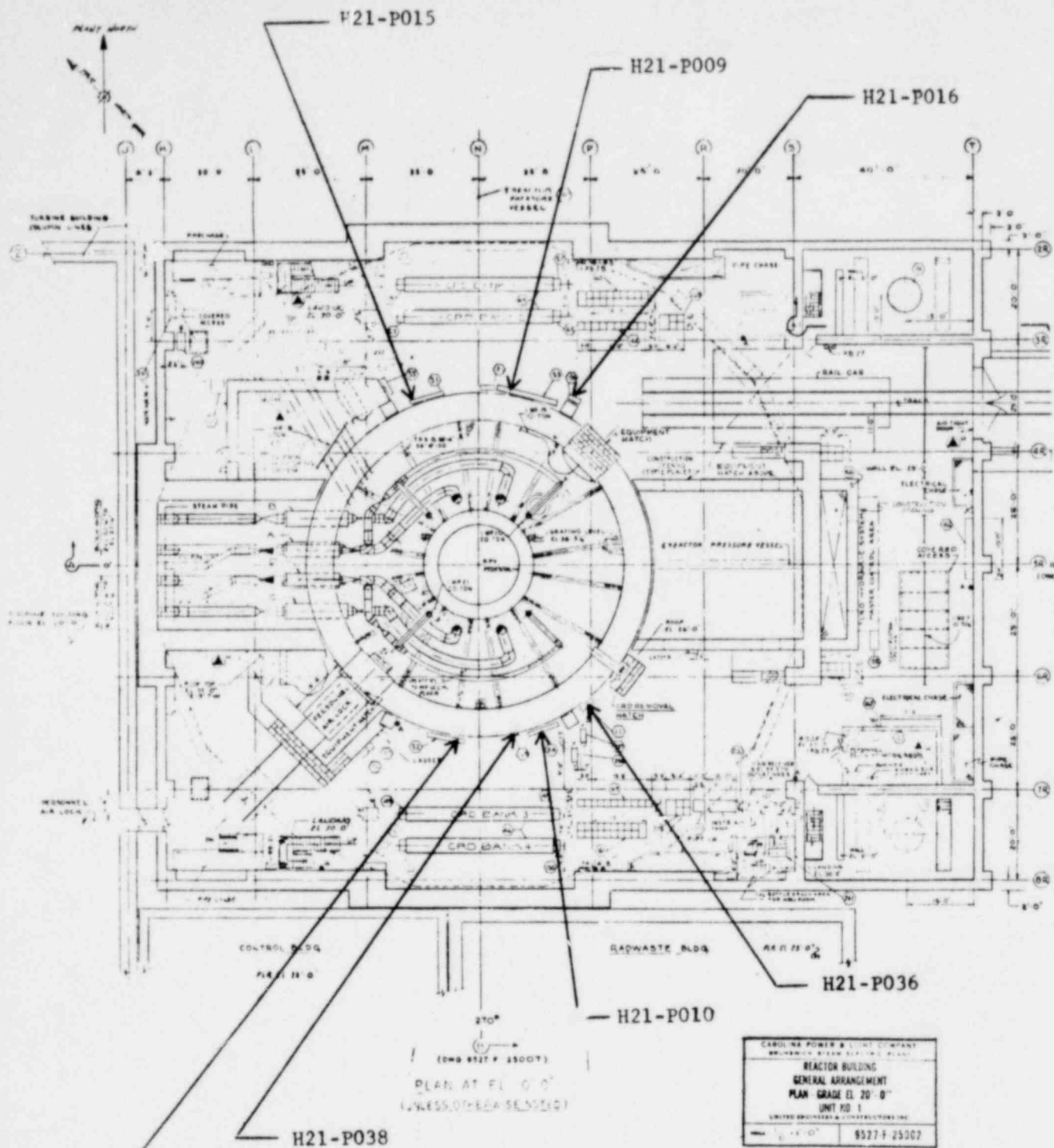


TYPICAL HOOK-UP
ROSEMOUNT 1152 TRANSMITTER REPLACES
BARKSDALE B2T-M18SS-66

INSTR. TAG NO.	REPLACES	LOCATED
B21-PT-N056A	B21-PS-N056A	LOCAL
B21-PT-N056B	B21-PS-N056B	LOCAL
B21-PT-N056C	B21-PS-N056C	LOCAL
B21-PT-N056D	B21-PS-N056D	LOCAL

					LICENSE NO. DPR-71, DOCKET NO. 50-325	
					PLANT MODIFICATION 77-269	
					CAROLINA POWER & LIGHT COMPANY	
					BRUNSWICK STEAM ELECTRIC PLANT	
					UNIT NO. 1	
					PIPING HOOK-UP AT LOCAL STATIONS	
					FOR	
					PRESSURE TRANSMITTERS	
					ROSEMOUNT 1152DP REPLACES	
					BARKSDALE B2T-M18SS-66	
REV. NO.	DATE	DESCRIPTION	ENGR.	DUPENG.	ATTACHMENT "A"	
					SHEET 19 OF 19	

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POOR ORIGINAL

CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
REACTOR BUILDING
INSTRUMENT RACKS
ELEVATION 20'-0"
PRESSURE SWITCH TO ANALOG REPLACEMENT

ATTACHMENT "A"

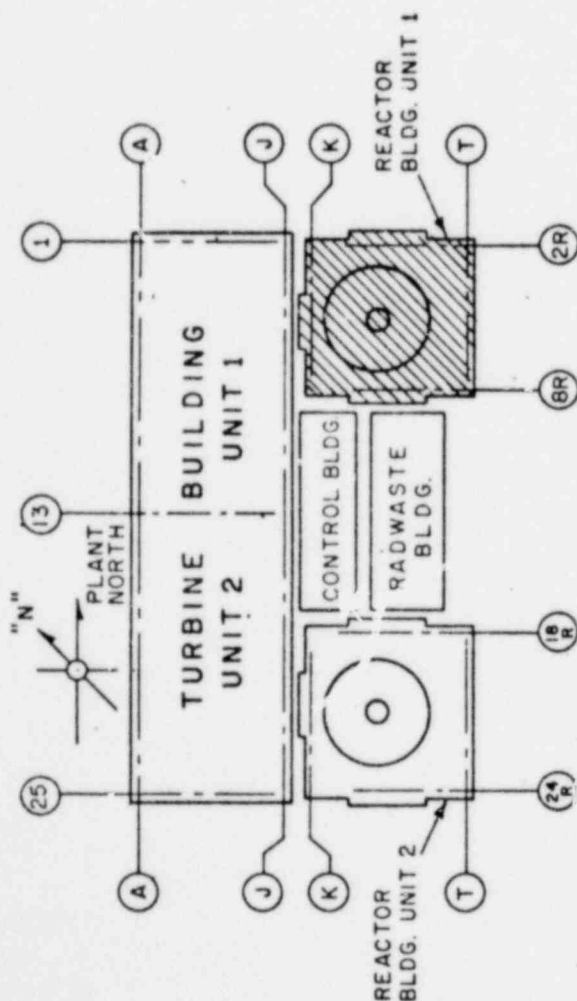
SHEET 1 OF 3

EQUIPMENT LIST

ITEM NO.	DESCRIPTION	C.P.&L. EQUIP. NO.	G.E. M.P.L. NO.
11	HPCI LEAK DETECTOR INST. RACK - B	1B	H21-P036
51	MAIN STEAM FLOW INSTRUMENT RACK	1A	H21-P015
52	MAIN STEAM FLOW INSTRUMENT RACK	1B	H21-P025
53	JET PUMP INSTRUMENT RACK (1 TO 10)	1A	H21-P009
54	JET PUMP INSTRUMENT RACK (11 TO 20)	1B	H21-P010
* 78	R.V. LEVEL & PRESSURE INSTRUMENT RACK	1A	H21-P004 & P004-002
* 79	R.V. LEVEL & PRESSURE INSTRUMENT RACK	1B	H21-P005 & P005-002
168	RCIC LEAK DETECTOR INST. RACK - B	1B	H21-P038
186	CS/HPCI LEAK DETECTOR INST. RACK		H21-P016

NOTES:

1. SYMBOL SHOWN WITH AN ASTERISK (*) DENOTES INSTRUMENT RACKS LOCATED AT ELEVATION 50'-0" IN REACTOR BUILDING
2. ALL OTHER INSTRUMENT RACKS ARE LOCATED AT ELEVATION 20'-0"



KEY PLAN
1" = 200'-0"

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CAROLINA POWER & LIGHT COMPANY
BRUNSWICK STEAM ELECTRIC PLANT

UNIT NO. 1
REACTOR BUILDING
INSTRUMENT RACKS
PRESSURE SWITCH TO ANALOG REPLACEMENT

ATTACHMENT "A"

SHEET 3 OF 3

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SECTION VI

PRESSURE AND LEVEL TRANSMITTERS - TAG NUMBER INDEX

Unit No.	Tag Number	Page No.	Unit No.	Tag Number	Page No.
1	B21-PDT-N006A	24 A	1	B21-PT-N056A	21 A
1	B21-PDT-N006B	24 A	1	B21-PT-N056B	21 A
1	B21-PDT-N006C	24 A	1	B21-PT-N056C	21 A
1	B21-PDT-N006D	24 A	1	B21-PT-N056D	21 A
1	B21-PDT-N007A	24 A			
1	B21-PDT-N007B	24 A			
1	B21-PDT-N007C	24 A			
1	B21-PDT-N007D	24 A			
1	B21-PDT-N008A	24 A			
1	B21-PDT-N008B	24 A	1	C71-PT-N002A	21 A
1	B21-PDT-N008C	24 A	1	C71-PT-N002B	21 A
1	B21-PDT-N008D	24 A	1	C71-PT-N002C	21 A
1	B21-PDT-N009A	25 A	1	C71-PT-N002D	21 A
1	B21-PDT-N009B	25 A			
1	B21-PDT-N009C	25 A			
1	B21-PDT-N009D	25 A			
1	B21-LT -N017A-1	24 A			
1	B21-LT -N017A-2	24 A			
1	B21-LT -N017B-1	24 A			
1	B21-LT -N017B-2	24 A			
1	B21-LT -N017C-1	24 A			
1	B21-LT -N017C-2	24 A	1	E11-PT-N010A	21 A
1	B21-LT -N017D-1	24 A	1	E11-PT-N010B	21 A
1	B21-LT -N017D-2	24 A	1	E11-PT-N010C	21 A
1	B21-LT -N024A-1	24 A	1	E11-PT-N010D	21 A
1	B21-LT -N024A-2	24 A	1	E11-PT-N011A	22 A
1	B21-LT -N024B-1	24 A	1	E11-PT-N011B	22 A
1	B21-LT -N024B-2	24 A	1	E11-PT-N011C	22 A
1	B21-LT -N025A-1	24 A	1	E11-PT-N011D	22 A
1	B21-LT -N025A-2	24 A	1	E11-PT-N019A	22 A
1	B21-LT -N025B-1	24 A	1	E11-PT-N019B	22 A
1	B21-LT -N025B-2	24 A	1	E11-PT-N019C	22 A
1	B21-LT -N031A	25 A	1	E11-PT-N019D	22 A
1	B21-LT -N031B	25 A			
1	B21-LT -N031C	25 A			
1	B21-LT -N031D	25 A	1	E41-PDT-N004	25 A
			1	E41-PDT-N005	25 A
1	B21-PT-N015A	21 A			
1	B21-PT-N015B	21 A	1	E51-PDT-N017	25 A
1	B21-PT-N015C	21 A	1	E51-PDT-N018	25 A
1	B21-PT-N015D	21 A			
1	B21-PT-N021A	21 A			
1	B21-PT-N021B	21 A	1	B21-LT-N036	25 A
1	B21-PT-N021C	21 A	1	B21-LT-N037	25 A
1	B21-PT-N021D	21 A	1	B21-LT-N042A	25 A
1	B21-PT-N023A	21 A	1	B21-LT-N042B	25 A
1	B21-PT-N023B	21 A			
1	B21-PT-N023C	21 A			
1	B21-PT-N023D	21 A			

Spec. No. 9527-01-252-51

SECTION VI

PRESSURE AND LEVEL TRANSMITTERS - TAG NUMBER INDEX (Cont'd)

R5 | Unit No. Tag Number Page No.

R6	1	E41-LT-NO14	26 A
	1	E51-LT-NO10	26 A

Spec. No. 9527-01-252-51

Page 18 A

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R5 |

R5

SECTION VII

PRESSURE INSTRUMENT

SPECIFICATION SHEET

TAG NO. SEE PAGES 21A & 22ACLIENT CAROLINA POWER & LIGHT COLOCATION BREP - UNITS 1SERVICE SEE PAGES 21A & 22A

(CLASS I)

GENERAL	DESCRIPTION:	RECORDER <input type="checkbox"/>	INDICATOR <input type="checkbox"/>	BLIND <input checked="" type="checkbox"/>	CONTROLLER <input type="checkbox"/>	(NOTE 1) TRANSMITTER <input checked="" type="checkbox"/>
	CASE:	RECTANGULAR <input type="checkbox"/>	CIRCULAR <input type="checkbox"/>	MINI <input type="checkbox"/>	COLOR:	BLACK <input type="checkbox"/> OTHER <u>MER STD</u>
	MOUNTING:	FLUSH <input type="checkbox"/>	SURFACE <input type="checkbox"/>	BRACKET <input checked="" type="checkbox"/>	NO. PTS. RECORDING	INDICATING
	CHART TYPE:	* STRIP <input type="checkbox"/>	* CIRCULAR <input type="checkbox"/>	RANGE	CHART NO.	
CONTROL	SCALE:	RANGE		CHART SPEED		
	CHART DRIVE:	SPRING <input type="checkbox"/>	DAY WIND <input type="checkbox"/>	ELECTRIC <input type="checkbox"/>	EXP. PROOF <input type="checkbox"/>	V CY OTHER
	TYPE:	PNEUMATIC <input type="checkbox"/>	3-15 PSIG <input type="checkbox"/>	ELECTRIC <input type="checkbox"/>	OUTPUT	
	MTG. LOC. CH:	INTERNAL <input type="checkbox"/>	PLUG-IN <input type="checkbox"/>	REMOTE <input type="checkbox"/>	ON-OFF <input type="checkbox"/> OTHER	
TRANSMTR.	PROP.	S	RESET <input type="checkbox"/>	RATE <input type="checkbox"/>	INCREASES <input type="checkbox"/> DECREASES <input type="checkbox"/>	
	ON MEASUREMENT INCREASE, OUTPUT:	INTERNAL <input type="checkbox"/>		EXTERNAL <input type="checkbox"/>	INTEGRAL <input type="checkbox"/> NO POSITIONS	
	AUTO. MAN SWITCH:	NONE <input type="checkbox"/>	PNEUMATIC <input type="checkbox"/>	ELECTRIC <input type="checkbox"/>	INTERNAL <input type="checkbox"/>	EXTERNAL <input type="checkbox"/>
	SETPOINT ADJUSTMENTS:	REMOTE SET <input type="checkbox"/>	MANUAL SET <input type="checkbox"/>	CASCADE <input type="checkbox"/>	MASTER <input type="checkbox"/>	SECONDARY <input type="checkbox"/>
PRESSURE ELEMENT	MANUAL REG:	NONE <input type="checkbox"/>	IN CASE <input type="checkbox"/>	SUB-PANEL <input type="checkbox"/>	USED WITH INSTR. NO.	
	TYPE:	PNEUMATIC <input type="checkbox"/>	OUTPUT:	3-15 <input type="checkbox"/>	OTHER POWER SUPPLY: 24VDC (BY OTHERS)	
	ELECTRIC <input checked="" type="checkbox"/>	OUTPUT:	4-20 MADC	EXP. PROOF <input type="checkbox"/>	GEN. PURPOSE <input type="checkbox"/>	WTHR. PROOF <input type="checkbox"/>
	TYPE:	SPIRAL <input type="checkbox"/>	BELLOWS <input type="checkbox"/>	BOURDON <input type="checkbox"/>	DIAPHRAGM <input checked="" type="checkbox"/>	HELICAL <input type="checkbox"/>
OPERATING CONDITIONS	MATERIAL:	BRONZE <input type="checkbox"/>	STEEL <input type="checkbox"/>	316 SS <input checked="" type="checkbox"/>	OTHER	
	RANGE:	<u>SEE PAGES 21A & 22A</u>		OVER RANGE PROTECT TO <u>2000 PSIG</u>		
	DIAPHRAGM SEAL:	CLEANOUT <input type="checkbox"/>	NON-CLEANOUT <input type="checkbox"/>	FLUSH. CONN. <input type="checkbox"/>	FLANGED <input type="checkbox"/>	LB. ASA; TYPE:
	MATERIALS:	DIAPHRAGM	BOTTOM BOWL	CAPILLARY TUBING:	MAT'L.	ARMOR
ACCESSORIES	CONNECTION, NPT:	BOWL	* INSTR.	1/4	BACK <input type="checkbox"/>	BOTTOM <input type="checkbox"/>
	FLUID:	<u>SEE PAGES 21A & 22A</u>				
	PRESSURE:	NORMAL	PSIG MAX.	PSIG TEMP:	NORMAL	MAX.
	FILTER-REGULATOR <input type="checkbox"/>	SUPPLY GAGE <input type="checkbox"/>	MTG. BRACKET <input checked="" type="checkbox"/>	SYPHON <input type="checkbox"/>	OUTPUT GAGE <input type="checkbox"/>	
NOTES	CHARTS	INKSET <input type="checkbox"/>	CONTROLLER MANIFOLD <input type="checkbox"/>			
	ELECT. CONTACTS:					
	OTHER:					
	<p>(1) ROSEMOUNT MODEL 1152GP</p> <p>(2) SEISMIC QUALIFICATION REQUIRED; INSTALLED INDOORS</p> <p>(3) 5-POINT CALIBRATION FOR EACH INSTRUMENT.</p> <p>(4) FOR PLANT MOD. 77-268 & 269</p>					

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SECTION VII

SPECIFICATION SHEET

TAG NO. SEE BELOW

CLIENT CAROLINA POWER & LIGHT COLOCATION SEEP - UNITS 1SERVICE SEE BELOW (CLASS I)

TAG NO.	PROCESS RANGE (PSIG)	CALIBRATION RANGE (PSIG)		PROCESS PRESS (PSIG)		PROCESS TEMP GINST. (°F)		PROCESS FLUID	SERVICE	NOTE
		ATTA	20MA	NORM	MAX	NORM	MAX			
1-B21-PT-N015A	0-1200	0	1200	965	1352	100	150	STEAM	MAIN STEAMLINE PRESS LOW	1
1-B21-PT-N015B	0-1200	0	1200							1
1-B21-PT-N015C	0-1200	0	1200							1
1-B21-PT-N015D	0-1200	0	1200							1
1-B21-PT-N023A	600 TO 1200	600	1200	1005	1337			WATER	Rx PRESS HIGH	1
1-B21-PT-N023B	600 TO 1200	600	1200							1
1-B21-PT-N023C	600 TO 1200	600	1200							1
1-B21-PT-N023D	600 TO 1200	600	1200							1
1-B21-PT-N021A	0-500	0	500		1325				Rx PRESS LOW	3
1-B21-PT-N021B	0-500	0	500							3
1-B21-PT-N021C	0-500	0	500							3
1-B21-PT-N021D	0-500	0	500							3
1-B21-PT-N056A	0 TO 30" Hg VAC	0" Hg VAC	30" Hg VAC	7" Hg VAC	0" Hg VAC			STEAM	COND. VACUUM LOW	2
1-B21-PT-N056B	0 TO 30" Hg VAC	0" Hg VAC	30" Hg VAC							2
1-B21-PT-N056C	0 TO 30" Hg VAC	0" Hg VAC	30" Hg VAC							2
1-B21-PT-N056D	0 TO 30" Hg VAC	0" Hg VAC	30" Hg VAC							2
1-C71-PT-N002A	0-5	0	5	.35	72	70		AIR/H ₂ O	DRYWELL PRESS HI	4
1-C71-PT-N002B	0-5	0	5							4
1-C71-PT-N002C	0-5	0	5							4
1-C71-PT-N002D	0-5	0	5							4
1-E11-PT-N010A	0-5	0	5							4
1-E11-PT-N010B	0-5	0	5							4
1-E11-PT-N010C	0-5	0	5							4
1-E11-PT-N010D	0-5	0	5							4

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BASED ON I.S.A. RP 20

D-2020, 2025, 2522, 2525
L-20120, 2052, 2512, 2515

POOR ORIGINAL

SPEC. NO. 9527-01-252-31
PAGE 21A

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SPECIFICATION SHEET

TAG NO. SEE BELOW

LOCATION BSEP - UNITS 1

SERVICE SEE BELOW (CLASS I)

NOTES

- (1) ROSEMOUNT MODEL 1152GPYE22T0280PB
- (2) ROSEMOUNT MODEL 1152GPSE22T0280PB
- (3) ROSEMOUNT MODEL 1152GP8E22T0280PB
- (4) ROSEMOUNT MODEL 1152GP4E22T0280PB

POOR ORIGINAL

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SECTION VII

DIFFERENTIAL PRESSURE INSTRUMENT

SPECIFICATION SHEET

TAG NO. SEE PAGES 24A, 25A & 26A

CLIENT CAROLINA POWER & LIGHT CO
 LOCATION BSEP - UNITS 1
 SERVICE SEE PAGES 24A, 25A & 26A (CLASS I)

GENERAL

DESCRIPTION: RECORDER ☐ INDICATOR ☐ BLIND ☒ CONTROLLER ☐ (NOTE 1) TRANSMITTER ☒ INTEG. ☐
 CASE: RECTANGULAR ☐ CIRCULAR ☐ COLOR: BLACK ☐ OTHER MER STD
 MOUNTING: FLUSH ☐ SURFACE ☐ BRACKET ☒ NO. PTS. RECORDING _____ INDICATING _____
 CHART TYPES: _____ CIRC. ☐ RANGE: _____ SQ. ROOT ☐ UNIFORM ☐ _____ REV / DAY
 SCALE: TYPE _____ RANGE: _____ SQ. ROOT ☐ UNIFORM ☐
 CHART DRIVE: SPRING ☐ DAY WIND _____ ELECTRIC ☐ EXP. PROOF ☐ V _____ CY OTHER _____

CONTROL

TYPE: PNEUMATIC ☐ 3-15 PSIG ☐ ELECTRIC ☐ OUTPUT _____
 MTG. LOCATION: INTERNAL ☐ PLUG-IN ☐ REMOTE ☐
 PROP. _____ \$ _____ RESET ☐ RATE ☐ ON-OFF ☐ OTHER _____
 ON MEASUREMENT INCREASE, OUTPUT: INCREASES ☐ DECREASES ☐
 AUTO-MAN SWITCH: NONE ☐ INTERNAL ☐ EXTERNAL ☐ INTEGRAL ☐ NO POSITIONS _____
 SETPOINT ADJUSTMENTS: PNEUMATIC ☐ ELECTRIC ☐ INTERNAL ☐ EXTERNAL ☐
 REMOTE SET ☐ MANUAL SET ☐ CASCADE ☐ MASTER ☐ SECONDARY ☐
 MANU. REG. NONE ☐ IN CASE ☐ SUB-PANEL ☐ USED WITH INSTR. NO. _____

TRANSMTR.

TYPE: PNEUMATIC ☐ OUTPUT: 3-15 ☐ OTHER POWER SUPPLY: 24VDC (By OTHERS)
 ELECTRIC ☒ OUTPUT: 4-20 mA dc EXP. PROOF ☐ GEN. PURPOSE ☐ WTHR. PROOF ☐

DIFFERENTIAL UNIT

SERVICE: FLOW ☐ LEVEL ☒ OR DIFF. PRESS. ☒ DIFF. RANGE SEE PAGES 24A, 25A & 26A
 TYPE: FORCE BAL. ☐ BELLOWS ☐ MERC. MANO. ☐ OTHER DIFF. CAPACITANCE
 BODY MATL: STEEL ☐ 316 STNL. STL. ☒ OTHER _____ RATING 2000 PSIG AT 100 °F
 ELEMENT MATL: 316 STNL. STL. ☒ OTHER _____
 PROCESS CONNECTION SIZE: NPT 1/4" ☒ 1/2" ☐ OTHER _____

PRIMARY ELEMENT

TYPE: ORIFICE ☐ FLOW NOZ. ☐ VENTURI ☐ OTHER _____
 TYPE TAPS: FLANGE ☐ VENA CONTRACTA ☐ PIPE ☐ OTHER _____
 PIPE I.D.: _____ ELANGE SIZE: _____ LB. ASA TYPE: _____
 ELEMENT MATL: _____ BORE: _____ BETA RATIO _____

OPERATING CONDITIONS

FLUID: SEE PAGES 24A, 25A & 26A FLOW: NORMAL _____ FULL SCALE _____ UNITS _____
 PRESSURE: NORMAL _____ PSIG. MAX. _____ PSIG. TEMPERATURE: NORMAL _____ ° MAX. _____ °
 SPECIFIC GRAVITY: _____ AT _____ °F MOL. WT. _____ VISCOSITY _____ CP AT _____ °F
 BASE CONDITIONS: _____ PSIA. _____ °F STEAM: QUALITY _____ % SUPERHEAT: _____ °F

ACCESSORIES

FILTER-REGULATOR ☐ SUPPLY GAUGE ☐ MTG. BRACKET ☐ COND. POTS ☐ OUTPUT-GAUGE ☐
 CHARTS: _____ INKSET ☐ METER MANIFOLD ☐ CONTROLLER MANIFOLD ☐
 ELECT. CONTACTS: _____
 OTHER: _____

NOTES

- (1) ROSEMOUNT MODEL 1152DP
- (2) SEISMIC QUALIFICATION REQUIRED, INSTALLED INDOORS.
- (3) FIVE (5) POINT CALIBRATION FOR EACH INSTRUMENT.
- (4) FOR PLANT MOD. 77-268 & 269

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POOR ORIGINAL

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SECTION VII

SPECIFICATION SHEET

TAG NO. SEE BELOWCLIENT CAROLINA POWER & LIGHT COLOCATION SSSP - UNITS 1SERVICE SEE BELOW (CLASS I)

TAG NOS.	PROCESS RANGE	CALIB. RANGE		PROCESS PRESS (PSIG)		PROCESS TEMP INSTR. (°F)		FLUID	SERVICE	N O T E
		4 MA	20 MA	NORM	MAX	NORM	MAX			
1-B21-LT-NO17A-1	0-60"WC	67.58"WC	25.1"WC	1005	1337	100	150	WATER	Rx LEVEL LOW	3.5
1-B21-LT-NO17A-2	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL HIGH	3.5
1-B21-LT-NO17B-1	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL LOW	3.5
1-B21-LT-NO17B-2	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL HIGH	3.5
1-B21-LT-NO17C-1	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL LOW	3.5
1-B21-LT-NO17C-2	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL HIGH	3.5
1-B21-LT-NO17D-1	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL LOW	3.5
1-B21-LT-NO17D-2	0-60"WC	67.58"WC	25.1"WC						Rx LEVEL HIGH	3.5
1-B21-LT-NO24A-1	-150 TO 60" WC	196.4"WC	47.4"WC						Rx LEVEL LOW	1.5
1-B21-LT-NO24A-2	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-LT-NO24B-1	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-LT-NO24B-2	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-LT-NO25A-1	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-LT-NO25A-2	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-LT-NO25B-1	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-LT-NO25B-2	-150 TO 60" WC	196.4"WC	47.4"WC							1.5
1-B21-PDT-NO06A	0-150PSID	0 PSID	150 PSID	1000				STEAM	MAIN STEAMLINE FLOW HIGH	2
1-B21-PDT-NO06B	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO06C	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO06D	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO07A	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO07B	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO07C	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO07D	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO08A	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO08B	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO08C	0-150PSID	0 PSID	150 PSID							2
1-B21-PDT-NO08D	0-150PSID	0 PSID	150 PSID							2

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D2522, 2523, 2524, 2525, 2529

D2526, 2527, 2528, 2529

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SECTION VII

SPECIFICATION SHEET

TAG NO. SEE BELOW

CLIENT CAROLINA POWER & LIGHT CO

LOCATION ESEP - UNITS 1

SERVICE SEE BELOW

(CLASS I)

TAG NOS.	PROCESS RANGE	CALIB. RANGE		PROCESS PRESS (PSIG)		PROCESS TEMP @ INSTR. (°F)		FLUID	SERVICE	NOTE
		4 MA	20 MA	NORM	MAX	NORM	MAX			
1-B21-PDT-N009A	0-150 PSID	0 PSID	150 PSID	1000	1337	100	150	STEAM	MAIN STEAMLINE FLOW HIGH	2
1-B21-PDT-N009B	0-150 PSID	0 PSID	150 PSID							2
1-B21-PDT-N009C	0-150 PSID	0 PSID	150 PSID							2
1-B21-PDT-N009D	0-150 PSID	0 PSID	150 PSID							2
1-B21-LT-N031A	-150 TO 60" WC	196.4" WC	47.4" WC	1005				WATER	RX LEVEL LOW	1.5
1-B21-LT-N031B	-150 TO 60" WC	196.4" WC	47.4" WC							1.5
1-B21-LT-N031C	-150 TO 60" WC	196.4" WC	47.4" WC							1.5
1-B21-LT-N031D	-150 TO 60" WC	196.4" WC	47.4" WC							1.5
1-E41-PDT-N004	-300 TO 300" WC	-300" WC	300" WC					STEAM	HPCI STEAMLINE ΔPHI	1
1-E41-PDT-N005	-300 TO 300" WC	-300" WC	300" WC							1
1-E51-PDT-N0017	-550 TO 550" WC	-550" WC	550" WC	1135					PCIC STEAMLINE ΔPHI	4
1-E51-PDT-N0018	-550 TO 550" WC	-550" WC	550" WC							4
1-B21-LT-N036	-100 TO 200" WC	321.44" WC	33.74" WC	1005				WATER	RX LEVEL LOW	1
1-B21-LT-N037	-100 TO 200" WC	321.44" WC	33.74" WC							1
1-B21-LT-N042A	0-60" WC	67.58" WC	25.1" WC							3
1-B21-LT-N042E	0-60" WC	67.58" WC	25.1" WC							3

(1) ROSEMOUNT MODEL 1152DP5E22T0280PB

(2) ROSEMOUNT MODEL 1152DP7E22T0280PB

(3) ROSEMOUNT MODEL 1152DT4E22T0280PB

(4) ROSEMOUNT MODEL 1152DP6E22T0280PB

(5) FIELD TO INSURE THAT INSTRUMENT "ZERO" AGREES WITH VESSEL "ZERO" REF. LEVEL WHICH IS 517" ABOVE VESSEL BASE. RANGE TO MATCH THAT OF REPLACED DIFFERENTIAL PRESS SWITCH.

NOTES

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D2525, 2530, 25025 25030

SPECIFICATION SHEET

TAG NO. SEE BELOW

LOCATION BSEP - UNITS 1

SERVICE SEE BELOW

(CLASS I

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Notes

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SECTION V

TRIP CALIBRATION SYSTEM - TAG NUMBER INDEX

UNIT NO.	TAG NO.	PAGE NO.	UNIT NO.	TAG NO.	PAGE NO.
1	B21-N006A-1	40 A	1	B21-N024B-1	44 A
1	B21-N006B-1	44 A	1	B21-N024B-2	38 A
1	B21-N006C-1	42 A	1	B21-N025A-1	42 A
1	B21-N006D-1	46 A	1	B21-N025A-2	35 A
1	B21-N007A-1	40 A	1	B21-N025B-1	46 A
1	B21-N007B-1	44 A	1	B21-N025B-2	38 A
1	B21-N007C-1	42 A	1	B21-N031A-1	34 A
1	B21-N007D-1	46 A	1	B21-N031A-2	34 A
1	B21-N008A-1	40 A	1	B21-N031A-3	34 A
1	B21-N008B-1	44 A	1	B21-N031A-4	34 A
1	B21-N008C-1	42 A	1	B21-N031B-1	37 A
1	B21-N008D-1	46 A	1	B21-N031B-2	37 A
1	B21-N009A-1	40 A	1	B21-N031B-3	37 A
1	B21-N009B-1	44 A	1	B21-N031B-4	37 A
1	B21-N009C-1	42 A	1	B21-N031C-1	34 A
1	B21-N009D-1	46 A	1	B21-N031C-2	34 A
1	B21-N015A-1	40 A	1	B21-N031C-3	34 A
1	B21-N015B-1	44 A	1	B21-N031C-4	34 A
1	B21-N015C-1	42 A	1	B21-N031D-1	37 A
1	B21-N015D-1	46 A	1	B21-N031D-2	37 A
1	B21-N017A-1	40 A	1	B21-N031D-3	37 A
1	B21-N017A-2	35 A	1	B21-N031D-4	37 A
1	B21-N017B-1	44 A	1	B21-N036-1	36 A
1	B21-N017B-2	35 A	1	B21-N037-1	39 A
1	B21-N017C-1	42 A	1	B21-N042A-1	36 A
1	B21-N017C-2	38 A	1	B21-N042B-1	39 A
1	B21-N017D-1	46 A	1	B21-N056A-1	40 A
1	B21-N017D-2	38 A	1	B21-N056B-1	44 A
1	B21-N021A-1	34 A	1	B21-N056C-1	42 A
1	B21-N021A-2	34 A	1	B21-N056D-1	46 A
1	B21-N021B-1	37 A	1	B21-4033	34 A
1	B21-N021B-2	37 A	1	B21-4036	37 A
1	B21-N021C-1	34 A	1	B21-4039	40 A
1	B21-N021C-2	34 A	1	B21-4040-1 (Spare)	41 A
1	B21-N021D-1	37 A	1	B21-4040-2 (Spare)	41 A
1	B21-N021D-2	37 A	1	B21-4041	42 A
1	B21-N023A-1	40 A	1	B21-4042-1 (Spare)	43 A
1	B21-N023A-2	40 A	1	B21-4042-2 (Spare)	43 A
1	B21-N023B-1	44 A	1	B21-4043	44 A
1	B21-N023B-2	44 A	1	B21-4044-1 (Spare)	45 A
1	B21-N023C-1	42 A	1	B21-4044-2 (Spare)	45 A
1	B21-N023C-2	42 A	1	B21-4045	46 A
1	B21-N023D-1	46 A	1	B21-4046-1 (Spare)	47 A
1	B21-N023D-2	46 A	1	B21-4046-2 (Spare)	47 A
1	B21-N024A-1	40 A	1	B21-4047-1 (Spare)	40 A
1	B21-N024A-2	35 A	1	B21-4048-1 (Spare)	42 A
			1	B21-4049-1 (Spare)	44 A
			1	B21-4050-1 (Spare)	46 A
			1	B21-4052	19 A

SECTION V

TRIP CALIBRATION SYSTEM - TAG NUMBER INDEX (Cont'd)

<u>UNIT NO.</u>	<u>TAG NO.</u>	<u>PAGE NO.</u>
1	C71-N002A-1	40A
1	C71-N002B-1	44A
1	C71-N002C-1	42A
1	C71-N002D-1	46A
1	E11-N010A-1	36A
1	E11-N010B-1	39A
1	E11-N010C-1	36A
1	E11-N010D-1	39A
1	E11-N011A-1	35A
1	E11-N011A-2	35A
1	E11-N011B-1	38A
1	E11-N011B-2	38A
1	E11-N011C-1	35A
1	E11-N011C-2	35A
1	E11-N011D-1	38A
1	F'1-N011D-2	38A
1	E11-N019A-1	36A
1	E11-N019B-1	39A
1	E11-N019C-1	36A
1	E11-N019D-1	39A
1	E11-4034-1 (Spare)	36A
1	E11-4034-2 (Spare)	36A
1	E11-4035-1 (Spare)	36A
1	E11-4035-2 (Spare)	36A
1	E11-4037-1 (Spare)	39A
1	E11-4037-2 (Spare)	39A
1	E11-4038-1 (Spare)	39A
1	E11-4038-2 (Spare)	39A
1	E41-N004-1	35A
1	E41-N004-2	35A
1	E41-N005-1	38A
1	E41-N005-2	38A
1	E41-N014-1	36A
1	E51-N017-1	35A
1	E51-N017-2	35A
1	E51-N018-1	38A
1	E51-N018-2	38A
1	E51-N010-1	39A

SECTION V

TRIP CALIBRATION SYSTEM - TAG NUMBER INDEX (Cont'd)

NOTES:

1. The tag number index, as shown on Specification No. 9527-01-252-55, Sheet Nos. 17A and 18A, is recorded on the following data sheets and on the plant modification drawings, whereas the instrument tag numbers noted on the technical specification sheets reflects the distinction between master and slave trip units in accordance with the following examples:

	<u>TRANSMITTERS</u>	<u>DATA SHEETS & DRAWINGS MASTER/SLAVE TRIP UNITS</u>	<u>TECHNICAL SPECIFICATIONS</u>
(Ex.)	B21-PT-N023A	B21-N023A-1 (Master) B21-N023A-2 (Slave)	B21-PTM-N023A-1 B21-PTS-N023A-2
(Ex.)	B21-LT-N017A-1 B21-LT-N017A-2	B21-N017A-1 (Master) B21-N017A-2 (Master)	B21-LTM-N017A-1 B21-LTM-N017A-2

etc.

2. The symbol (c) shown in trip setpoint column on the following specification data sheets reflect nominal trip setpoints. Actual trip setpoints will be determined and set in the Field to be consistent with the technical specifications.

SECTION VI
SPECIFICATION SHEET

TRIP CALIBRATION SYSTEM

Rosemount Model 510DU Trip Calibration System consisting of one hundred seventy-two (172) Master Trip Units, eighty (80) Slave Trip Units, twelve (12) Calibration Units and twenty-eight (28) unwired card files complete with accessories as listed below.

Refer to specification sheets, pages 34A thru 47A for tag numbers, scales, trip setpoints and card file locations. The master, slave and calibration units shall be furnished completely assembled in their respective card file positions as shown in the specification sheets.

ACCESSORIES:

Three (3) Trip Unit Card Extenders
Two (2) Spare Parts Kits
One (1) Readout Assembly Card Extender
One (1) Calibration Card Extender
One (1) Bench Test Facility
Eighty-Eight (88) Blanks for Trip Units
Sixteen (16) Blanks for Calibration Units
Two (2) Readout Assembly tagged as follows:

1-B21-4052

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-63 (ECCS DIV. I)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP ϕ SETPOINT	SERVICE
1-CB-XU-3897	1	1-B21-N021A-1	M	0-500 PSIG	325 PSIG	Rx Press Low
	2	1-B21-N021A-2	S	(0-500 PSIG)	325 PSIG	Rx Press Low
	3	1-B21-N021C-1	M	0-500 PSIG	325 PSIG	Rx Press Low
	4	1-B21-N021C-2	S	(0-500 PSIG)	325 PSIG	Rx Press Low
	5	1-B21-N031A-1	M	-150 To 60 IN H ₂ O	-38IN H ₂ O	Rx Level Low
	6	1-B21-N031A-2	S	(-150 To 60 IN H ₂ O)	-38IN H ₂ O	Rx Level Low
	7	1-B21-N031A-3	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	8	1-B21-N031A-4	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	9	1-B21-N031C-1	M	-150 To 60 IN H ₂ O	-38IN H ₂ O	Rx Level Low
	10	1-B21-N031C-2	S	(-150 To 60 IN H ₂ O)	-38IN H ₂ O	Rx Level Low
	11	1-B21-N031C-3	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	12	1-B21-N031C-4	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	13	1-B21-4033	C	Digital	-	Calibration

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-63 (ECCS DIV. I)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP SETPOINT	SERVICE
1-CB-XU-3898	1	1-B21-N017A-2	M	0-60 IN H ₂ O	58 IN H ₂ O	Rx Level High
	2	1-B21-N017B-2	M	0-60 IN H ₂ O	58 IN H ₂ O	Rx Level High
	3	1-B21-N024A-2	M	-150 To 60 IN H ₂ O	-38 IN H ₂ O	Rx Level Low
	4	1-B21-N025A-2	M	-150 To 60 IN H ₂ O	-38 IN H ₂ O	Rx Level Low
	5	1-E41-N004-1	M	-300 To 300" IN H ₂ O	-230 IN H ₂ O	HPCI Stmline Δ P Hi
	6	1-E41-N004-2	S	(-300 To 300 IN H ₂ O)	+230 IN H ₂ O	HPCI Stmline Δ P Hi
	7	1-E51-N017-1	M	-550 To 550" H ₂ O	-412 IN H ₂ O	RCIC Stmline Δ P Hi
	8	1-E51-N017-2	S	(-550 To 550" H ₂ O)	+412 IN H ₂ O	RCIC Stmline Δ P Hi
	9	1-E11-N011A-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	10	1-E11-N011A-2	S	(0-5 PSIG)	2 PSIG	Drywell Press Hi
	11	1-E11-N011C-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	12	1-E11-N011C-2	S	(0-5 PSIG)	2 PSIG	Drywell Press Hi
	13	Blank for Calib. Unit	-	-	-	-

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI
SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-63 (ECCS DIV. I)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP & SETPOINT	SERVICE
1-CB-XU-3899	1	1-E11-N010A-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	2	1-E11-N010C-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	3	1-E11-N019A-1	M	0-5 PSIG	2.5 PSIG	Drywell Press Hi
	4	1-E11-N019C-1	M	0-5 PSIG	2.5 PSIG	Drywell Press Hi
	5	1-B21-N042A-1	M	0-60IN H ₂ O	12.5IN H ₂ O	Rx Level Low
	6	1-B21-N036-1	M	-100 To 200 IN H ₂ O	-39IN H ₂ O	Rx Level Low
	7	1-E11-4034-1	M	-	-	Spare
R5	8	1-E11-4034-2	S	-	-	Spare
	9	1-E41-N014-1	M	0-30IN H ₂ O	15IN H ₂ O	HPCI Drain Pot Level High
	10	1-E11-4035-1	M	-	-	Spare
	11	1-E11-4035-2	S	-	-	Spare
	12	Blank	-	-	-	-
	13	Blank for Calib. Unit	-	-	-	-

NOTES

(1) M = Master Trip Unit; S = Slave Trip Unit; C - Calibration Unit

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SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-64 (ECCS DIV. II)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP & SETPOINT	SERVICE
1-CB-XU-3900	1	1-B21-N021B-1	M	0-500 PSIG	325 PSIG	Rx Press Low
	2	1-B21-N021B-2	S	(0-500 PSIG)	325 PSIG	Rx Press Low
	3	1-B21-N021D-1	M	0-500 PSIG	325 PSIG	Rx Press Low
	4	1-B21-N021D-2	S	(0-500 PSIG)	325 PSIG	Rx Press Low
	5	1-B21-N031B-1	M	-150 To 60 IN H ₂ O	-38IN H ₂ O	Rx Level Low
	6	1-B21-N031B-2	S	(-150 To 60 IN H ₂ O)	-38IN H ₂ O	Rx Level Low
	7	1-B21-N031B-3	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	8	1-B21-N031B-4	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	9	1-B21-N031D-1	M	-150 To 60 IN H ₂ O	-38IN H ₂ O	Rx Level Low
	10	1-B21-N031D-2	S	(-150 To 60 IN H ₂ O)	-38IN H ₂ O	Rx Level Low
	11	1-B21-N031D-3	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	12	1-B21-N031D-4	S	(-150 To 60 IN H ₂ O)	-147.5 IN H ₂ O	Rx Level Low
	13	1-B21-4036	C	Digital	-	Calibration

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

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SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-64 (ECCS DIV. II)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP c SETPOINT	SERVICE
1-CB-XU-3901	1	1-B21-N017C-2	M	0-60 IN H ₂ O	58 IN H ₂ O	Rx Level High
	2	1-B21-N017D-2	M	0-60 IN H ₂ O	58 IN H ₂ O	Rx Level High
	3	1-B21-N024B-2	M	-150 To 60 IN H ₂ O	-38 IN H ₂ O	Rx Level Low
	4	1-B21-N025B-2	M	-150 To 60 IN H ₂ O	-38 IN H ₂ O	Rx Level Low
	5	1-E41-N005-1	M	-300 To 300 IN H ₂ O	-230 IN H ₂ O	HPCI Stmline Δ P Hi
	6	1-E41-N005-2	S	(-300 To 300 IN H ₂ O)	+230 IN H ₂ O	HPCI Stmline Δ P Hi
	7	1-E51-N018-1	M	-550 To 550 IN H ₂ O	-412 IN H ₂ O	RCIC Stmline Δ P Hi
	8	1-E51-N018-2	S	(-550 To 550 IN H ₂ O)	+ 412 IN H ₂ O	RCIC Stmline Δ P Hi
	9	1-E11-N011B-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	10	1-E11-N011B-2	S	(0-5 PSIG)	2 PSIG	Drywell Press Hi
	11	1-E11-N011D-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	12	1-E11-N011D-2	S	(0-5 PSIG)	2 PSIG	Drywell Press Hi
	13	Blank for Calib. Unit	-	-	-	-

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-64 (ECCS DIV. II)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP ϕ SETPOINT	SERVICE
1-CB-XU-3902	1	1-E11-N010B-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	2	1-E11-N010D-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	3	1-E11-N019B-1	M	0-5 PSIG	2.5 PSIG	Drywell Press Hi
	4	1-E11-N019D-1	M	0-5 PSIG	2.5 PSIG	Drywell Press Hi
	5	1-B21-N042B-1	M	0-60IN H ₂ O	12.5IN H ₂ O	Rx Level Low
	6	1-B21-N037-1	M	-100 To 200 IN H ₂ O	-39IN H ₂ O	Rx Level Low
	7	1-E11-4037-1	M	-	-	Spare
	8	1-E11-4037-2	S	-	-	Spare
	9	1-E51-N010-1	M	0-30 IN H ₂ O	8 IN H ₂ O	RCIC Drain Pot Level High
	10	1-E11-4038-1	M	-	-	Spare
	11	1-E11-4038-2	S	-	-	Spare
	12	(Blank)		-	-	-
	13	Blank for Calib. Unit	-	-	-	-

NOTES

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

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CABINET TAG NO.: 1-CB-XU-65 (RPS CHANNEL A1)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP SETPOINT	SERVICE
1-CB-XU-3903	1	1-B21-N006A-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	2	1-B21-N007A-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	3	1-B21-N008A-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	4	1-B21-N009A-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	5	1-B21-N015A-1	M	0-1200PSIG	825 PSIG	Main Stm Press Lo
	6	1-B21-N024A-1	M	-150 To 60 IN H ₂ O	-38 IN H ₂ O	Rx Level Low
	7	1-B21-N056A-1	M	0-30 IN HgVAC	7IN HgVAC	Cond. Vacuum Lo
	8	1-C71-N002A-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	9	1-B21-N017A-1	M	0-60 IN H ₂ O ₂	12.5IN H ₂ O ₂	Rx Level Low
	10	1-B21-N023A-1	M	600-1200 PSIG	1045PSIG	Rx Press High
	11	1-B21-N023A-2	S	(600-1200PSIG)	1035 PSIG	Rx Press Hi
	12	1-B21-4047-1	S	-	-	Spare
	13	1-B21-4039	C	Digital	-	Calibration

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-65 (RPS CHANNEL A1)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP ϕ SETPOINT	SERVICE
1-CB-XU-3904	1	1-B21-4040-1	M	-	-	Spare
	2	1-B21-4040-2	S	-	-	Spare
	3	Blank	-	-	-	-
	4	Blank	-	-	-	-
	5	Blank	-	-	-	-
	6	Blank	-	-	-	-
	7	Blank	-	-	-	-
	8	Blank	-	-	-	-
	9	Blank	-	-	-	-
	10	Blank	-	-	-	-
	11	Blank	-	-	-	-
	12	Blank	-	-	-	-
	13	Blank for Calib. Unit	-	-	-	-

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-66 (RPS CHANNEL A2)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP c SETPOINT	SERVICE
1-CB-XU-3905	1	1-B21-N006C-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	2	1-B21-N007C-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	3	1-B21-N008C-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	4	1-B21-N009C-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	5	1-B21-N015C-1	M	0-1200 PSIG	825 PSIG	Main Stm Press Lo
	6	1-B21-N025A-1	M	-150 To 60 IN H ₂ O	-38IN H ₂ O	Rx Level Low
	7	1-B21-N056C-1	M	0-30IN HgVAC	7IN HgVAC	Cond. Vacuum Lo
	8	1-C71-N002C-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	9	1-B21-N017C-1	M	0-60IN H ₂ O	12.5IN H ₂ O	Rx Level Low
	10	1-B21-N023C-1	M	600-1200PSIG	1045 PSIG	Rx Press High
	11	1-B21-N023C-2	S	(600-1200PSIG)	1035 PSIG	Rx Press High
	12	1-B21-4048-1	S	-	-	Spare
	13	1-B21-4041	C	Digital	-	Calibration

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

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SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-66 (RPS CHANNEL A2)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP C SETPOINT	SERVICE
1-CB-XU-3906	1	1-B21-4042-1	M	-	-	Spare
	2	1-B21-4042-2	S	-	-	Spare
	3	Blank	-	-	-	-
	4	Blank	-	-	-	-
	5	Blank	-	-	-	-
	6	Blank	-	-	-	-
	7	Blank	-	-	-	-
	8	Blank	-	-	-	-
	9	Blank	-	-	-	-
	10	Blank	-	-	-	-
	11	Blank	-	-	-	-
	12	Blank	-	-	-	-
	13	Blank for Calib. Unit	-	-	-	-

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

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SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-67 (RPS CHANNEL B1)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP SETPOINT	SERVICE
1-CB-XU-3907	1	1-B21-N006B-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	2	1-B21-N007B-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	3	1-B21-N008B-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	4	1-B21-N009B-1	M	0-150 PSID	115 PSID	Main Stm Flo Hi
	5	1-B21-N015B-1	M	0-1200 PSIG	825 PSIG	Main Stm Press Lo
	6	1-B21-N024B-1	M	-150 To 60 IN H ₂ O	-38 IN H ₂ O	Rx Level Low
	7	1-B21-N056B-1	M	0-30IN HgVAC	7IN HgVAC	Cond. Vacuum Lo
	8	1-C71-N002B-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	9	1-B21-N017B-1	M	0-60 IN H ₂ O	12.5IN H ₂ O	Rx Level Low
	10	1-B21-N023B-1	M	600-1200PSIG	1045 PSIG	Rx Press High
	11	1-B21-N023B-2	S	(600-1200PSIG)	1035 PSIG	Rx Press High
	12	1-B21-4049-1	S	-	-	Spare
	13	1-B21-4043	C	Digital	-	Calibration

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

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SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-67 (RPS CHANNEL B1)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP c SETPOINT	SERVICE
1-CB-XU-3908	1	1-B21-4044-1	M	-	-	Spare
	2	1-B21-4044-2	S	-	-	Spare
	3	Blank	-	-	-	-
	4	Blank	-	-	-	-
	5	Blank	-	-	-	-
	6	Blank	-	-	-	-
	7	Blank	-	-	-	-
	8	Blank	-	-	-	-
	9	Blank	-	-	-	-
	10	Blank	-	-	-	-
	11	Blank	-	-	-	-
	12	Blank	-	-	-	-
	13	Blank for Calib. Unit	-	-	-	-

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-68 (RPS CHANNEL B2)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP c SETPOINT	SERVICE
1-CB-XU-3909	1	1-B21-N006D-1	M	0-150 PSID	115 PSID	Main Stm Flow Hi
	2	1-B21-N007D-1	M	0-150 PSID	115 PSID	Main Stm Flow Hi
	3	1-B21-N008D-1	M	0-150 PSID	115 PSID	Main Stm Flow Hi
	4	1-B21-N009D-1	M	0-150 PSID	115 PSID	Main Stm Flow Hi
	5	1-B21-N015D-1	M	0-1200 PSIG	825 PSIG	Main Stm Press Low
	6	1-B21-N025B-1	M	-150 To 60 IN H ₂ O	-38IN H ₂ O	Rx Level Low
	7	1-B21-N056D-1	M	0-30IN HgVAC	7IN HgVAC	Cond. Vacuum Lo
	8	1-C71-N002D-1	M	0-5 PSIG	2 PSIG	Drywell Press Hi
	9	1-B21-N017D-1	M	0-60 IN H ₂ O	12.5IN H ₂ O	Rx Level Low
	10	1-B21-N023D-1	M	600-1200PSIG	1045PSIG	Rx Press High
	11	1-B21-N023D-2	S	(600-1200PSIG)	1035PSIG	Rx Press High
	12	1-B21-4050-1	S	-	-	Spare
	13	1-B21-4045	C	Digital	-	Calibration

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

SECTION VI

SPECIFICATION SHEET (CONT'D)

CABINET TAG NO.: 1-CB-XU-68 (RPS CHANNEL B2)						
CARD FILE TAG NO.	CARD FILE POSITION	INSTRUMENT TAG NO.	TYPE	SCALE (RANGE)	TRIP C SETPOINT	SERVICE
1-CB-XU-3910	1	1-B21-4046-1	M	-	-	Spare
	2	1-B21-4046-2	S	-	-	Spare
	3	Blank	-	-	-	-
	4	Blank	-	-	-	-
	5	Blank	-	-	-	-
	6	Blank	-	-	-	-
	7	Blank	-	-	-	-
	8	Blank	-	-	-	-
	9	Blank	-	-	-	-
	10	Blank	-	-	-	-
	11	Blank	-	-	-	-
	12	Blank	-	-	-	-
	13	Blank for Calib. Unit	-	-	-	-

NOTE:

(1) M = Master Trip Unit; S = Slave Trip Unit; C = Calibration Unit

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TABLE 2.2.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

<u>FUNCTIONAL UNIT AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
1. Intermediate Range Monitor, Neutron Flux - High ⁽¹⁾ (C51-IRM-K601 A,B,C,D,E,F,G,H)	≤120 divisions of full scale	≤120 divisions of full scale
2. Average Power Range Monitor (C51-APRM-CH.A,B,C,D,E,F)		
a. Neutron Flux - High, 15% ⁽²⁾	≤15% of RATED THERMAL POWER	≤15% of RATED THERMAL POWER
b. Flow Biased Neutron Flux - High ⁽³⁾⁽⁴⁾	≤(0.66 W + 54%)	≤(0.66 W + 54%)
c. Fixed Neutron Flux - High ⁽⁴⁾	≤120% of RATED THERMAL POWER	≤120% of RATED THERMAL POWER
3. Reactor Vessel Steam Dome Pressure - High (B21-PTM-N023A-1,B-1,C-1,D-1)	≤1045 psig	≤1045 psig
4. Reactor Vessel Water Level - Low, Level ^{#1} (B21-LTM-N017A-1,B-1,C-1,D-1)	≥12.5 inches above instrument zero	≥12.5 inches above instrument zero
5. Main Steam Line Isolation Valve - Closure ⁽⁵⁾ (B21-F022 A,B,C,D; B21-F028 A,B,C,D)	≤10% closed	≤10% closed
6. Main Steam Line Radiation - High (D12-RM-K603 A,B,C,D)	≤3 x full power background	≤3.5 x full power background

TABLE 2.2.1-1 (continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

<u>FUNCTIONAL UNIT AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
7. Drywell Pressure - High (C71-PTM-N002A-1,B-1,C-1,D-1)	≤ 2 psig	≤ 2 psig
8. Scram Discharge Volume Water Level - High (C11-LSH-N013 A,B,C,D)	≤ 109 gallons	≤ 109 gallons

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TABLE 3.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT AND INSTRUMENT NUMBER	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(a) (b)	ACTION
1. Intermediate Range Monitors: (C51-IRM-K601A,B,C,D,E,F,G,H)			
a. Neutron Flux - High	2, 5	3	1
	3, 4	2	2
b. Inoperative	2, 5	3	1
	3, 4	2	2
2. Average Power Range Monitor: (C51-APRM-CH.A,B,C,D,E,F,)			
a. Neutron Flux - High, 15%	2, 5	2	3
b. Flow Biased Neutron Flux - High	1	2	4
c. Fixed Neutron Flux-High, 120%	1	2	4
d. Inoperative	1, 2, 5	2	5
e. Downscale	1	2	4
f. LPRM	1, 2, 5	(c)	NA
3. Reactor Vessel Steam Dome Pressure - High (B21-PT-N023A,B,C,D) (B21-PTM-N023A-1,B-1,C-1,D-1)	1, 2 ^(d)	2	6
4. Reactor Vessel Water Level Low, Level #1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	1, 2	2	6
5. Main Steam Line Isolation Valve - Closure (B21-F022A,B,C,D, and B21-F028A,B,C,D)	1	4	4

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Addendum No.

TABLE 3.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTION UNIT AND INSTRUMENT NUMBER	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(a) (b)	ACTION
6. Main Steam Line Radiation - High (L12-RM-K603A,B,C,D)	1, 2 ^(d)	2	7
7. Drywell Pressure - High (C71-PT-N002A,B,C,D) (C71-PTM-N002A-1,B-1,C-1,D-1)	1, 2 ^(e)	2	6
8. Scram Discharge Volume Water Level - High (C11-LSH-N013A,B,C,D)	1, 2, 5 ^(f)	2	5
9. Turbine Stop Valve - Closure (EHC-SVOS-1X,2X,3X,4X)	1 ^(g)	4	8
10. Turbine Control Valve Fast Closure Control Oil Pressure - Low (EHC-PSL-1756,1757,1758,1759)	1 ^(g)	2	8
11. Reactor Mode Switch in Shutdown Position (C71A-SI)	1, 2, 3, 4, 5	1	9
12. Manual Scram (C71A-S3A,B)	1, 2, 3, 4, 5	1	10

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1444 201

TABLE 3.3.1-2

REACTOR PROTECTION SYSTEM RESPONSE TIMES

FUNCTIONAL UNIT AND INSTRUMENT NUMBER

RESPONSE TIME (Seconds)

- | | |
|---|-------|
| 1. Intermediate Range Monitors (C51-IRM-K601A,B,C,D,E,F,G,H): | |
| a. Neutron Flux - High* | NA |
| b. Inoperative | NA |
| 2. Average Power Range Monitor* (C51-APRM-CH.A,B,C,D,E,F): | |
| a. Neutron Flux - High, 15% | ≤0.09 |
| b. Flow Biased Neutron Flux - High | NA |
| c. Neutron Flux - High, 120% | ≤0.09 |
| d. Inoperative | NA |
| e. Downscale | NA |
| f. LPRM | NA |
| 3. Reactor Vessel Steam Dome Pressure - High
(B21-PT-N023A,B,C,D)
(B21-PTM-N023A-1,B-1,C-1,D-1) | ≤0.55 |
| 4. Reactor Vessel Water Level - Level #1
(B21-LT-N017A-1,B-1,C-1,D-1)
(B21-LTM-N017A-1,B-1,C-1,D-1) | ≤1.05 |
| 5. Main Steam Line Isolation Valve-Closure (B21-F022A,B,C,D and B21-F028A,B,C,D) | ≤0.06 |
| 6. Main Steam Line Radiation - High (D12-RM-K603A,B,C,D) | NA |
| 7. Drywell Pressure - High
(C71-PT-N002A,B,C,D)
(C71-PTM-N002A-1,B-1,C-1,D-1) | NA |
| 8. Scram Discharge Volume Water Level - High (C11-LSH-N013A,B,C,D) | NA |
| 9. Turbine Stop Valve - Closure (EHC-SVOS-1X,2X,3X,4X) | ≤0.06 |

TABLE 3.3.1-2 (Continued)

REACTOR PROTECTION SYSTEM RESPONSE TIMES

<u>FUNCTIONAL UNIT AND INSTRUMENT NUMBER</u>	<u>RESPONSE TIME (Seconds)</u>
10. Turbine Control Valve Fast Closure, Control Oil Pressure - Low (EHC-PSL-1756,1757,1758,1759)	≤ 0.08
11. Reactor Mode Switch in Shutdown Position (C71A-S1)	NA
12. Manual Scram (C71A-S3A,B)	NA

* Neutron detectors are exempt from response time testing. Response time shall be measured from detector output or input of first electronic component in channel.

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TABLE 4.3.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION ^(a)	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
1. Intermediate Range Monitors: (C51-IRM-K601 A,B,C,D,E,F,G,H)				
a. Neutron Flux - High	D	S/U ^{(b)(c)}	R	2
	D	W	R	3, 4, 5
b. Inoperative	NA	W	NA	2, 3, 4, 5
2. Average Power Range Monitor: (C51-APRM-CH.A,B,C,D,E,F)				
a. Neutron Flux - High 15%	S	S/U ^(b) , W ^(d)	Q	2
	S	W	Q	5
b. Flow Biased Neutron Flux-High	S	S/U ^(b) , W	W ^{(e)(f)} , Q	1
c. Fixed Neutron Flux - High, 120%	S	S/U ^(b) , W	W ^(e) , Q	1
d. Inoperative	NA	W	NA	1, 2, 5
e. Downscale	NA	W	NA	1
f. LPRM	D	NA	(g)	1, 2, 5
3. Reactor Vessel Steam Dome Pressure - High (B21-PT-NO23A, B, C, D) (B21-PTM-NO23A-1, B-1, C-1, D-1)	NA ^(k) D	NA M	R ⁽¹⁾ M	1, 2
4. Reactor Vessel Water Level - Low Level #1 (B21-LT-NO17A-1, B-1, C-1, D-1) (B21-LTM-NO17A-1, B-1, C-1, D-1)	NA ^(k) D	NA M	R ⁽¹⁾ M	1, 2
5. Main Steam Line Isolation Valve - Closure (B21-FO22 A,B,C,D and B21-FO28 A,B,C,D)	NA	M	R ^(h)	1

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1444 204

TABLE 4.3.1-1 (continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT AND INSTRUMENT NUMBER</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION^(a)</u>	<u>OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED</u>
6. Main Steam Line Radiation-High (D12-RM-K603 A,B,C,D)	S	M ⁽ⁱ⁾	R ^(j)	1, 2
7. Drywell Pressure - High (C71-PT-NO02A, B, C, D) (C71-PTM-NO02A-1,B-1,C-1,D-1)	NA ^(k) D	NA M	R ^(l) M	1, 2
8. Scram Discharge Volume Water Level - High (C11-LSH-NO13 A, B, C, D)	NA	Q	R	1, 2, 5
9. Turbine Stop Valve - Closure (EHC-SVOS-1X, 2X, 3X, 4X)	NA	M	R ^(h)	1
10. Turbine Control Valve Fast Closure, Control Oil Pressure- Low (EHC-PSL-1756,1757,1758, 1759)	NA	M	R	1
11. Reactor Mode Switch in Shutdown Position (C71A-S1)	NA	R	NA	1, 2, 3, 4, 5
12. Manual Scram (C71A-S3A,B)	NA	Q	NA	1, 2, 3, 4, 5

- a. Neutron detectors may be excluded from CHANNEL CALIBRATION.
b. Within 24 hours prior to startup, if not performed within the previous 7 days.
c. The IRM channels shall be compared to the APRM channels and the SRM instruments for overlap during each startup, if not performed within the previous 7 days.
d. When changing from CONDITION 1 to CONDITION 2, perform the required surveillance within 12 hours after entering CONDITION 2.
e. This calibration shall consist of the adjustment of the APRM readout to conform to the power values calculated by a heat balance during CONDITION 1 when THERMAL POWER \geq 25% of RATED THERMAL POWER.

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TABLE 4.3.1-1 (continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

-
- f. This calibration shall consist of the adjustment of the APRM flow biased setpoint to conform to a calibrated flow signal.
 - g. The LPRM's shall be calibrated at least once per effective full power month (EFPM) using the TIP system.
 - h. This calibration shall consist of a physical inspection and actuation of these position switches.
 - i. Instrument alignment using a standard current source.
 - j. Calibration using a standard radiation source.
 - k. The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.
 - l. Transmitters are exempted from the monthly channel calibration.

TABLE 3.3.2-1

ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION AND INSTRUMENT NUMBER	VALVE GROUPS OPERATED BY <u>SIGNAL(a)</u>	MINIMUM NUMBER OPERABLE CHANNELS <u>PER TRIP SYSTEM(b)(c)</u>	APPLICABLE OPERATIONAL <u>CONDITION</u>	<u>ACTION</u>
1. <u>PRIMARY CONTAINMENT ISOLATION</u>				
a. Reactor Vessel Water Level - Low				
1. Level #1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	2, 6, 7, 8	2	1, 2, 3	20
2. Level #2 (B21-LT-N024A-1,B-1,and B21-LT-N025A-1,B-1 (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	1, 3	2	1, 2, 3	20
b. Drywell Pressure - High (C71-PT-N002A,B,C,D) (C71-PTM-N002A-1,B-1,C-1,D-1)	2, 6, 7	2	1, 2, 3	20
c. Main Steam Line				
1. Radiation - High (d) (D12-RM-K603A,B,C,D)	1	2	1, 2, 3	21
2. Pressure - Low (B21-PT-N015A,B,C,D) (B21-PTM-N015A-1,B-1,C-1,D-1)	1	2	1	22

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1444 207

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TRIP FUNCTION AND INSTRUMENT NUMBER	VALVE GROUPS OPERATED BY SIGNAL(a)	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(b)(c)	APPLICABLE OPERATIONAL CONDITION	ACTION
1. PRIMARY CONTAINMENT ISOLATION (Continued)				
c. Main Steam Line (Continued)				
3. Flow - High				
(B21-PDT-N006A,B,C,D; B21-PDT-N007A,B,C,D; B21-PDT-N008A,B,C,D; B21-PDT-N009A,B,C,D)				
(B21-PDTM-N006A-1,B-1,C-1,D-1; B21-PDTM-N007A-1,B-1,C-1,D-1; B21-PDTM-N008A-1,B-1,C-1,D-1; B21-PDTM-N009A-1,B-1,C-1,D-1)				
	1	2/line	1	22
d. Main Steam Line Tunnel				
Temperature - High	1	2(e)	1, 2, 3	21
(B21-TS-N010A,B,C,D; B21-TS-N011A,B,C,D; B21-TS-N012A,B,C,D and B21-TS-N013A,B,C,D)				
e. Condenser Vacuum - Low				
(B21-PT-N056A,B,C,D)				
(B21-PTM-N056A-1,B-1,C-1,D-1)	1	2	1, 2(f)	21
f. Turbine Building Area				
Temperature - High	1	4(e)	1, 2, 3	21
(B21-TS-3225A,B,C,D; B21-TS-3226A,B,C,D; B21-TS-3227A,B,C,D; B21-TS-3228A,B,C,D; B21-TS-3229A,B,C,D; B21-TS-3230A,B,C,D; B21-TS-3231A,B,C,D; and B21-TS-3232A,B,C,D)				

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>VALVE GROUPS OPERATED BY SIGNAL (a)</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM (b) (c)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
<u>2. SECONDARY CONTAINMENT ISOLATION</u>				
a. Reactor Building Exhaust Radiation - High (D12-RM-N010A,B)	6	1	1, 2, 3, 5 and *	23
b. Drywell Pressure - High (C71-PT-N002A,B,C,D) (C71-PTM-N002A-1,B-1,C-1,D-1)	2, 6, 7	2	1, 2, 3	23
c. Reactor Vessel Water Level - Low, Level #2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1)				
(B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	1, 3	2	1, 2, 3	23
<u>3. REACTOR WATER CLEANUP SYSTEM ISOLATION</u>				
a. Δ Flow - High (G31-dFS-N603-1A,1B)	3	1	1, 2, 3	24
b. Area Temperature - High (G31-TS-N600A,B,C,D,E,F)	"	2	1, 2, 3	24
c. Area Ventilation Δ Temp. - High (G31-TS-N602A,B,C,D,E,F)	3	2	1, 2, 3	24
d. SLCS Initiation (C41A-S1)	3(g)	NA	1, 2, 3	24
e. Reactor Vessel Water Level - Low, Level #2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1)				
(B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	1, 3	2	1, 2, 3	24

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TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>VALVE GROUPS OPERATED BY SIGNAL(a)</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(b)(c)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
4. <u>CORE STANDBY COOLING SYSTEMS ISOLATION</u>				
a. High Pressure Coolant Injection Isolation				
1. HPCI Steam Line Flow - High (E41-PDT-N004 and E41-PDT-N005) (E41-PDTM-N004-1 and E41-PDTM-N005-1) (E41-PDTS-N004-2 and E41-PDTS-N005-2)	4	2	1, 2, 3	25
2. HPCI Steam Supply Pressure - Low (E41-PSL-N001A,B,C,D)	4	2	1, 2, 3	25
3. HPCI Steam Line Tunnel Temperature - High (E41-TS-3314; E41-TS-3315; E41-TS-3316; E41-TS-3317; E41-TS-3318; E41-TS-3354; E41-TS-3488 and E41-TS-3489)	4	2	1, 2, 3	25
4. Bus Power Monitor (E41-K55 and E41-K56)	NA(h)	1/bus	1, 2, 3	26
5. HPCI Turbine Exhaust Diaphragm Pressure - High (E41-PSH-N012A,B,C,D)	4	2	1, 2, 3	25
6. HPCI Steam Line Ambient Temperature - High (E5i-TS-N603C,D)	4	2	1, 2, 3	25

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TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>VALVE GROUPS OPERATED BY SIGNAL(a)</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(b)(c)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
4. <u>CORE STANDBY COOLING SYSTEMS ISOLATION</u> (Continued)				
a. High Pressure Coolant Injection Isolation (Continued)				
7. HPCI Steam Line Area Δ Temp. - High (E51-dTS-N604C,D)	4	2	1, 2, 3	25
8. Emergency Area Cooler Temperature - High (E41-TS-N002A,B)	4	2	1, 2, 3	25

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TABLE 3.3.2-1 (continued)

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>VALVE GROUPS OPERATED BY SIGNAL(a)</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(b)(c)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
b. Reactor Core Isolation Cooling System Isolation				
1. RCIC Steam Line Flow - High (E51-PDT-N017 and E51-PDT-N018) (E51-PDTM-N017-1 and E51-PDTM-N018-1) (E51-PDTS-N017-2 and E51-PDTS-N018-2)	5	2	1, 2, 3	25
2. RCIC Steam Supply Pressure - Low (E51-PS-N019A,B,C,D)	5	2	1, 2, 3	25
3. RCIC Steam Line Tunnel Temperature - High (E51-TS-3319; E51-TS-3320; E51-TS-3321; E51-TS-3322; E51-TS-3323; E51-TS-3355 and E51-TS-3487)	5	2	1, 2, 3	25
4. Bus Power Monitor (E51-K42 and E51-K43)	NA(h)	1/bus	1, 2, 3	26
5. RCIC Turbine Exhaust Diaphragm Pressure - High (E51-PS-N012A,B,C,D)	5	2	1, 2, 3	25
6. RCIC Steam Line Ambient Temp - High (E51-TS-N603A,B)	5	2	1, 2, 3	25
7. RCIC Steam Line Area Δ Temp - High (E51-dTS-N604A,B)	5	2	1, 2, 3	25
8. RCIC Equipment Room Ambient Temp - High (E51-TS-N602A,B)	5	2	1, 2, 3	25
9. RCIC Equipment Room Δ Temp - High (E51-dTS-N601A,B)	5	2	1, 2, 3	25

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TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>VALVE GROUPS OPERATED BY SIGNAL(a)</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM(b)(c)</u>	<u>APPLICABLE OPERATIONAL CONDITION</u>	<u>ACTION</u>
5. <u>SHUTDOWN COOLING SYSTEM ISOLATION</u>				
a. Reactor Vessel Water - Low, Level #1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	2, 6, 7, 8	2	3, 4, 5	25
b. Reactor Steam Dome Pressure - High (B32-PS-N018A,B)	7, 8	1	1, 2, 3	27

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1444-213

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
<u>1. PRIMARY CONTAINMENT ISOLATION</u>		
a. Reactor Vessel Water Level - Low		
1. Level #1 (B21-LTM-N017A-1, B-1, C-1, D-1)	$\geq +12.5$ inches	$\geq +12.5$ inches
2. Level #2 (B21-LTM-N024A-1, B-1 and B21-LTM-N025A-1, B-1)	≥ -38 inches	≥ -38 inches
b. Drywell Pressure - High (C71-PTM-N002A-1, B-1, C-1, D-1)	≤ 2 psig	≤ 2 psig
c. Main Steam Line		
1. Radiation - High (D12-RM-K603 A, B, C, D)	$\leq 3 \times$ full power background	$\leq 3.5 \times$ full power background
2. Pressure - Low (B21-PTM-N015A-1, B-1, C-1, D-1)	≥ 825 psig	≥ 825 psig
3. Flow - High (B21-PDTM-N006A-1, B-1, C-1, D-1; B21-PDTM-N007A-1, B-1, C-1, D-1; B21-PDTM-N008A-1, B-1, C-1, D-1; B21-PDTM-N009A-1, B-1, C-1, D-1)	$\leq 140\%$ of rated flow	$\leq 140\%$ of rated flow
d. Main Steam Line Tunnel Temperature - High (B21-TS-N010 A, B, C, D; B21-TS-N011 A, B, C, D; B21-TS-N012 A, B, C, D; and B21-TS-N013 A, B, C, D)	$\leq 200^{\circ}$ F	$\leq 200^{\circ}$ F
e. Condenser Vacuum - Low (B21-PTM-N056A-1, B-1, C-1, D-1)	≥ 7 inches Hg Vacuum	≥ 7 inches Hg vacuum
f. Turbine Building Area Temp. - High (B21-TS-3225 A, B, C, D; B21-TS-3226 A, B, C, D; B21-TS-3227 A, B, C, D; B21-TS-3228 A, B, C, D; B21-TS-3229 A, B, C, D; B21-TS-3230 A, B, C, D; B21-TS-3231 A, B, C, D and B21-TS-3232 A, B, C, D)	$\leq 200^{\circ}$ F	$\leq 200^{\circ}$ F

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TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
<u>2. SECONDARY CONTAINMENT ISOLATION</u>		
a. Reactor Building Exhaust Radiation - High (D12-RM-NO10 A, B)	\leq 11 mr/hr	\leq 1' mr/hr
b. Drywell Pressure - High (C71-PTM-NO02A-1, B-1, C-1, D-1)	\leq 2 psig	\leq 2 psig
c. Reactor Vessel Water Level - Low, Level #2 (B21-LTM-NO24A-1, B-1 and B21-LTM-NO25A-1, B-1)	\geq -38 inches	\geq -38 inches
<u>3. REACTOR WATER CLEANUP SYSTEM ISOLATION</u>		
a. Δ Flow - High (G31-dFS-N603-1A, 1B)	\leq 53 gal/min	\leq 53 gal/min
b. Area Temperature - High (G31-TS-N600A, B, C, D, E, F)	\leq 150° F	\leq 150° F
c. Area Ventilation Temperature Δ Temp - High (G31-TS-N602A, B, C, D, E, F)	\leq 50° F	\leq 50° F
d. SLCS Initiation (C41A-S1)	NA	NA
e. Reactor Vessel Water - Low, Level #2 (B21-LTM-NO24A-1, B-1 and B21-LTM-NO25A-1, B-1)	\geq -38 inches	\geq -38 inches

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TABLE 3.3.2-2 (continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
4. <u>CORE STANDBY COOLING SYSTEMS ISOLATION</u>		
a. High Pressure Coolant Injection Isolation		
1. HPCI Steam Line Flow - High (E41-PDTM-NO04-1 and E41-PDTM-NO05-1) (E41-PDTS-NO04-2 and E41-PDTS-NO05-2)	\leq 300% of rated flow	\leq 300% of rated flow
2. HPCI Steam Supply Pressure - Low (E41-PSL-NO01A, B, C, D)	\geq 100 psig	\geq 100 psig
3. HPCI Steam Line Tunnel Temperature - High (E41-TS-3314; E41-TS-3315; E41-TS-3316; E41-TS-3317; E41-TS-3318; E41-TS-3354; E41-TS-3488 and E41-TS-3489)	\leq 200° F	\leq 200° F
4. Bus Power Monitor (E41-K55 and E41-K56)	NA	NA
5. HPCI Turbine Exhaust Diaphragm Pressure-High (E41-PSH-NO12A, B, C, D)	\leq 10 psig	\leq 10 psig
6. HPCI Steam Line Ambient Temp. - High (E51-TS-N603C, D)	\leq 200° F	\leq 200° F
7. HPCI Steam Line Area Δ Temp. - High (E51dTS-N604C, D) (E51-dTS-N604C, D)	\leq 50° F	\leq 50° F
8. Emergency Area Cooler Temp. - High (E41-TS-N602A, B)	\leq 175° F	\leq 175° F

TABLE 3.3.2-2 (continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
b. Reactor Core Isolation Cooling System Isolation		
1. RCIC Steam Line Flow - High (E51-PDTM-N017-1 and E51-PDTM-N018-1) (E51-PDTS-N017-2 and E51-PDTS-N018-2)	\leq 300% of rated flow	\leq 300% of rated flow
2. RCIC Steam Supply Pressure - Low (E51-PS-N019A, B, C, D)	\geq 50 psig	\geq 50 psig
3. RCIC Steam Line Tunnel Temp. - High (E51-TS-3319; E51-TS-3320; E51-TS-3321; E51-TS-3322; E51-TS-3323; E51-TS-3355 and E51-TS-3487)	\leq 175° F	\leq 175° F
4. Bus Power Monitor (E51-K42 and E51-K43)	NA	NA
5. RCIC Turbine Exhaust Diaphragm Pressure - High (E51-PS-N012A, B, C, D)	\leq 10 psig	\leq 10 psig
6. RCIC Steam Line Ambient Temp. - High (E51-TS-N603A, B)	\leq 200° F	\leq 200° F
7. RCIC Steam Line Area Δ Temp. - High (E51-dTS-N604A, B)	\leq 50° F	\leq 50° F
8. RCIC Equipment Room Ambient Temp. - High (E51-TS-N602A, B)	\leq 175° F	\leq 175° F
9. RCIC Equipment Room Δ Temp. - High (E51-dTS-N601A, B)	\leq 50° F	\leq 50° F

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TABLE 3.3.2-2 (continued)ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
5. <u>SHUTDOWN COOLING SYSTEM ISOLATION</u>		
a. Reactor Vessel Water - Low, Level #1 (B21-LTM-NO17A-1, B-1, C-1, D-1)	$\geq +12.5$ inches	$\geq +12.5$ inches
b. Reactor Steam Dome Pressure - High (B32-PS-NO18A, B)	≤ 140 psig	≤ 140 psig

TABLE 3.3.2.-3

ISOLATION SYSTEM RESPONSE TIMETRIP FUNCTION AND INSTRUMENT NUMBERRESPONSE TIME (Seconds)1. PRIMARY CONTAINMENT ISOLATION

a. Reactor Vessel Water Level - Low

1. Level #1

(B21-LT-N017A-1,B-1,C-1,D-1)

(B21-LTM-N017A-1,B-1,C-1,D-1)

 ≤ 13

2. Level #2

(B21-LT-N024A-1,B-1 and

B21-LT-N025A-1,B-1)

(B21-LTM-N024A-1,B-1 and

B21-LTM-N025A-1,B-1)

 $\leq 1.0^{**}$

b. Drywell Pressure - High

(C71-PT-N002A,B,C,D)

(C71-PTM-N002A-1,B-1,C-1,D-1)

 ≤ 13

c. Main Steam Line

1. Radiation - High*

(D12-RM-K603A,B,C,D)

 $\leq 1.0^{**}$

2. Pressure - Low

(B21-PT-N015A,B,C,D)

(B21-PTM-N015A-1,B-1,C-1,D-1)

 ≤ 13

3. Flow - High

(B21-PDT-N006A,B,C,D;

B21-PDT-N007A,B,C,D;

B21-PDT-N008A,B,C,D;

B21-PDT-N009A,B,C,D)

B21-PDTM-N006A-1,B-1,C-1,D-1;

B21-PDTM-N007A-1,B-1,C-1,D-1;

B21-PDTM-N008A-1,B-1,C-1,D-1;

B21-PDTM-N009A-1,B-1,C-1,D-1)

 $\leq 0.5^{**}$

d. Main Steam Line Tunnel Temperature - High

(B21-TS-N010A,B,C,D; B21-TS-N011A,B,C,D;

B21-TS-N012A,B,C,D; and B21-TS-N013A,B,C,D)

 ≤ 13

e. Condenser Vacuum - Low

(B21-PT-N056A,B,C,D)

(B21-PTM-N056A-1,B-1,C-1,D-1)

 ≤ 13

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TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM RESPONSE TIME

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>RESPONSE TIME (Seconds)</u>
<u>1. PRIMARY CONTAINMENT ISOLATION (Continued)</u>	
f. Turbine Building Area Temperature - High (B21-TS-3225A,B,C,D; B21-TS-3226A,B,C,D; B21-TS-3227A,B,C,D; B21-TS-3228A,B,C,D; B21-TS-3229A,B,C,D; B21-TS-3230A,B,C,D; B21-TS-3231A,B,C,D; B21-TS-3232A,B,C,D)	NA
<u>2. SECONDARY CONTAINMENT ISOLATION</u>	
a. Reactor Building Exhaust Radiation - High * (D12-RM-N010A,B)	≤13
b. Drywell Pressure - High (C71-PT-N002A,B,C,D) (C71-PTM-N002A-1,B-1,C-1,D-1)	≤13
c. Reactor Vessel Water Level - Low, Level #2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	≤1.0**

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TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM RESPONSE TIME

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>RESPONSE TIME (Seconds)</u>
3. <u>REACTOR WATER CLEANUP SYSTEM ISOLATION</u>	
a. Δ Flow - High G31-dFS-N603-1A,1B)	≤ 13
b. Area Temperature - High (G31-TS-N600A,B,C,D,E,F)	≤ 13
c. Area Ventilation Temperature Δ T - High (G31-TS-N602A,B,C,D,E,F)	≤ 13
d. SLCS Initiation (C41A-S1)	NA
e. Reactor Vessel Water - Low, Level #2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	$\leq 1.0^{**}$
4. <u>CORE STANDBY COOLING SYSTEMS ISOLATION</u>	
a. High Pressure Coolant Injection Isolation	
1. HPCI Steam Line Flow - High (E41-PDT-N004 and E41-PDT-N005) (E41-PDTM-N004-1 and E41-PDTM-N005-1) (E41-PDTS-N004-2 and E41-PDTS-N005-2)	≤ 13
2. HPCI Steam Supply Pressure - Low (E41-PSL-N001A,B,C,D)	≤ 13
3. HPCI Steam Line Tunnel Temperature - High (E41-TS-3314; E41-TS-3315; E41-TS-3316; E41-TS-3317; E41-TS-3318; E41-TS-3354; E41-TS-3488 and E41-TS-3489)	≤ 13
4. Bus Power Monitor (E41-K55 and E41-K56)	NA
5. HPCI Turbine Exhaust Diaphragm Pressure - High (E41-PSH-N012A,B,C,D)	NA
6. HPCI Steam Line Ambient Temperature - High (E51-TS-N603C,D)	NA
7. HPCI Steam Line Area Δ Temp - High (E51-dTS-1.604C,D)	NA
8. Emergency Area Cooler Temperature - High (E41-TS-602A,B)	NA

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TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM RESPONSE TIME

TRIP FUNCTION AND INSTRUMENT NUMBER	RESPONSE TIME (Seconds)
b. Reactor Core Isolation Cooling System Isolation	
1. RCIC Steam Line Flow - High (E51-PDT-N017 and E51-PDT-N018) (E51-PDTM-N017A-1 and E51-PDTM-N018A-1) (E51-PDTS-N017A-2 and E51-PDTS-N018A-2)	NA
2. RCIC Steam Supply Pressure - Low (E51-PS-N019A,B,C,D)	NA
3. RCIC Steam Line Tunnel Temp - High (E51-TS-3319; E51-TS-3320; E51-TS-3321; E51-TS-3322; E51-TS-3323; E51-TS-3355 and E51-TS-3487)	NA
4. Bus Power Monitor (E51-K42 and E51-K43)	NA
5. RCIC Turbine Exhaust Diaphragm Pressure - High (E51-PS-N012A,B,C,D)	NA
6. RCIC Steam Line Ambient Temperature - High (E51-TS-N603A,B)	NA
7. RCIC Steam Line Area Δ Temp - High (E51-dTS-N604A,B)	NA
8. Emergency Area Cooler Temperature - High (E51-TS-N602A,B)	NA
9. RCIC Equipment Room Δ Temp - High (E51-dTS-N601A,B)	NA
5. <u>SHUTDOWN COOLING SYSTEM ISOLATION</u>	
a. Reactor Vessel Water Level - Low, Level #1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	NA
b. Reactor Steam Dome Pressure - High (B32-PS-N018A,B)	NA

* Radiation monitors are exempt from response time testing. Response time shall be measured from detector output or the input of the first electronic component in the channel.

** Isolation actuation instrumentation response time only.

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TABLE 4.3.2-1

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low				
1. Level #1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3
2. Level #2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3
b. Drywell Pressure - High (C71-PT-N002A,B,C,D) (C71-PTM-N002A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3
c. Main Steam Line				
1. Radiation - High (D12-RM-K603A,B,C,D)	D	W	R	1, 2, 3
2. Pressure - Low (B21-PT-N015A,B,C,D) (B21-PTM-N015A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1
3. Flow - High (B21-PDT-N006A,B,C,D; B21-PDT-N007A,B,C,D; B21-PDT-N008A,B,C,D; B21-PDT-N009A,B,C,D)	NA ^(a)	NA	R ^(b)	
(B21-PDTM-N006A-1,B-1,C-1,D-1; B21-PDTM-N007A-1,B-1,C-1,D-1; B21-PDTM-N008A-1,B-1,C-1,D-1; B21-PDTM-N009A-1,B-1,C-1,D-1)	D	M	M	1

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1449 223

TABLE 4.3.2.-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED</u>
1. <u>PRIMARY CONTAINMENT ISOLATION</u> (Continued)				
d. Main Steam Line Tunnel Temperature - High (B21-TS-N010A,B,C,D; B21-TS-N011A,B,C,D; B21-TS-N012A,B,C,D and B21-TS-N013A,B,C,D)	NA	M	R	1, 2, 3
e. Condenser Vacuum - Low (B21-PT-N056A,B,C,D) (B21-PTM-N056A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1, 2#
f. Turbine Building Area Temp - High (B21-TS-3225A,B,C,D; B21-TS-3226A,B,C,D; B21-TS-3227A,B,C,D; B21-TS-3228A,B,C,D; B21-TS-3229A,B,C,D; B21-TS-3230A,B,C,D; B21-TS-3231A,B,C,D and B21-TS-3232A,B,C,D)	NA	M	R	1, 2, 3

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#When reactor steam pressure ≥ 500 psig.

TABLE 4.3.2.-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
2. <u>SECONDARY CONTAINMENT ISOLATION</u>				
a. Reactor Building Exhaust Radiation - High (D12-RM-N010A,B)	D	M	R	1, 2, 3, 5 and *
b. Drywell Pressure - High (C71-PT-N002A,B,C,D) (C71-PTM-N002A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3
c. Reactor Vessel Water Level - Low, Level #2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3
3. <u>REACTOR WATER CLEANUP SYSTEM ISOLATION</u>				
a. Δ Flow - High (G31-dFS-N603-1A,1B)	D	M	R	1, 2, 3
b. Area Temperature - High (G31-TS-N604A,B,C,D,E,F)	NA	M	R	1, 2, 3
c. Area Ventilation Δ Temp - High (G31-TS-N602A,B,C,D,E,F)	NA	M	R	1, 2, 3

*When handling irradiated fuel in the secondary containment.

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1444 225

TABLE 4.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED</u>
3. <u>REACTOR WATER CLEANUP SYSTEM ISOLATION</u> (continued)				
d. SLCS Initiation (C41A-S1)	NA	R	NA	1, 2, 3
e. Reactor Vessel Water Level - Low, Level #2 (B21-LT-N024A-1, B-1 and B21-LT-N025A-1, B-1)	NA ^(a)	NA	R ^(b)	
(B21-LTM-N024A-1, B-1 and B21-LTM-N025A-1, B-1)	D	M	M	1, 2, 3

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1444 226

TABLE 4.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED</u>
4. <u>CORE STANDBY COOLING SYSTEMS ISOLATION</u>				
a. High Pressure Coolant Injection Isolation				
1. HPCI Steamline Flow - High (E41-PDT-N004 and E41-PDT-N005)	NA ^(a)	NA	R ^(b)	
(E41-PDTM-N004-1 and E41-PDTM-N005-1)	D	M	M	1, 2, 3
(E41-PDTS-N004-2 and E41-PDTS-N005-2)				
2. HPCI Steam Supply Pressure - Low (E41-PSL-N001A,B,C,D)	NA	M	R	1, 2, 3
3. HPCI Steamline Tunnel Temperature - High (E41-TS-3314; E41-TS-3315; E41-TS-3316; E41-TS-3317; E41-TS-3318; E41-TS-3354; E41-TS-3488 and E41-TS-3489)	NA	M	Q	1, 2, 3
4. Bus Power Monitor (E41-K55 and E41-K56)	NA	R	NA	1, 2, 3
5. HPCI Turbine Exhaust Diaphragm Pressure - High (E41-PSH-N012A,B,C,D)	NA	M	Q	1, 2, 3
6. HPCI Steam Line Ambient Temp - High (E51-TS-N603C,D)	NA	M	R	1, 2, 3
7. HPCI Steam Line Area Δ Temp - High (E51-dTS-N604C,D)	NA	M	R	1, 2, 3
8. Emergency Area Cooler Temp - High (E41-TS-N602A,B)	NA	M	Q	1, 2, 3

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Amendment No.

1444 227

TABLE 4.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
b. Reactor Core Isolation Cooling System Isolation				
1. RCIC Steamline Flow - High (E51-PDT-N017 and E51-PDT-N018) NA ^(a)	NA	NA	R ^(b)	
(E51-PDTM-N017A-1 and E51-PDTM-N018A-1)	D	M	M	1, 2, 3
(E51-PDTS-N017A-2 and E51-PDTS-N018A-2)				
2. RCIC Steam Supply Pressure - Low (E51-PS-N019A,B,C,D)	NA	M	Q	1, 2, 3
3. RCIC Steamline Tunnel High Temperature (E51-TS-3319; E51-TS-3320; E51-TS-3321; E51-TS-3322; E51-TS-3323; E51-TS-3355 and E51-TS-3487)	NA	M	R	1, 2, 3
4. Bus Power Monitor (E51-K42 and E51-K43)	NA	R	NA	1, 2, 3
5. RCIC Turbine Exhaust Diaphragm Pressure - High (E51-PS-N012A,B,C,D)	NA	M	R	1, 2, 3
6. RCIC Steam Line Ambient Temp - High (E51-TS-N603A,B)	NA	M	R	1, 2, 3
7. RCIC Steam Line Area Δ Temp - High (E51-dTS-N604A,B)	NA	M	R	1, 2, 3
8. RCIC Equipment Room Ambient Temp - High (E51-TS-N602A,B)	NA	M	Q	1, 2, 3
9. RCIC Equipment Room Δ Temp - High (E51-dTS-N601A,B)	NA	M	Q	1, 2, 3

TABLE 4.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED</u>
5. <u>SHUTDOWN COOLING SYSTEM ISOLATION</u>				
a. Reactor Vessel Water - Low, Level #1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	3, 4, 5
b. Reactor Steam Dome Pressure High (B32-PS-N018A,B)	NA	S/U*, M	R	1, 2, 3

* If not performed within the previous 31 days.

- (a) The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.
- (b) Transmitters are exempted from the monthly channel calibration.

TABLE 3.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>
1. <u>CORE SPRAY SYSTEM</u>		
a. Reactor Vessel Water Level - Low, Level #3 (B21-LT-NO31A, B, C, D) (B21-LTS-NO31A-3, B-3, C-3, D-3; B21-LTS-NO31A-4, B-4, C-4, D-4)	2	1, 2, 3, 4, 5
b. Reactor Steam Dome Pressure - Low (Injection Permissive) (B21-PT-NO21A, B, C, D) (B21-PTM-NO21A-1, B-1, C-1, D-1) (B21-PTS-NO21A-2, B-2, C-2, D-2)	2	1, 2, 3, 4, 5
c. Drywell Pressure - High (E11-PT-NO11A, B, C, D) (E11-PTM-NO11A-1, B-1, C-1, D-1) (E11-PTS-NO11A-2, B-2, C-2, D-2)	2	1, 2, 3
d. Time Delay Relay	1	1, 2, 3, 4, 5
e. Bus Power Monitor #(E21-K1A, B)	1/bus	1, 2, 3, 4, 5
2. <u>LPCI MODE OF RHR SYSTEM</u>		
a. Drywell Pressure - High (E11-PT-NO11A, B, C, D) (E11-PTM-NO11A-1, B-1, C-1, D-1)	2	1, 2, 3
b. Reactor Vessel Water Level - Low, Level #3 (B21-LT-NO31A, B, C, D) (B21-LTS-NO31A-3, B-3, C-3, D-3) (B21-LTS-NO31A-4, B-3, C-3, D-3)	2	1, 2, 3, 4*, 5*

*Not applicable when two core spray system subsystems are OPERABLE per Specification 3.5.3.1.

#Alarm Only. When inoperable, verify power availability to the bus at least per 12 hours.

TABLE 3.3.3-1 (continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>
2. <u>LPCI MODE OF RHR SYSTEM</u> (continued)		
c. Reactor Vessel Shroud Level (Drywell Spray Permissive) (B21-LT-NO36 and B21-LT-NO37) (B21-LTM-NO36-1 and B21-LTM-NO37-1)	1	1, 2, 3, 4*, 5*
d. Reactor Steam Dome Pressure - Low (Injection Per- missive) (B21-PT-NO21A, B, C, D) (B21-PTM-NO21A-1, B-1, C-1, D-1) (B21-PTS-NO21A-2, B-2, C-2, D-2)		
1. RHR Pump Start and LPCI Injection Valve Actuation	2	1, 2, 3, 4*, 5*
2. Recirculation Loop Pump Discharge Valve Actuation	2	1, 2, 3, 4*, 5*
e. RHR Pump Start - Time Delay Relay	1	1, 2, 3, 4*, 5*
f. Bus Power Monitor# (E11-K106A, B)	1/bus	1, 2, 3, 4*, 5*

*Not applicable when two core spray system subsystems are OPERABLE per Specification 3.5.3.1.

#Alarm only. When inoperable, verify power availability to the bus at least once per 12 hours.

TABLE 3.3.3-1 (continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>
3. <u>HPCI SYSTEM</u>		
a. Reactor Vessel Water Level - Low, Level #2 (B21-LT-NO31A, B, C, D) (B21-LTM-NO31A-1, B-1, C-1, D-1; B21-LTS-NO31A-2, B-2, C-2, D-2)	2	1, 2, 3
b. Drywell Pressure - High (E11-PT-NO11A, B, C, D) (E11-PTM-NO11A-1, B-1, C-1, D-1, E11-PTS-NO11A-2, B-2, C-2, D-2)	2	1, 2, 3
c. Condensate Storage Tank Level-Low** (E41-LS-NO02, E41-LS-NO03)	NA*	1, 2, 3
d. Suppression Chamber Water Level-High** (E41-LSH- NO15A, B)	NA*	1, 2, 3
e. Bus Power Monitor # (E41-K55 and E41-K56)	1/bus	1, 2, 3
4. <u>ADS</u>		
a. Drywell Pressure - High, coincident with (E11-PT-NO10A, B, C, D) (E11-PTM-NO10A-1, B-1, C-1, D-1)	2	1, 2, 3
b. Reactor Vessel Water Level - Low, Level #3 (B21-LT-NO31A, B, C, D) (B21-LTS-NO31A-3, B-3, C-3, D-3; B21-LTS-NO31A-4, B-4, C-4, D-4)	2	1, 2, 3

Alarm only. When inoperable, verify power availability to the bus at least once per 12 hours.

* When either channel of the automatic transfer logic is inoperable, align HPCI pump suction to the suppression pool.

**Provides signal to HPCI pump suction valves only.

TABLE 3.3.3-1 (continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>
4. <u>ADS</u> (continued)		
c. ADS Timer (B21-TDPU-K5A, B)	1	1, 2, 3
d. Core Spray Pump Discharge Pressure - High (Permissive) (E21-PS-NO08A, B and E21-PS-NO09A, B)	2	1, 2, 3
e. RHR (LPCI Mode) Pump Discharge Pressure - High (Permissive) (E11-PS-NO16A, B, C, D and E11-PS-NO20A, B, C, D)	2/pump	1, 2, 3
f. Bus Power Monitor # (B21-K1A, B)	1/bus	1, 2, 3

Alarm only. When inoperable, verify power availability to the bus at least once per 12 hours.

TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
1. <u>CORE SPRAY SYSTEM</u>		
a. Reactor Vessel Water Level - Low, Level #3 (B21-LTS-NO31A-3, B-3, C-3, D-3; B21-LTS-NO31A-4, B-4, C-4, D-4)	≥ -147.5 inches	≥ -147.5 inches
b. Reactor Steam Dome Pressure - Low (B21-PTS-NO21A-2, B-2, C-2, D-2)	410 ± 15 psig	410 ± 15 psig
c. Drywell Pressure - High (E11-PTS-NO11A-2, B-2, C-2, D-2)	≤ 2 psig	≤ 2 psig
d. Time Delay Relay	$14 \leq t \leq 16$ secs	$14 \leq t \leq 16$ secs
e. Bus Power Monitor (E21-K1A, B)	NA	NA
2. <u>LPCI MODE OF RHR SYSTEM</u>		
a. Drywell Pressure - High (E11-PTM-NO11A-1, B-1, C-1, D-1)	≤ 2 psig	≤ 2 psig
b. Reactor Vessel Water Level - Low, Level #3 (B21-LTS-NO31A-3, B-3, C-3, D-3; B21-LTS-NO31A-4, B-4, C-4, D-4)	≥ -147.5 inches	≥ -147.5 inches
c. Reactor Vessel Shroud Level (B21-LTM-NO36-1 and B21-LTM-NO37-1)	$\geq 39''$ below TAF*	$\geq 39''$ below TAF*

*Top of the active fuel.

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TABLE 3.3.3-2 (continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>	
d. Reactor Steam Dome Pressure - Low			
1. RHR Pump Start and LCPI Injection Valve Actuation (B21-PTS-NO21A-2, B-2, C-2, D-2)	410 \pm 15 psig	410 \pm 15 psig	
2. Recirculation Pump Discharge Valve Actuation (B21-PTM-NO21A-1, B-1, C-1, D-1)	310 \pm 15 psig	310 \pm 15 psig	
e. RHR Pump Start - Time Delay Relay	9 \leq t \leq 11 seconds	9 \leq t \leq 11 seconds	
f. Bus Power Monitor (E11-K106A, B)	NA	NA	

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1444 235

TABLE 3.3.3-2 (continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
3. <u>HPCI SYSTEM</u>		
a. Reactor Vessel Water Level - Low, Level #2 (B21-LTM-NO31A-1, B-1, C-1, D-1 and B21-LTS-NO31A-2, B-2, C-2, D-2)	\geq -38 inches	\geq -38 inches
b. Drywell Pressure - High (E11-PTM-NO11A-1, B-1, C-1, D-1 and E11-PTS-NO11A-2, B-2, C-2, D-2)	\leq 2 psig	\leq 2 psig
c. Condensate Storage Tank Level - Low (E41-LS-NO02, E41-LS-NO03)	\geq 23'4"	\geq 23'4"
d. Suppression Chamber Water Level - High* (E41-LSH-NO15A, B)	\leq -2 feet	\leq -2 feet
e. Bus Power Monitor (E41-K55 and E41-K56)	NA	NA
4. <u>ADS</u>		
a. Drywell Pressure - High (E11-PTM-NO10A-1, B-1, C-1, D-1)	\leq 2 psig	\leq 2 psig
b. Reactor Vessel Water Level - Low, Level #3 (B21-LTS-NO31A-3, B-3, C-3, D-3 and B21-LTS-NO31-A-4, B-4, C-4, D-4)	\geq -147.5 inches	\geq -147.5 inches
c. ADS Timer (B21-TDPU-K5A, B)	\leq 120 seconds	\leq 120 seconds
d. Core Spray Pump Discharge Pressure - High (E21-PS-NO08A, B and E21-PS-NO09A, B)	\geq 100 psig	\geq 100 psig
e. RHR (LPCI Mode) Pump Discharge Pressure - High (E11-PS-NO16A, B, C, D and E11-PS-NO20A, B, C, D)	\geq 100 psig	\geq 100 psig

*Suppression chamber water level zero is the torus centerline minus 1 inch.

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
4. <u>ADS</u> (continued)		
f. Bus Power Monitor (B21-K1A, B)	NA	NA

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3/4 3-35A

Amendment No.

1444-237

TABLE 4.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
1. CORE SPRAY SYSTEM				
a. Reactor Vessel Water Level - Low, Level #3 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-3,B-3,C-3,D-3) (B21-LTS-N031A-4,B-4,C-4,D-4)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3, 4, 5
b. Reactor Steam Dome Pressure - Low (B21-PT-N021A,B,C,D) (B21-PTM-N021A-1,B-1,C-1,D-1) (B21-PTS-N021A-2,B-2,C-2,D-2)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3, 4, 5
c. Drywell Pressure - High (E11-PT-N011A,B,C,D) (E11-PTM-N011A-1,B-1,C-1,D-1) (E11-PTS-N011A-2,B-2,C-2,D-2)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3
d. Time Delay Relay	NA	R	R	1, 2, 3, 4, 5
e. Bus Power Monitor (E21-K1A,B)	NA	R	NA	1, 2, 3, 4, 5
2. LPCI MODE OF RHR SYSTEM				
a. Drywell Pressure - High (E11-PT-N011A,B,C,D) (E11-PTM-N011A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3

(a) The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.

(b) Transmitters are exempted from the monthly channel calibration.

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3/4 3-37

Amendment No.

144-238

TABLE 4.3.3.-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
2. <u>LPCI MODE OF RHR SYSTEM (Continued)</u>				
b. Reactor Vessel Water Level - Low, Level #3 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-3,B-3,C-3,D-3) (B21-LTS-N031A-4,B-4,C-4,D-4)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3, 4*, 5*
c. Reactor Vessel Shroud Level (B21-LT-N036; B21-LT-N037) (B21-LTM-N036-1 and B21-LTM-N037-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3, 4*, 5*
d. Reactor Steam Dome Pressure - Low (B21-PT-N021A,B,C,D)	NA ^(a)	NA	R ^(b)	
1. RHR Pump Start and LPCI Injection Valve Actuation (B21-PTM-N021A-2,B-2,C-2,D-2)	D	M	M	1, 2, 3, 4*, 5*
2. Recirculation Loop Pump Discharge Valve Actuation (B21-PTM-N021A-1,B-1,C-1,D-1)	D	M	M	1, 2, 3, 4*, 5*
e. RHR Pump Start-Time Delay Relay	NA	R	R	1, 2, 3, 4*, 5*
f. Bus Power Monitor (E11-K106A,B)	NA	R	NA	1, 2, 3, 4*, 5*

* Not applicable when two core spray system subsystems are OPERABLE per Specification 3.5.3.1.

(a) The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.

(b) Transmitters are exempted from the monthly channel calibration.

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3/4 3/37A

Amendment No.

11/14/79

TABLE 4.3.3.-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
3. <u>HPCI SYSTEM</u>				
a. Reactor Vessel Water Level - Low Level #2 (B21-LT-N031A,B,C,D) (B21-LTM-N031A-1,B-1,C-1,D-1) (B21-LTS-N031A-2,B-2,C-2,D-2)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3
b. Drywell Pressure - High (E11-PT-N011A,B,C,D) (E11-PTM-N011A-1,B-1,C-1,D-1) (E11-PTS-N011A-2,B-2,C-2,D-2)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3
c. Condensate Storage Tank Level Low (E41-LS-N002, E41-LS-N003)	NA	M	Q	1, 2, 3
d. Suppression Chamber Water Level - High (E41-LSH-N015A,B)	NA	M	Q	1, 2, 3
e. Bus Power Monitor (E41-K55 and E41-K56)	NA	R	NA	1, 2, 3
4. <u>ADS</u>				
a. Drywell Pressure - High (E11-PT-N010A,B,C,D) (E11-PTM-N010A-1,B-1,C-1,D-1)	NA ^(a) D	NA M	R ^(b) M	1, 2, 3

(a) The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.

(b) Transmitters are exempted from the monthly channel calibration.

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TABLE 4.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS IN WHICH SURVEILLANCE REQUIRED
4. ADS (Continued)				
b. Reactor Vessel Water Level - Low, Level #3 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-3,B-3,C-3,D-3) (B21-LTS-N031A-4,B-4,C-4,D-4)	NA ^(a) D D	NA M M	R ^(b) M M	1, 2, 3
c. ADS Timer (B21-TDPU-K5A,B)	NA	R	R	1, 2, 3
d. Core Spray Pump Discharge Pressure - High (E21-PS-N008A,B and E21-PS-N009A,B)	NA	M	Q	1, 2, 3
e. RHR (LPCI MODE) Pump Discharge Pressure - High (E11-PS-N016A,B,C,D and E11-PS-N020A,B,C,D)	NA	M	Q	1, 2, 3
f. Bus Power Monitor (B21-K1A,B)	NA	R	NA	1, 2, 3

(a) The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.

(b) Transmitters are exempted from the monthly channel calibration.

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TABLE 3.3.5.3-1POST-ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT AND INSTRUMENT NUMBER</u>	<u>MINIMUM NO. OF OPERABLE INSTRUMENT CHANNELS</u>
1. Reactor Vessel Water Level (B21-LITS-N026A,B; B21-LR-615; B21-LI-R604A,B; B21-LT-N037 and B21-LTM-N037-1)	2
2. Reactor Vessel Pressure (B21-PI-R004A,B; C32-LPR-R608 and C32-PT-N005A,B)	2
3. Containment Pressure (CAC-PI-2599; CAC-PT-2599; CAC-PR-1257-1 and CAC-PT-1257-1)	2
4. Containment Pressure (CAC-TR-1258-1 thru 13,22,23,24 and C91-P602)	2
5. Suppression Chamber Atmosphere Temperature (CAC-TR-1258-17 thru 20 and C91-P602)	2
6. Suppression Chamber Water Level (CAC-LI-2601-3; CAC-LR-2602; CAC-LT-2601; CAC-LT-2602 and CAC-LY-2601-1)	2
7. Suppression Chamber Water Temperature (CAC-TR-1258-14, 21 and C91-P602)	2
8. Containment Radiation (CAC-AR-1260; CAC-AQH-1260-1,2,3; CAC-AR-1261; CAC-AQH-1261-1,2,3; CAC-AR-1262 and CAC-AQH-1262-1,2,3)	2
9. Containment Oxygen (CAC-AT-1259-2; CAC-AR-1259; CAC-AT-1263-2 and CAC-AR-1263)	2
10. Containment Hydrogen (CAC-AT-1959-1; CAC-AR-1259; CAC-AT-1263-1 and CAC-AR-1263)	2

TABLE 4.3.5.3-1

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT AND INSTRUMENT NUMBER	CHANNEL CHECK	CHANNEL CALIBRATION
1. Reactor Vessel Water Level (B21-LITS-N026A,B; B21-LR-R615; B21-LI-R604A,B; B21-LT-N037 and B21-LTM-N037-1)	M	R
2. Reactor Vessel Pressure (B21-PI-R004A,B; C32-LPR-R608 and C32-PT-N005A,B)	M	R
3. Containment Pressure (CAC-PI-2599; CAC-PT-2599; CAC-PR-1257-1 and CAC-PT-1257-1)	M	R
4. Containment Temperature (CAC-TR-1258-1 thru 13,22,23,24 and C91-P602)	M	R
5. Suppression Chamber Atmosphere Temperature (CAC-TR-1258-17 thru 20 and C91-P602)	M	R
6. Suppression Chamber Water Level (CAC-LI-2601-3; CAC-LR-2602; CAC-LT-2601; CAC-LT-2602 and CAC-LY-2601-1)	M	R
7. Suppression Chamber Water Temperature (CAC-TR-1258-14, 21 and C91-P602)	M	R
8. Containment Radiation (CAC-AR-1260; CAC-AQH-1260-1,2,3; CAC-AR-1261; CAC-AQH-1261-1,2,3; CAC-AR-1262 and CAC-AQH-1262-1,2,3)	M	R
9. Containment Oxygen Concentration (CAC-AT-1259-2; CAC-AR-1259; CAC-AT-1263-2 and CAC-AR-1263)	M	R
10. Containment Hydrogen Concentration (CAC-AT-1259-1; CAC-AR-1259; CAC-AT-1263-1 and CAC-AR-1263)	M	R

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1444 243

TABLE 3.3.6.1-1

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>MINIMUM NUMBER OPERABLE TRIP SYSTEMS PER OPERATING PUMP</u>
1. Reactor Vessel Water Level - Low Low, Level 2 (B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1) B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	1
2. Reactor Vessel Pressure - Low (B21-PS-N045A,B,C,D)	1

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TABLE 3.3.6.1-2

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
1. Reactor Vessel, Water Level - Low low, Level 2 (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	\geq -38 inches	\geq -38 inches
2. Reactor Vessel Pressure - Low (B21-PS-N045A,B,C,D)	\geq 1120 psig	\geq 1120. psig

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TABLE 4.3.6.1-1

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION AND INSTRUMENT NUMBER</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>
1. Reactor Vessel Water Level - Low Low, Level 2 (B21-LT-N024A-1,B-1; B21-LT-N025A-1,B-1) B21-LTM-N024A-1,B-1; B21-LTM-N025A-1,B-1)	NA ^(a) D	NA M	R ^(b) M
2. Reactor Vessel Pressure - Low (B21-PS-N045A,B,C,D)	NA	M	R

(a) The transmitter channel check is satisfied by the trip unit channel check.
A separate transmitter check is not required.

(b) Transmitters are exempted from the monthly channel calibration.

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1444 246

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per 18 months, during shutdown, by verifying that either:

1. The battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for 8 hours when the battery is subjected to a battery service test, or

2. The battery capacity is adequate to supply a dummy load of the following profile while maintaining the battery terminal voltage \geq 105 volts.

a) During the initial 60 seconds of the test;

- 1) Battery 1A-1 \geq 1056.42 amperes,
- 2) Battery 1A-2 \geq 1211.90 amperes,
- 3) Battery 1B-1 \geq 1089.06 amperes, and
- 4) Battery 1B-2 \geq 1042.67 amperes.

b) During the remainder of the first 30 minutes of the test;

- 1) Battery 1A-1 \geq 243.19 amperes,
- 2) Battery 1A-2 \geq 159.10 amperes,
- 3) Battery 1B-1 \geq 176.79 amperes, and
- 4) Battery 1B-2 \geq 216.67 amperes.

c) During the remainder of the 8 hour test;

- 1) Battery 1A-1 \geq 89.52 amperes,
- 2) Battery 1A-2 \geq 50.34 amperes,
- 3) Battery 1B-1 \geq 53.39 amperes, and
- 4) Battery 1B-2 \geq 75.09 amperes.

3. At the completion of either of the above tests, the battery charger shall be demonstrated capable of recharging its battery at a rate of at least 200 amperes while supplying normal D.C. loads. The battery shall be charged to at least 95% capacity in \leq 24 hours.

e. At least once per 60 months during shutdown by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test shall be performed subsequent to the satisfactory completion of the required battery service test and after normal equalizer charge.