December 12, 1983

Docket No. 50-325

Mr. E. E. Utley
Executive Vice President
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

The Commission has issued the enclosed Amendment No. 60 to Facility Operating License No. DPR-71 for the Brunswick Steam Electric Plant, Unit 1. The amendment consists of changes to the Technical Specifications in response to your submittal of January 26, 1983.

The amendment modifies the Technical Specifications to apply to new analog (continuous measuring) instrumentation that has been installed in Unit 1. The analog instrumentation replaces certain pressure switches and will provide improved performance of trip functions for reactor protection system actuation containment isolation, reactor core isolation cooling system isolation and emergency core cooling system actuation. In addition, miscellaneous typographical errors are corrected.

When you notify us that the new analog instrumentation is installed and operable in Unit 2 we will issue an amendment for that unit.

A copy of the related Safety Evaluation is also enclosed.

Sincerely,

Original signed by/

Marshall Grotenhuis, Project Manager
Operating Reactors Branch #2
Division of Licensing

See changes noted

12/7/83

Enclosures:
1. Amendment No. 60 to License No. DPR-71
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION:	Docket File	NRC PDR	LPDR	ORB#2 Reading	DEisenhut
SNorris	MGrotenhuis	OELD	SECY	LJHarmon	EJordan
JTaylor	TBarnhart-4	WJones	DBrinkman	ACRS-10	OPA-CMiles
RDiggs	NSIC	Gray	SMacKay	Extra - 5	
DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:ORB#2	OELD	DL:ADL:OR
SNorris	MGrotenhuis	SMacKay	DVassallo		GLainas
12/2/83	12/7/83	12/2/83	12/2/83	12/7/83	12/12/83

8312280236 831212
PDR ADOCK 05000325
P PDR

Mr. E. E. Utley
Carolina Power & Light Company
Brunswick Steam Electric Plant, Units 1 and 2

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CAROLINA POWER & LIGHT COMPANY

DOCKET NO. 50-325

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 60
License No. DPR-71

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Carolina Power & Light Company (the licensee) dated January 26, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-71 is hereby amended to read as follows:

8312280237 831212
PDR ADOCK 05000325
P PDR

2. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 60 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the
Technical Specifications

Date of Issuance: December 12, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 60

FACILITY OPERATING LICENSE NO. DPR-71

DOCKET NO. 50-325

Revise the Appendix A Technical Sepcifications as follows:

Remove	Insert
2-4	2-4
2-5	2-5
3/4 3-3	3/4 3-3
3/4 3-6a	3/4 3-6a
3/4 3-8	3/4 3-8
3/4 3-11	3/4 3-11
3/4 3-12	3/4 3-12
3/4 3-13	3/4 3-13
3/4 3-14	3/4 3-14
3/4 3-14a	3/4 3-14a
3/4 3-15	3/4 3-15
3/4 3-17	3/4 3-17
3/4 3-18	3/4 3-18
3/4 3-19	3/4 3-19
3/4 3-20	3/4 3-20
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24
3/4 3-24a	3/4 3-24a
3/4 3-25	3/4 3-25
3/4 3-26	3/4 3-26
3/4 3-27	3/4 3-27
3/4 3-28	3/4 3-28
3/4 3-29	3/4 3-29
3/4 3-29a	3/4 3-29a
3/4 3-31	3/4 3-31
3/4 3-32	3/4 3-32
3/4 3-32a	3/4 3-32a
3/4 3-34	3/4 3-34
3/4 3-35	3/4 3-35
3/4 3-35a	3/4 3-35a
3/4 3-37	3/4 3-37
3/4 3-38	3/4 3-38
3/4 3-38a	3/4 3-38a

TABLE 2.2.1-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

FUNCTIONAL UNIT AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUES
1. Intermediate Range Monitor, Neutron Flux - High[1] (C51-IRM-K601A,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)	≥ +162.5 inches*	≥ +162.5 inches*
5. Main Steam Line Isolation Valve - Closure[5] (B21-F022A,B,C,D; B21-F028A,B,C,D)	≤ 10% closed	≤ 10% closed
6. Main Steam Line Radiation - High (D12-RM-K603A,B,C,D)	≤ 3 x full power background	≤ 3.5 x full power background
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-N013A,B,C,D)	≤ 109 gallons	≤ 109 gallons

TABLE 2.2.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

FUNCTIONAL UNIT AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUES
9. Turbine Stop Valve - Closure[6] (EHC-SVOS-1X,2X,3X,4X)	≤ 10% closed	≤ 10% closed
10. Turbine Control Valve Fast Closure, Control Oil Pressure - Low[6] (EHC-PSL-1756,1757,1758,1759)	≥ 500 psig	≥ 500 psig

TABLE 3.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT AND INSTRUMENT NUMBER	APPLICABLE OPERATIONAL CONDITIONS	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM (a)	ACTION
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-51)	1, 2, 3, 4, 5	1	9
12. Manual Scram (C71-A-S3A,B)	1, 2, 3, 4, 5	1	10

TABLE 3.3.1-2 (Continued)

REACTOR PROTECTION SYSTEM RESPONSE TIMES

FUNCTIONAL UNIT AND INSTRUMENT NUMBER	RESPONSE TIME (Seconds)
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)	$\leq$ 0.06
10. Turbine Control Valve Fast Closure, Control Oil Pressure - Low (EHC-PSL-1756,1757,1758,1759)	$\leq$ 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 from the input of the first electronic component in the channel.

TABLE 4.3.1-1 (Continued)

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
5. Main Steam Line Isolation Valve - Closure (B21-F022A,B,C,D and B21-F028A,B,C,D)	NA	M	R[h]	1
6. Main Steam Line Radiation - High (D12-RM-K603A,B,C,D)	S	M[i]	R[j]	1, 2
7. Drywell Pressure - High				
(C71-PT-N002A,B,C,D)	NA[k]	NA	R[l]	1, 2
(C71-PTM-N002A-1,B-1,C-1,D-1)	D	M	M	1, 2
8. Scram Discharge Volume Water Level - High (C11-LSH-N013A,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

TABLE 3.3.2-1

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				
a. Reactor Vessel Water Level -				
1. 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	1, 2, 3	20
2. 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	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
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

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
PRIMARY CONTAINMENT ISOLATION (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; B21-TS-N013A,B,C,D)	1	2(e)	1, 2, 3	21
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 (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)	1	4(e)	1, 2, 3	21

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
2. SECONDARY CONTAINMENT ISOLATION				
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
3. REACTOR WATER CLEANUP SYSTEM ISOLATION				
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)	3	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-N024 A-1,B-1 and B21-LT-N025 A-1,B-1) (B21-LTM-N024 A-1,B-1 and B21-LTM-N025 A-1,B-1)	1, 3	2	1, 2, 3	24

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
4. CORE STANDBY COOLING SYSTEMS ISOLATION				
a. High Pressure Coolant Injection System Isolation				
1. HPCI Steam Line Flow - High (E41-PDT-N004; E41-PDT-N005) (E41-PDTS-N004-2; E41-PDTS-N005-2)	4	1	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; 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 (E51-TS-N603C,D)	4	1	1, 2, 3	25

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
7. HPCI Steam Line Area Δ Temp. - High (E51-dTS-N604C,D)	4	1	1, 2, 3	25
8. Emergency Area Cooler Temperature - High (E41-TS-N602A,B)	4	1	1, 2, 3	25
b. Reactor Core Isolation Cooling System Isolation				
1. RCIC Steam Line Flow - High (E51-PDT-N017; E51-PDT-N018) (E51-PDTS-N017-2; E51-PDTS-N018-2)	5	1	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; 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

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
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	1	1, 2, 3	25
7. RCIC Steam Line Area Δ Temp - High (E51-dTS-N604A,B)	5	1	1, 2, 3	25
8. RCIC Equipment Room Ambient Temp - High (E51-TS-N602A,B)	5	1	1, 2, 3	25
9. RCIC Equipment Room Δ Temp - High (E51-dTS-N601A,B)	5	1	1, 2, 3	25
5. SHUTDOWN COOLING SYSTEM ISOLATION				
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)	2, 6, 7, 8	2	1, 2, 3	27
b. Reactor Steam Dome Pressure- High (B32-PS-N018A,B)	7, 8	1	1, 2, 3	27

TABLE 3.3.2-2

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
1. PRIMARY CONTAINMENT ISOLATION		
a. Reactor Vessel Water Level -		
1. Low, Level 1 (B21-LTM-N017A-1,B-1,C-1,D-1)	≥ + 162.5 inches*	≥ + 162.5 inches*
2. Low, Level 2 (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	≥ + 112 inches*	≥ + 112 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-K603A,B,C,D)	≤ 3 x full power background	≤ 3.5 x 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)	≤ 140% of rated flow	≤ 140% of rated flow

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
PRIMARY CONTAINMENT ISOLATION (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; B21-TS-N013A,B,C,D)	≤ 200°F	≤ 200°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-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)	≤ 200°F	≤ 200°F
2. SECONDARY CONTAINMENT ISOLATION		
a. Reactor Building Exhaust Radiation - High (D12-RM-N010A,B)	≤ 11 mr/hr	≤ 11 mr/hr
b. Drywell Pressure - High (C71-PTM-N002A-1,B-1,C-1,D-1)	≤ 2 psig	≤ 2 psig
c. Reactor Vessel Water Level - Low, Level 2 (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	≥ + 112 inches*	≥ + 112 inches*

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
3. REACTOR WATER CLEANUP SYSTEM ISOLATION		
a. Δ Flow - High (G31-dFS-N603-1A,1B)	≤ 53 gal/min	≤ 53 gal/min
b. Area Temperature - High (G31-TS-N600A,B,C,D,E,F)	≤ 150°F	≤ 150°F
c. Area Ventilation Temperature Δ Temp - High (G31-TS-N602A,B,C,D,E,F)	≤ 50°F	≤ 50°F
d. SLCS Initiation (C41A-S1)	NA	NA
e. Reactor Vessel Water Level - Low, Level 2 (B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	≥ + 112 inches*	≥ + 112 inches*
4. CORE STANDBY COOLING SYSTEMS ISOLATION		
a. High Pressure Coolant Injection System Isolation		
1. HPCI Steam Line Flow - High (E41-PDTS-N004-2; E41-PDTS-N005-2)	≤ 300% of rated flow	≤ 300% of rated flow
2. HPCI Steam Supply Pressure - Low (E41-PSL-N001A,B,C,D)	≥ 100 psig	≥ 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; E41-TS-3489)	≤ 200°F	≤ 200°F

TABLE 3.3.2-2 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
4. Bus Power Monitor (E41-K55 and E41-K56)	NA	NA
5. HPCI Turbine Exhaust Diaphragm Pressure - High (E41-PSH-N012A,B,C,D)	≤ 10 psig	≤ 10 psig
6. HPCI Steam Line Ambient Temp - High (E51-TS-N603C,D)	≤ 200°F	≤ 200°F
7. HPCI Steam Line Area Δ Temp - High (E51-dTS-N604C,D)	≤ 50°F	≤ 50°F
8. Emergency Area Cooler Temp - High (E41-TS-N602A,B)	≤ 175°F	≤ 175°F
b. Reactor Core Isolation Cooling System Isolation		
1. RCIC Steam Line Flow - High (E51-PDTS-N017-2; E51-PDTS-N018-2)	≤ 300% of rated flow	≤ 300% of rated flow
2. RCIC Steam Supply Pressure - Low (E51-PS-N019A,B,C,D)	≥ 50 psig	≥ 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; E51-TS-3487)	≤ 175°F	≤ 175°F
4. Bus Power Monitor (E51-K42 and E51-K43)	NA	NA

TABLE 3.3.2-3

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION AND INSTRUMENT NUMBER	RESPONSE TIME (Seconds)#
1. PRIMARY CONTAINMENT ISOLATION	
a. Reactor Vessel Water Level -	
1. Low, Level 1 (B21-LT-N017A-1,B-1,C-1,D-1) (B21-LTM-N017A-1,B-1,C-1,D-1)	≤13
2. 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**
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)	≤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)	≤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; 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

TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION AND INSTRUMENT NUMBER	RESPONSE TIME (Seconds)#
PRIMARY CONTAINMENT ISOLATION (Continued)	
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
2. SECONDARY CONTAINMENT ISOLATION	
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**
3. REACTOR WATER CLEANUP SYSTEM ISOLATION	
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 ΔT - High (G31-TS-N602A,B,C,D,E,F)	≤13
d. SLCS Initiation (C41A-S1)	NA
e. Reactor Vessel Water Level - Low, Level 2 (B21-LT-N024 A-1,B-1 and B21-LT-N025 A-1,B-1) (B21-LTM-N024 A-1,B-1 and B21-LTM-N025 A-1,B-1)	≤1.0**

TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION AND INSTRUMENT NUMBER	RESPONSE TIME (Seconds)#
4. CORE STANDBY COOLING SYSTEMS ISOLATION	
a. High Pressure Coolant Injection System Isolation	
1. HPCI Steam Line Flow - High (E41-PDT-N004; E41-PDT-N005) (E41-PDTS-N004-2; 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; 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 (E51-dTS-N604C,D)	NA
8. Emergency Area Cooler Temperature - High (E41-TS-602A,B)	NA
b. Reactor Core Isolation Cooling System Isolation	
1. RCIC Steam Line Flow - High (E51-PDT-N017; E51-PDT-N018) (E51-PDTS-N017-2; E51-PDTS-N018-2)	NA
2. RCIC Steam Supply Pressure - Low (E51-PS-N019A,B,C,D)	NA

TABLE 3.3.2-3 (Continued)

ISOLATION SYSTEM INSTRUMENTATION RESPONSE TIME

TRIP FUNCTION AND INSTRUMENT NUMBER	RESPONSE TIME (Seconds)#
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; E51-TS-3487)	NA
4. Bus Power Monitor (E51-K42 and E51-K43)	NA
5. RCIC Turbine Exhaust Diaphram 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. SHUTDOWN COOLING SYSTEM ISOLATION	
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.

\# Isolation system instrumentation response time specified for the Trip Function actuating each valve group shall be added to isolation time shown in Table 3.6.3-1 and Table 3.6.5.2-1 for valves in each valve group to obtain ISOLATION SYSTEM RESPONSE TIME for each valve.

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 -				
1. Low, Level 1				
(B21-LT-N017A-1,B-1,C-1,D-1)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTM-N017A-1,B-1,C-1,D-1)	D	M	M	1, 2, 3
2. Low, Level 2				
(B21-LT-N024A-1,B-1 and B21-LT-N025A-1,B-1)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTM-N024A-1,B-1 and B21-LTM-N025A-1,B-1)	D	M	M	1, 2, 3
b. Drywell Pressure - High				
(C71-PT-N002A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(C71-PTM-N002A-1,B-1,C-1,D-1)	D	M	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)	NA[a]	NA	R[b]	1
(B21-PTM-N015A-1,B-1,C-1,D-1)	D	M	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]	1
(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

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
PRIMARY CONTAINMENT ISOLATION (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; B21-TS-N013A,B,C,D)	NA	M	R	1, 2, 3
e. Condenser Vacuum - Low (B21-PT-N056A,B,C,D)	NA[a]	NA	R[b]	1, 2#
(B21-PTM-N056A-1,B-1,C-1,D-1)	D	M	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; B21-TS-3232A,B,C,D)	NA	M	R	1, 2, 3

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. SECONDARY CONTAINMENT ISOLATION				
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)	NA[a]	NA	R[b]	1, 2, 3
(C71-PTM-N002A-1,B-1,C-1,D-1)	D	M	M	1, 2, 3
c. Reactor Vessel Water Level - Low, Level 2 (B21-LT-N024 A-1,B-1 and B21-LT-N025 A-1,B-1)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTM-N024 A-1,B-1 and B21-LTM-N025 A-1,B-1)	D	M	M	1, 2, 3
3. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. Δ Flow - High (G31-dFS-N603-1A,1B)	D	M	R	1, 2, 3
b. Area Temperature - High (G31-TS-N600A,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
d. SLCS Initiation (C41A-S1)	NA	R	NA	1, 2, 3
e. Reactor Vessel Water Level - Low, Level 2 (B21-LT-N024 A-1,B-1 and B21-LT-N025 A-1,B-1)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTM-N024 A-1,B-1 and B21-LTM-N025 A-1,B-1)	D	M	M	1, 2, 3

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
4. CORE STANDBY COOLING SYSTEMS ISOLATION				
a. High Pressure Coolant Injection System Isolation				
1. HPCI Steam Line Flow - High (E41-PDT-N004; E41-PDT-N005)	NA[a]	NA	R[b]	1, 2, 3
(E41-PDTS-N004-2; E41-PDTS-N005-2)	D	M	M	1, 2, 3
2. HPCI Steam Supply Pressure - Low (E41-PSL-N001A,B,C,D)	NA	M	R	1, 2, 3
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-3388; 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

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
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
b. Reactor Core Isolation Cooling System Isolation				
1. RCIC Steam Line Flow - High (E51-PDT-N017; E51-PDT-N018)	NA[a]	NA	R[b]	1, 2, 3
(E51-PDTS-N017-2; (E51-PDTS-N018-2)	D	M	M	1, 2, 3
2. RCIC Steam Supply Pressure - low (E51-PS-N019A,B,C,D)	NA	M	Q	1, 2, 3
3. RCIC Steam Line Tunnel High Temperature (E51-TS-3319; E51-TS-3320; E51-TS-3321; E51-TS-3322; E51-TS-3323; E51-TS-3355; 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

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
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
5. SHUTDOWN COOLING SYSTEM ISOLATION				
a. Reactor Vessel Water Level - Low, Level 1				
(B21-LT-N017A-1,B-1,C-1,D-1)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTM-N017A-1,B-1,C-1,D-1)	D	M	M	1, 2, 3
b. Reactor Steam Dome Pressure - High (B32-PS-N018A,B)	NA	S/U[c], M	R	1, 2, 3

* When handling irradiated fuel in the secondary containment.
\# When reactor steam pressure ≥ 500 psig.
(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.
(c) If not performed within the previous 31 days.

TABLE 3.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION AND INSTRUMENT NUMBER	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
1. CORE SPRAY SYSTEM			
a. Reactor Vessel Water Level - Low, Level 3 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-4,B-4,C-4,D-4)	2	1, 2, 3, 4, 5	30
b. Reactor Steam Dome Pressure - Low (Injection Permissive) (B21-PT-N021A,B,C,D) (B21-PTS-N021A-2,B-2,C-2,D-2)	2	1, 2, 3, 4, 5	31
c. Drywell Pressure - High (E11-PT-N011A,B,C,D) (E11-PTS-N011A-2,B-2,C-2,D-2)	2	1, 2, 3	30
d. Time Delay Relay (E21-K16A,B)	1	1, 2, 3, 4, 5	31
e. Bus Power Monitor# (E21-K1A,B)	1/bus	1, 2, 3, 4, 5	32
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM			
a. Drywell Pressure - High (E11-PT-N011A,B,C,D) (E11-PTM-N011A-1,B-1,C-1,D-1)	2	1, 2, 3	30
b. Reactor Vessel Water Level - Low, Level 3 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-4,B-4,C-4,D-4)	2	1, 2, 3, 4*, 5*	30
c. Reactor Vessel Shroud Level (Drywell Spray Permissive) (B21-LT-N036 and B21-LT-N037) (B21-LTM-N036-1 and B21-LTM-N037-1)	1	1, 2, 3, 4*, 5*	31
d. Reactor Steam Dome Pressure - Low (Injection Permissive) (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)			
1. RHR Pump Start and LPCI Injection Valve Actuation	2	1, 2, 3, 4*, 5*	31
2. Recirculation Loop Pump Discharge Valve Actuation	2	1, 2, 3, 4*, 5*	31

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION AND INSTRUMENT NUMBER	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM (Continued)			
e. RHR Pump Start - Time Delay Relay (STR-1A1,2 and STR-1B1,2)	1	1, 2, 3, 4*, 5*	31
f. Bus Power Monitor# (E11-K106A,B)	1/bus	1, 2, 3, 4*, 5*	32
3. HIGH PRESSURE COOLANT INJECTION SYSTEM			
a. Reactor Vessel Water Level - Low, Level 2 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-2,B-2,C-2,D-2)	2	1, 2, 3	30
b. Drywell Pressure - High (E11-PT-N011A,B,C,D) (E11-PTS-N011A-2,B-2,C-2,D-2)	2	1, 2, 3	30
c. Condensate Storage Tank Level - Low (E41-LS-N002, E41-LS-N003)	2**	1, 2, 3	33
d. Suppression Chamber Water Level - High (E41-LSH-N015A,B)	2**	1, 2, 3	33
e. Bus Power Monitor# (E41-K55 and E41-K56)	1/bus	1, 2, 3	32
4. AUTOMATIC DEPRESSURIZATION SYSTEM			
a. Drywell Pressure - High, coincident with (E11-PT-N010A,B,C,D) (E11-PTM-N010A-1,B-1,C-1,D-1)	2	1, 2, 3	30
b. Reactor Vessel Water Level - Low, Level 3 (B21-LT-N031A,B,C,D) (B21-LTS-N031A-3,B-3,C-3,D-3)	2	1, 2, 3	30

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION AND INSTRUMENT NUMBER	MINIMUM NUMBER OPERABLE CHANNELS PER TRIP SYSTEM	APPLICABLE OPERATIONAL CONDITIONS	ACTION
AUTOMATIC DEPRESSURIZATION SYSTEM (Continued)			
c. Reactor Vessel Water Level - Low, Level 1 (B21-LT-N042A,B) (B21-LTM-N042A-1,B-1)	1	1, 2, 3	30
d. ADS Timer (B21-TDPU-K5A,B)	1	1, 2, 3	31
e. Core Spray Pump Discharge Pressure - High (Permissive) (E21-PS-N008A,B and E21-PS-N009A,B)	2	1, 2, 3	31
f. RHR (LPCI MODE) Pump Discharge Pressure - High (Permissive) (E11-PS-N016A,B,C,D and E11-PS-N020A,B,C,D)	2/pump	1, 2, 3	31
g. Bus Power Monitor# (B21-K1A,B)	1/bus	1, 2, 3	32

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE OPERATIONAL CONDITIONS	ACTION
5. LOSS OF POWER					
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	1/bus	1/bus	1/bus	1,2,3,4##,5##	34
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	3/bus	2/bus	2/bus	1,2,3,4##,5##	35

* Not applicable when two core spray system subsystems are OPERABLE per Specification 3.5.3.1.
** Provides signal to HPCI pump suction valves only.
\# Alarm only.
\## Required when ESF equipment is required to be OPERABLE.

TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
1. CORE SPRAY SYSTEM		
a. Reactor Vessel Water Level - Low, Level 3 (B21-LTS-N031A-4,B-4,C-4,D-4)	$\geq$ + 2.5 inches*	$\geq$ + 2.5 inches*
b. Reactor Steam Dome Pressure - Low (B21-PTS-N021A-2,B-2,C-2,D-2)	410 $\pm$ 15 psig	410 $\pm$ 15 psig
c. Drywell Pressure - High (E11-PTS-N011A-2,B-2,C-2,D-2)	$\leq$ 2 psig	$\leq$ 2 psig
d. Time Delay-Relay (E21-K16A,B)	14 $\leq$ t $\leq$ 16 secs	14 $\leq$ t $\leq$ 16 secs
e. Bus Power Monitor (E21-K1A,B)	NA	NA
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM		
a. Drywell Pressure - High (E11-PTM-N011A-1,B-1,C-1,D-1)	$\leq$ 2 psig	$\leq$ 2 psig
b. Reactor Vessel Water Level - Low, Level 3 (B21-LTS-N031A-4,B-4,C-4,D-4)	$\geq$ + 2.5 inches*	$\geq$ + 2.5 inches*
c. Reactor Vessel Shroud Level (B21-LTM-N036-1 and B21-LTM-N037-1)	$\geq$ - 53 inches*	$\geq$ - 53 inches*
d. Reactor Steam Dome Pressure - Low		
1. RHR Pump Start and LCPI Valve Actuation (B21-PTS-N021A-2,B-2,C-2,D-2)	410 $\pm$ 15 psig	410 $\pm$ 15 psig
2. Recirculation Pump Discharge Valve Actuation (B21-PTM-N021A-1,B-1,C-1,D-1)	310 $\pm$ 15 psig	310 $\pm$ 15 psig

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM (Continued)		
e. RHR Pump Start - Time Delay Relay (STR-1A1,2 and STR-1B1,2)	$9 \leq t \leq 11$ seconds	$9 \leq t \leq 11$ seconds
f. Bus Power Monitor (E11-K106A,B)	NA	NA
3. HIGH PRESSURE COOLANT INJECTION SYSTEM		
a. Reactor Vessel Water Level - Low, Level 2 (B21-LTS-N031A-2,B-2,C-2,D-2)	$\geq$ + 112 inches*	$\geq$ + 112 inches*
b. Drywell Pressure - High (E11-PTS-N011A-2,B-2,C-2,D-2)	$\leq$ 2 psig	$\leq$ 2 psig
c. Condensate Storage Tank Level - Low (E41-LS-N002; E41-LS-N003)	$\geq$ 23 feet 4 inches	$\geq$ 23 feet 4 inches
d. Suppression Chamber Water Level - High (E41-LSH-N015A,B)	$\leq$ -2 feet**	$\leq$ -2 feet**
e. Bus Power Monitor (E41-K55 and E41-K56)	NA	NA
4. AUTOMATIC DEPRESSURIZATION SYSTEM		
a. Drywell Pressure-High (E11-PTM-N010A-1,B-1,C-1,D-1)	$\leq$ 2 psig	$\leq$ 2 psig
b. Reactor Vessel Water Level - Low, Level 3 (B21-LTS-N031A-3,B-3,C-3,D-3)	$\geq$ + 2.5 inches*	$\geq$ + 2.5 inches*
c. Reactor Vessel Water Level - Low, Level 1 (B21-LTM-N042A-1,B-1)	$\geq$ + 162.5 inches*	$\geq$ + 162.5 inches*
d. ADS Timer (B21-TDPU-K5A,B)	$\leq$ 120 seconds	$\leq$ 120 seconds

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION AND INSTRUMENT NUMBER	TRIP SETPOINT	ALLOWABLE VALUE
AUTOMATIC DEPRESSURIZATION SYSTEM (Continued)		
e. Core Spray Pump Discharge Pressure - High (E21-PS-N008A,B and E21-PS-N009A,B)	≥ 100 psig	≥ 100 psig
f. RHR (LPCI MODE) Pump Discharge Pressure - High (E11-PS-N016A,B,C,D and E11-PS-N020A,B,C,D)	≥ 100 psig	≥ 100 psig
g. Bus Power Monitor (B21-K1A,B)	NA	NA
5. LOSS OF POWER		
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)#	a. 4.16 kv Basis - 2940 ± 161 volts b. 120 v Basis - 84 ± 4.6 volts c. ≤ 10 sec. time delay	2940 ± 315 volts 84 ± 9 volts ≤ 10 secs. time delay
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	a. 4.16 kv Basis - 3727 ± 9 volts b. 120 v Basis - 106.5 ± 0.25 volts c. 10 ± 0.5 sec. time delay	3727 ± 21 volts 106.5 ± 0.60 volts 10 ± 1.0 sec. time delay

This is an inverse time delay voltage relay. The voltages shown are the maximum that will not result in a trip. Lower voltage conditions will result in decreased trip times.

* Vessel water levels refer to REFERENCE LEVEL ZERO.

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

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)	NA[a]	NA	R[b]	1, 2, 3, 4, 5
(B21-LTS-N031A-4,B-4,C-4,D-4)	D	M	M	1, 2, 3, 4, 5
b. Reactor Steam Dome Pressure - Low				
(B21-PT-N021A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3, 4, 5
(B21-PTS-N021A-2,B-2,C-2,D-2)	D	M	M	1, 2, 3, 4, 5
c. Drywell Pressure - High				
(E11-PT-N011A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(E11-PTS-N011A-2,B-2,C-2,D-2)	D	M	M	1, 2, 3
d. Time Delay Relay (E21-K16A,B)	NA	R	R	1, 2, 3, 4, 5
e. Bus Power Monitor (E21-K1A,B)	NA	R	NA	1, 2, 3, 4, 5
2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM				
a. Drywell Pressure - High				
(E11-PT-N011A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(E11-PTM-N011A-1,B-1,C-1,D-1)	D	M	M	1, 2, 3
b. Reactor Vessel Water Level - Low, Level 3				
(B21-LT-N031A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3, 4*, 5*
(B21-LTS-N031A-4,B-4,C-4,D-4)	D	M	M	1, 2, 3, 4*, 5*
c. Reactor Vessel Shroud Level				
(B21-LT-N036 and B21-LT-N037)	NA[a]	NA	R[b]	1, 2, 3, 4*, 5*
(B21-LTM-N036-1 and B21-LTM-N037-1)	D	M	M	1, 2, 3, 4*, 5*

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
LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM (Continued)				
d. Reactor Steam Dome Pressure - Low (B21-PT-N021A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3, 4*, 5*
1. RHR Pump Start and LPCI Injection Valve Actuation (B21-PTS-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 (STR-1A1,2 and STR-1B1,2)	NA	R	R	1, 2, 3, 4*, 5*
f. Bus Power Monitor (E11-K106A,B)	NA	R	NA	1, 2, 3, 4*, 5*
3. HIGH PRESSURE COOLANT INJECTION SYSTEM				
a. Reactor Vessel Water Level - Low, Level 2 (B21-LT-N031A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTS-N031A-2,B-2,C-2,D-2)	D	M	M	1, 2, 3
b. Drywell Pressure - High (E11-PT-N011A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(E11-PTS-N011A-2,B-2,C-2,D-2)	D	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

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. AUTOMATIC DEPRESSURIZATION SYSTEM				
a. Drywell Pressure - High				
(E11-PT-N010A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(E11-PTM-N010A-1,B-1,C-1,D-1)	D	M	M	1, 2, 3
b. Reactor Vessel Water Level - Low, Level 3				
(B21-LT-N031A,B,C,D)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTS-N031A-3,B-3,C-3,D-3)	D	M	M	1, 2, 3
c. Reactor Vessel Water Level - Low, Level 1				
(B21-LT-N042A,B)	NA[a]	NA	R[b]	1, 2, 3
(B21-LTM-N042A-1,B-1)	D	M	M	1, 2, 3
d. ADS Timer (B21-TDPU-K5A,B)	NA	R	R	1, 2, 3
e. Core Spray Pump Discharge Pressure - High (E21-PS-N008A,B and E21-PS-N009A,B)	NA	M	Q	1, 2, 3
f. 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
g. Bus Power Monitor (B21-K1A,B)	NA	R	NA	1, 2, 3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 60 TO FACILITY LICENSE NO. DPR-71

CAROLINA POWER & LIGHT COMPANY

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1

DOCKET NO. 50-325

1.0 Introduction

By letter dated January 26, 1983, the Carolina Power & Light Company (the licensee) submitted proposed changes to the Technical Specifications appended to Facility Operating License Nos. DPR-71 and DPR-62 for the Brunswick Steam Electric Plant (BSEP), Units 1 and 2. The proposed changes modify the Technical Specifications to apply to new analog (continuous measuring) instrumentation that has been installed in Unit 1 and will be installed in Unit 2. The analog instrumentation replaces certain pressure switches and will provide improved performance of trip functions for reactor protection system actuation, containment isolation, reactor core isolation cooling system isolation and emergency core cooling system actuation. In addition, miscellaneous typographical errors are corrected.

When the licensee notifies the NRC that the new analog instrumentation is installed and operable in Unit 2 we will issue an amendment for that unit.

2.0 Evaluation

On November 19, 1979 the licensee submitted a request for Technical Specification changes to replace certain digital instrumentation with analog equipment. In response, the staff issued License Amendment Nos. 26 and 50 on March 14, 1980. The Safety Evaluation (SE) attached to those amendments found the proposed modifications to be technically acceptable and established a procedure whereby the licensee would periodically submit Technical Specification changes to revise instrument designations with surveillance requirements for those systems that had been modified. The licensee now proposes certain instrument Technical Specification changes based on the previously issued SE. The technical acceptability of the instrument replacement has been previously reviewed and approved. Furthermore, since the licensee is following the previously established periodic instrument change procedure, including change surveillance requirements, and the instrument designation changes do not involve substantive changes of the type usually associated with NRC approved changes, we find the proposed changes to be acceptable.

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3.0 Environmental Considerations

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR 51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the amendment.

4.0 Conclusions

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: December 12, 1983
Principal Contributors:
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