FORM APF-05D-001-02, REV. 12

CALCULATION CHANGE NOTICE

CCN NO. XX-E-013 (Base Calc No.) - 004 (Rev No.) - CN008 (Sequence No.)

CALCULATION TITLE – From *CALCULATION TITLE* field in EIS:
POST-FIRE SAFE SHUTDOWN (PFSSD) ANALYSIS

COMPUTER CODE: N/A **VERSION:** N/A

Administrative?	☐ YES	☑ NO	ASSOCIATED ENGINEERING CHANGE #:	13324

REGULATORY REVIEWS:
☐ Attached
☑ Attached to: 13324
☐ Not Applicable — N/A Only if Administrative
Evaluation # _____

USAR STATEMENT:
☐ Requires a change to the USAR:
☑ Does NOT require a change to the USAR

ANY DOCUMENTS IMPACTED?
☐ YES If yes, enter: SWO #, or Condition Report #, if applicable.
☑ NO

Status: ☑ ~~COMMITTED~~ ☒ FINAL ☐ VOID ☐ SUPERSEDED

ORIG	DigsigOrg 2.8, 0.7 Brian Fox Printed Name	7/22/2020 Date	ORIG	Printed Name	Date
	Brian R. Fox 2020.07.22 16:21:31 -05'00' Signature			Signature	
	QUALIFICATION REQUIRED: ES9280479			QUALIFICATION REQUIRED: ES9280479	
VERF	DigsigVer 2.8, 0.7 William Wilkins Printed Name	07/22/2020 Date	VERF	Printed Name	Date
	Signature			Jitesh K. Patel Digitally signed by Jitesh K. Patel Date: 2021.08.18 10:18:12 -05'00' Signature	
	QUALIFICATION REQUIRED: ES9280479			QUALIFICATION REQUIRED: ES9280479	
APP	DigsigApp 2.8, 0.7 Jeff Suter Printed Name	07/22/2020 Date	APP	Printed Name	Date
	Signature			Jeff Suter Digitally signed by Jeff Suter Date: 2021.08.18 11:52:52 -05'00' Signature	

DigsigCert 3.5 1.75

BRIAN R. FOX LICENSED 18295 KANSAS PROFESSIONAL ENGINEER

Digitally signed by Brian R. Fox
Date: 2020.07.22 16:24:40 -05'00'

DigsigCert 3.5 1.75

RPE Certification (For ASME Section III Stress Reports/Design Reports, refer to AP 05D-001 for qualification requirements)

CALCULATION SUBJECT (Statement Of Problem) - Enter this in *SUBJECT* field in EIS:

CP 13324 will replace the 7300 Controls System with a new Ovation DCS components. Changes in PFSSD functional descriptions and components are updated to reflect this change.

CALCULATION DATABASE INPUT	Page 2 CCN NO. XX-E-013 - 004 - 008 Base Calc No. Rev No. Sequence No.

Link new systems to the calculation/CCN in EIS.	
Systems Affected:	BB, PG, PK, PN, RP
Develop relationships between interdependent calculations in EIS.	
Additional Calculations Providing Input to this calculation:	None
Additional Calculations Impacted by this calculation:	None
Develop relationships between the calculation/CCN and controlled reference documents in EIS.	
Additional Controlled Documents Inputs to this calculation:	M-761A-00019, M-761A-00025, E-13PN02, E-11PK01, E-11PK04
Additional Controlled Documents Impacted by this calculation:	None
The reference documents listed below are those that cannot be linked to the calculation/CCN and shall be entered in the INDUSTRY REFERENCE field in EIS, e.g., ASME Codes, ANSI Standards, letters, etc.	
Additional Other Reference Documents:	CP 13324, CP 20011
Link new components to the calculation/CCN in EIS.	
Additional Components:	NG0410, PG19GCF3, PG20GAF4, PK004, PK014, PK024, PK0105, PK0401, PK0402, PK0407, PN003, PN004, PN310, PN410 (remove BBPK0455A, BBPK0455B, BBPK0455C, BBPS0455F, PG19GAF1, PG20GAF2, PK42, PK4200, PK4207, PK6107, PN001, PN002)

REFER TO DESKTOP GUIDE FOR PROCESSING CALCULATIONS IN EIS

LIST OF EFFECTIVE PAGES

CCN NO. XX-E-013 - 004 - **008**

Base Calc No. Rev No. Sequence No.

CCN Page No.	Calc. Page Affected DVR/SCRN/Other	CCN Page No.	Calc. Page Affected /DVR/SCRN/Other	CCN Page No.	Calc. Page Affected /DVR/SCRN/Other	CCN Page No.	Calc. Page Affected /DVR/SCRN/Other
1-5	N/A						
Att. 1	App. 1 p20-22 App. 3 p28-31, 35, 90, 108-115, 117-118						

DVR = Design Verification Report (if applicable)
SCRN = Regulatory Screening (if applicable)
AD = Applicability Determination

CALCULATION SHEET

CCN NO. XX-E-013 - 004 - 008
Base Calc. No. Rev. No. Sequence No

CP 13324 replaces the analog based Westinghouse 7300 Nuclear Steam Supply System (NSSS) with a digital Emerson Ovation Distributed Control System (DCS). The change impacts the PFSSD analysis. Changes to Calculation XX-E-013 are included in this CCN. Markups are attached.

Calculation Appendix 1 Page 20

Revise per attached markup to describe the operation of the pressurizer PORV controls.

Calculation Appendix 1 Pages 21 and 22

Revise per attached markup to describe the operation of the normal spray valves.

Calculation Appendix 1 Page 22

Revise per attached markup to describe that the PFSSD design of the pressurizer heaters is not affected.

Calculation Appendix 3

Revise per the attached markup.

ATTACHMENT 1
Page 1 of 20

CCN NO. XX-E-013 - 004 - 008
Base Calc No. Rev No. Sequence No

Attachment 1 - XX-E-013 markup

FORM APF 05D-001-01, REV. 10

APPENDIX 1
PFSSD FUNCTION EVALUATIONS
(REACTOR MAKEUP)

CALCULATION NO. XX-E-013
REVISION NO. 4
Page 20

RELAY	DESCRIPTION	COMMENT	
62XBB03	Pressurizer PORV Block Valve BBHV8000A Auxiliary Relay	If relay energized, BBHV8000A will open	
62XBB04	Pressurizer PORV Block Valve BBHV8000B Auxiliary Relay	If relay energized, BBHV8000B will open	
K713	Pressurizer High Pressure Train A	If relay energized, BBPCV0455A will open	
K713	Pressurizer High Pressure Train B	If relay energized, BBPCV0456A will open	
BB007	Pressurizer PORV BBPCV0455A Contactor Panel	Two Auxiliary relay contacts in series must be closed to initiate closing four contacts in series to open BBPCV0455A	

The Ovation system uses 4-signal verification from all four pressurizer pressure channels, with the 2nd highest pressure input selected as the validated signal. Two separate four-channel signal selection schemes in separate Ovation drops are used to develop the actuation signals for the PORVs, one for BBPCV0455A and one for BBPCV0456A. A hot short, open circuit or short to ground on a single input channel will result in the signal failing either high or low. If it fails to the lowest setting there is no impact on PFSSD because the PORVs will remain closed. If it fails to the highest setting, there is no impact because the Ovation system will continue to use the 2nd highest input. If the Ovation system senses a failed input, the control logic will change from 2nd highest to an average of the two highest inputs. PORV BBPCV0455A opens when validated pressure equals or exceeds 100 psig over setpoint (2335 psig) and closes when pressure returns to 80 psig over setpoint. PORV BBPCV0456A opens when the validated pressure exceeds 2335 psig and closes when pressure reduces to 2327 psig. Fire damage to two or more input channels would have to occur at the exact same time and fail to the exact same value, but not exceed the maximum 10V value, in order for the Ovation system to consider them valid and signal the PORVs to open. This is not considered a credible scenario and is not considered possible in the fire area analysis.

~~causing a rapid decrease in RCS pressure which could lead to boiling in the core.~~

Four pressurizer pressure transmitters feed signals to the pressurizer pressure and level control system as well as the reactor protection system (RPS). The signals from the pressure transmitters perform the following functions applicable to PFSSD:

- Trips the reactor on 2 of 4 high pressure at 2385 psig
- Closes PORV block valves on 2 of 4 low pressure at 2185 psig
- Trips the reactor on 2 of 4 low pressure at 1940 psig
- Safety injection on 2 of 4 low pressure at 1830 psig
- Opens PORV BBPCV0455A ~~on~~ signal from the pressurizer pressure ~~master controller (BBPK0455A). The nominal open setpoint is 2335 psig from either BBPT0455 or BBPT0457, depending on the position of the pressure channel selector switch (BBPS0455F). The normal switch position is with BBPT0455 selected.~~

and/or BBPCV0456A on high pressure

control system.

- ~~Opens PORV BBPCV0456A on signal from pressurizer pressure control system through a bistable set at 2335 psig from either BBPT0456 or BBPT0458, depending on the position of the pressure channel selector switch (BBPS0455F). The normal switch position is with BBPT0456 selected~~.

The reactor trip signals and block valve close signals are not specifically discussed in the fire area analyses because, with the reactor tripped and the block valves closed, the desired PFSSD condition is achieved. A spurious safety injection signal (SIS) complicates PFSSD so the fire area analysis document (E-1F9910) addresses areas where spurious low pressurizer pressure SIS can occur. Spurious signals from the

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APPENDIX 1 PFSSD FUNCTION EVALUATIONS (REACTOR MAKEUP)	CALCULATION NO. XX-E-013 REVISION NO. 4 Page 21

pressurizer pressure control system could cause one or both pressurizer PORVs to open, which is not desired for PFSSD. Therefore, these pressure signals are evaluated in the fire area analysis document (E-1F9910).

2. RCS Cooldown Rate Control: RCS cooldown rate control includes prevention of uncontrolled RCS cooldown and controlling RCS cooldown rate during decay heat removal.

   a. Uncontrolled RCS Cooldown: Main steam components that could initiate uncontrolled RCS cooldown are controlled (isolated). Control of these main steam components (steam generator atmospheric relief valves, MSIVs and MSIV bypass valves) is described in the reactivity control function discussion.

   b. Control of RCS Cooldown Rate: Main steam components (steam generator atmospheric relief valves) used to control RCS cooldown are described in the decay heat removal function discussion.

   Main steam line pressure transmitters provide a steam line pressure input signal to the safety injection circuits. Safety injection complicates control of the reactivity control function (excessive cooldown inserts positive reactivity), reactor makeup function (pressurizer level may not be maintained within indicating range) and decay heat removal (excessive cooldown rate). Safety injection is controlled by either preventing safety injection actuation (protecting SI input signals and/or opening safety injection pump breakers to prevent safety injection pumps from running). Consequently, the following steam line pressure transmitters are included in the post fire safe shutdown design:

COMPONENT	DESCRIPTION
ABPT0514	Steam Generator A Steamline Pressure Transmitter
ABPT0515	Steam Generator A Steamline Pressure Transmitter
ABPT0516	Steam Generator A Steamline Pressure Transmitter
ABPT0524	Steam Generator B Steamline Pressure Transmitter
ABPT0525	Steam Generator B Steamline Pressure Transmitter
ABPT0526	Steam Generator B Steamline Pressure Transmitter
ABPT0534	Steam Generator C Steamline Pressure Transmitter
ABPT0535	Steam Generator C Steamline Pressure Transmitter
ABPT0536	Steam Generator C Steamline Pressure Transmitter
ABPT0544	Steam Generator D Steamline Pressure Transmitter
ABPT0545	Steam Generator D Steamline Pressure Transmitter
ABPT0546	Steam Generator D Steamline Pressure Transmitter

3. Normal and Auxiliary Pressurizer Spray: Another element required to assure RCS pressure control functions are available is control of normal and auxiliary pressurizer spray. Because normal pressurizer spray relies upon the pressure differential between the surge line connection in the Loop 4 hot leg and the spray line

The pressurizer normal spray valves operate off a signal from the Ovation pressure control system. This system uses four-channel signal validation and selection to diagnose the need for pressurizer spray actuation. Whereas the previous analog Westinghouse 7300 NSSS system used a selector switch to select the two pressure channels used for control, the new Ovation system continuously receives input from all four pressure channels (BBPT0455, BBPT0456, BBPT0457 and BBPT0458). The use of four-channel signal validation and selection allows the control system to automatically remove failed or problematic inputs before control system disturbances can develop. This normally results in the 2nd highest pressure channel being selected for the pressure control function. This four-channel validation is an advantage to PFSSD because a spurious signal on one channel will not result in a failed open spray valve.

KAV0201 is also included in the PFSSD design in the event KAFV0029 is affected by the fire. Therefore, pressurizer normal spray valves BBPCV0455B and BBPCV0455C and associated cables and components are included in the PFSSDA to evaluate whether the spray valves will spuriously open

Fire damage to two or more input channels would have to occur at the exact same time and fail to the exact same value, but not exceed the maximum 10V value, in order for the Ovation system to consider them valid and signal the spray valves to open. This is not considered a credible scenario and is not considered possible in the fire area analysis.

The pressurizer normal spray valves (BBPCV0455B and BBPCV0455C) operate off a signal from the pressurizer pressure control system. The pressurizer pressure master controller (BBPK0455A) receives a signal from either BBPT0455 or BBPT0457, depending on the position of the pressure channel selector switch (BBPS0455F). The normal position of the switch has BBPT0455 selected. Switch BBPS0455F is connected to relay cards in panel RP047. Loss of power to the relay cards will cause the switch to revert to the BBPT0455/BBPT0456 position. If BBPT0455 is affected by the fire, operators can switch to BBPT0457 only if power to the relay cards is available. Therefore, power to RP047 is included in the PFSSD analysis.

Upon increasing pressure in the pressurizer as determined by the master controller, the spray valves open to compensate for the pressure increase. At Wolf Creek, one set of pressurizer backup heaters is normally maintained energized. This causes the master controller output to increase as pressure goes up. This output results in the pressurizer spray valves opening to compensate for the heat input to the pressurizer. The end result is RCS fluid from the spray lines continually mixing in the pressurizer, maintaining the boric acid and chemical concentrations equal to the RCS.

Pressurizer auxiliary spray valve BGHV8145 is not included in the post fire safe shutdown design because alternative and redundant means are available to prevent auxiliary spray. The pressurizer auxiliary spray tap is on the charging line downstream of the regenerative heat exchanger. Therefore, isolation of the normal charging line will prevent auxiliary pressurizer spray. In OFN RP-017, normal charging is isolated by closing BG8402B. For fires outside the control room, normal charging is isolated by closing either BGHV8105 or BGHV8106. However, in one fire area (A-24), it may not be possible to close valves BGHV8105 and BGHV8106 because these valves are located in fire area A-24 and a fire could damage the power cables. See fire area A-24 analysis in E-1F9910 for further discussion about this configuration.

4. Pressurizer Heaters: Pressurizer heaters are not credited in the redundant post fire safe shutdown design (10 CFR 50, Appendix R, Section III.G.2 areas). Calculation WCNOC-CP-002 is a thermal hydraulic transient analysis for the Wolf Creek plant for various fire scenarios. The pressurizer heaters were modeled on or off for each scenario to determine worse case effect. Based on the results, operation or maloperation of the pressurizer heaters had no adverse impact on PFSSD. Any minimal impact could be offset by available PFSSD equipment. Therefore, the pressurizer heaters are not included in the PFSSD analysis.

   The backup group B pressurizer heaters are credited in the alternative post fire safe shutdown design (10 CFR 50, Appendix R, Section III.G.3 areas). Procedure OFN RP-017 has operators maintain pressurizer pressure within acceptable parameters. This is done by cycling the backup group B heaters on and off as necessary. Calculation SA-08-006 assumes the pressurizer backup group B heaters are controlled in OFN RP-017 within 11.5 minutes following reactor trip. The backup group B heaters are isolated from the control room using RPHIS0003 on panel RP118B. Hand switch BBHIS0052B controls the position of incoming PG22 feeder breaker PG2201 from auxiliary shutdown panel RP118B. Bus PG22 is the power distribution bus for the backup group B heaters. Bus PG22 is fed from NB0208. These components are included in the alternative PFSSD design.

5. Pressurizer Pressure Indication: Pressurizer pressure indication is included in the PFSSD design to provide operators with a way of diagnosing an open PORV/block valve flow path or spurious pressurizer spray. The following pressurizer pressure indicators are included.

COMPONENT	DESCRIPTION
BBPI0455A	Pressurizer Pressure Indicator
BBPI0456	Pressurizer Pressure Indicator
BBPI0457	Pressurizer Pressure Indicator
BBPI0458	Pressurizer Pressure Indicator

The PFSSD design of the pressurizer heaters is not affected by the new Ovation NSSS Distributed Control System (DCS).

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
BBLI0460B	2	Pressurizer Level Indicator (Narrow Range)	1413S	A-28	RP118B	M	---	X	X	---	X	M-12BB02	E-13SB09 E-03SB16	M-761-00076 M-761-00495 M-761-02304	NN0217	XX-E-013-001-CN004	2
BBLT0459	1	Pressurizer Level Transmitter (Narrow Range)	RB4	RB-4	---	M	---	X	X	X	---	M-12BB02	E-13BB16 E-13SB09	M-761-00042 M-761-00076 M-761-2019	NN0111	---	0
BBLT0460	2	Pressurizer Level Transmitter (Narrow Range)	RB4	RB-4	---	M	---	X	X	X	X	M-12BB02	E-13BB16 E-13SB09	M-761-00076 M-761-00495 M-761-02304	NN0217	---	0
BBPB0403A	2	Reactor Coolant Sys Press Wide Range Hot Leg	3605	C-27	SB042	H	---	---	X	X	X	M-12BB04	E-13BB15 E-13NN01 E-13SB09	M-761-00101	NN0212	Required for cold shutdown - If control room not accessible or circuit damaged, locally open BBPV8702B	0
BBPB0405A	1	Reactor Coolant Sys Press Wide Range Hot Leg	3605	C-27	SB038	H	---	---	X	X	X	M-12BB04	E-13BB15 E-13NN01 E-13SB09	M-761-00101	NN0111	For alternate shutdown, locally operate EJHV8701B to transition to cold shutdown	0
BBPCV0455A	1	Pressurizer Power Operated Relief Valve	RB-10	RB-10	---	M	---	X	X	X	X	M-12BB02	E-13BB39 E-13BB40 E-11NK01	--- PN031001 PN041001	NK5108	XX-E-013-002-CN002 XX-E-013-003-CN006	4
BBPCV0455B	5	Pressurizer Spray Valve	RB-10	RB-10	---	M	---	X	X	X	X	M-12BB02	E-13BB19	M-761A-00019	~~PG19GCR218 PN001~~	XX-E-013-003-CN006	4
BBPCV0455C	5	Pressurizer Spray Valve	RB-10	RB-10	---	M	---	X	X	X	X	M-12BB02	E-13BB19	M-761A-00019	~~PG19GCR218 PN001~~	XX-E-013-003-CN006	4
BBPCV0456A	4	Pressurizer Power Operated Relief Valve	RB-10	RB-10	---	M	---	X	X	X	X	M-12BB02	E-13BB39 E-13BB40 E-11NK02	--- PN031001 PN041001	NK4421	XX-E-013-002-CN002 XX-E-013-003-CN006	4
BBPI0405	1	Reactor Coolant Sys Press Wide Range Hot Leg	3601	C-27	RL022	H	---	X	X	X	---	M-12BB04	E-13BB15 E-13NN01 E-13SB09	M-761-00101	NN0111	---	0
BBPI0406	4	Reactor Coolant Sys Press Wide Range Hot Leg	3601	C-27	RL022	H	---	X	X	X	---	M-12BB04	E-13BB16 E-13NN01 E-13SB09	M-761-00496 M-761-00101	NN0420	---	0
BBPI0406X	4	Reactor Coolant Sys Press Wide Range Hot Leg	1413S	A-28	RP118B	H	---	X	X	---	X	M-12BB04	E-13BB16 E-13NN01 E-13SB09 E-13SB16	M-761-00496	NN0420	XX-E-013-001-CN004 XX-E-013-001-CN011	2

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
BBPI0455A	5	Pressurizer Pressure Indicator	3601	C-27	RL002	S	M	X	X	X	---	M-12BB02	E-13SB08A	J-200-00095 M-761-00133 M-761-02018	NN0111	---	2
BBPI0456	6	Pressurizer Pressure Indicator	3601	C-27	RL002	S	M	X	X	X	---	M-12BB02	E-13SB08A	J-200-00095 M-761-00135 M-761-02048	NN0212	---	2
BBPI0457	5	Pressurizer Pressure Indicator	3601	C-27	RL002	S	M	X	X	X	---	M-12BB02	E-13SB08B	J-200-00095 M-761-00137 M-761-02079	NN0311	---	2
BBPI0458	6	Pressurizer Pressure Indicator	3601	C-27	RL002	S	M	X	X	X	---	M-12BB02	E-13SB08B	J-200-00095 M-761-00139 M-761-02102	NN0414	---	2
BBPK0455A	5	Pressurizer Master Controller	3601	C-27	RL002	M	---	X	X	X	---	---	E-13SC03	J-200-00095 M-761-00141 M-761-02127	PG19GCR218 PN001	---	2
BBPK0455B	5	BBPCV0455B Auto/Manual Controller	3601	C-27	RL002	M	---	X	X	X	---	---	E-13SC03	J-200-00095 M-761-00141 M-761-02128	PG19GCR218 PN001	---	2
BBPK0455C	5	BBPCV0455C Auto/Manual Controller	3601	C-27	RL002	M	---	X	X	X	---	---	E-13SC03	J-200-00095 M-761-00141 M-761-02129	PG19GCR218 PN001	---	2
BBPS0455F	6	Pressure Channel Selector Switch	3601	C-27	RL002	M	---	X	X	X	---	---	E-13SC01	J-200-00095 M-761-00142	PG20GBR219 PN002	---	2
BBPT0403	2	Reactor Coolant Sys Press Wide Range Hot Leg	1202	A-1	---	H	---	---	X	X	X	M-12BB04	E-13BB12A E-13BB12B E-13BB15 E-13NN01 E-13SB02 E-13SB09	M-761-00101	NN0212	Required for cold shutdown - If control room not accessible or circuit damaged, locally open BBPV8702B	0
BBPT0405	1	Reactor Coolant Sys Press Wide Range Hot Leg	1320	A-8	---	H	---	X	X	X	X	M-12BB04	E-13BB15 E-13NN01 E-13SB01 E-13SB08D E-13SB09	M-761-00101	NN0111	For alternate shutdown, locally operate EJHV8701B to transition to cold shutdown	0
BBPT0406	4	Reactor Coolant Sys Press Wide Range Hot Leg	1202	A-1	---	H	---	X	X	X	X	M-12BB04	E-13BB16 E-13NN01 E-13SB09	M-761-00101 M-761-00496	NN0420	---	0

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
BBPT0455	1	Pressurizer Pressure Transmitter	RB4	RB-4	---	S	---	X	X	X	X	M-12BB02	E-13BB16 E-13NN01 E-13SB09 E-13SB01 E-13SB02	M-761-00042 M-767-00347 M-761-02018	NN0111	Safety Injection could be initiated by low pressurizer pressure.	0
BBPT0456	2	Pressurizer Pressure Transmitter	RB4	RB-4	---	S	---	X	X	X	X	M-12BB02	E-13BB16 E-13NN01 E-13SB09 E-13SB01 E-13SB02	M-761-00043 M-767-00347 M-761-02048	NN0212	Safety Injection could be initiated by low pressurizer pressure.	0
BBPT0457	3	Pressurizer Pressure Transmitter	RB10	RB-10	---	S	---	X	X	X	X	M-12BB02	E-13BB16 E-13NN01 E-13SB09 E-13SB01 E-13SB02	M-761-00044 M-767-00347 M-761-02079	NN0311	Safety Injection could be initiated by low pressurizer pressure.	0
BBPT0458	4	Pressurizer Pressure Transmitter	RB10	RB-10	---	S	---	X	X	X	X	M-12BB02	E-13BB16 E-13NN01 E-13SB09 E-13SB01 E-13SB02	M-761-00044 M-767-00347 M-761-02102	NN0414	Safety Injection could be initiated by low pressurizer pressure.	0
BBPV8702A	4	RCS Hot Leg 1 to RHR Pump A Suction Iso Vlv	RB1	RB-1	---	M, H	---	X	X	X	X	M-12BB01	E-13BB12A	---	NG02BCF2	High Low Pressure Interface - Valve administratively controlled closed - Manually open valve to transition to cold shutdown if interlock not functional	0
BBPV8702B	4	RCS Hot Leg 4 to RHR Pump B Suction Iso Vlv	RB1	RB-1	---	M, H	---	X	X	X	X	M-12BB01	E-13BB12B	---	NG02BBF3	High Low Pressure Interface - Valve administratively controlled closed - Manually open valve to transition to cold shutdown if interlock not functional	0
BBPY0455BA	5	Pressurizer Spray Valve BBPCV0455B I/P Converter	RB-10	RB-10	---	M	---	X	X	X	X	M-12BB02	E-13BB19	---	~~PG19GCR218 PN001~~ PN031001 PN041001	XX-E-013-003-CN006	4

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
BBPY0455CA	5	Pressurizer Spray Valve BBPCV0455C I/P Converter	RB-10	RB-10	---	M	---	X	X	X	X	M-12BB02	E-13BB19	---	~~PG19GCR218 PN001~~ PN031001 PN041001	XX-E-013-003-CN006	4
BBTE0413A	1	RCS Hot Leg Temp Element (WR) Loop 1	RB1	RB-1	---	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00042 M-761-00070	NN0111	---	0
BBTE0413B	2	RCS Cold Leg Temp Element (WR) Loop 1	RB1	RB-1	---	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00043 M-761-00071	NN0212	---	0
BBTE0423A	1	RCS Hot Leg Temp Element (WR) Loop 2	RB1	RB-1	---	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00042	NN0111	---	0
BBTE0423B	2	RCS Cold Leg Temp Element (WR) Loop 2	RB1	RB-1	---	H	---	X	X	X	X	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00071	NN0217	---	0
BBTE0433A	2	RCS Hot Leg Temp Element (WR) Loop 3	RB1	RB-1	---	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00043	NN0212	---	0
BBTE0433B	1	RCS Cold Leg Temp Element (WR) Loop 3	RB1	RB-1	---	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00042	NN0111	---	0
BBTE0443A	2	RCS Hot Leg Temp Element (WR) Loop 4	RB1	RB-1	---	H	---	X	X	X	X	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00071	NN0217	---	0
BBTE0443B	1	RCS Cold Leg Temp Element (WR) Loop 4	RB1	RB-1	---	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00042	NN0111	---	0
BBTI0413A	1	RCS Hot Leg Temp Indicator (WR) Loop 1	3601	C-27	RL021	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB08D E-13SB09	M-761-00070	NN0111	---	0
BBTI0413B	2	RCS Cold Leg Temp Indicator (WR) Loop 1	3601	C-27	RL021	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB08D E-13SB09	M-761-00071	NN0212	---	0
BBTI0423A	1	RCS Hot Leg Temp Indicator (WR) Loop 2	3601	C-27	RL021	H	---	X	X	X	---	M-12BB01	E-13BB15 E-13NN01 E-13SB09	M-761-00070	NN0111	---	0

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
BGHV8153B	4	Excess Letdown/RCS Isolation Valve	RB1	RB-1	---	M	---	X	X	X	X	M-12BG01	E-13BG48 E-13RL02	---	NK4407	High Low Pressure Interface - Valve fails closed with power removed	0
BGHV8154A	1	Excess Letdown/RCS Isolation Valve	RB1	RB-1	---	M	---	X	X	X	X	M-12BG01	E-13BG48 E-13RL02	---	NK4119	High Low Pressure Interface - Valve fails closed with power removed	0
BGHV8154B	4	Excess Letdown/RCS Isolation Valve	RB1	RB-1	---	M	---	X	X	X	X	M-12BG01	E-13BG48 E-13RL02	---	NK4407	High Low Pressure Interface - Valve fails closed with power removed	0
BGHV8357A	1	CCP A Discharge to RCP Seals Valve	1114	A-2	---	R, M	---	X	X	X	---	M-12BG03	E-13BG52	---	NG01AGR4	---	0
BGHV8357B	4	CCP B Discharge to RCP Seals Valve	1107	A-4	---	R, M	---	X	X	X	X	M-12BG03	E-13BG52	---	NG02ADR5	---	0
BGHY0459	5	BGLCV0459 Solenoid Valve	RB9	RB-9	---	M	---	X	X	X	X	M-12BG01	E-13BG10 E-13RL02	---	PK5117	---	0
BGHY0460	5	BGLCV0460 Solenoid Valve	RB9	RB-9	---	M	---	X	X	X	X	M-12BG01	E-13BG10 E-13RL02	---	PK5117	---	0
BGLCV0112B	1	VCT Iso Vlv from Charging Pump Suction Valve	1318	A-8	---	R, M	---	X	X	X	---	M-12BG03	E-13BG12	---	NG01AFF2	---	0
BGLCV0112C	4	VCT Iso Vlv from Charging Pump Suction Valve	1318	A-8	---	R, M	---	X	X	X	X	M-12BG03	E-13BG12A	---	NG02AFR2	---	0
BGLCV0459	5	Letdown Isolation Valve	RB9	RB-9	---	M	---	X	X	X	X	M-12BG01	E-13BG10 E-13RL02	---	PK5117	High / Low Pressure Interface	0
BGLCV0459X	5	Pressurizer Low Level ~~Transistor~~ Relay	3605	C-27	RP043	M	---	X	X	X	---	M-12BG01	E-13BG10	M-761A-00019 M-761A-00025	~~PK5117~~ ~~PN01~~ ~~PG19GCR218~~	--- PN031001 PN041001	0
BGLCV0460	5	Letdown Isolation Valve	RB9	RB-9	---	M	---	X	X	X	X	M-12BG01	E-13BG10 E-13RL02	---	~~PK5117~~	~~High / Low Pressure Interface~~	0
BGLCV0460X	5	Pressurizer Low Level ~~Transistor~~ Relay	3605	C-27	RP043	M	---	X	X	X	---	M-12BG01	E-13BG10	M-761A-00019 M-761A-00025	~~PK5117~~ ~~PN01~~ ~~PG19GCR218~~	--- PN031001 PN041001	0
BGLT0112	1	VCT Level Transmitter	1318	A-8	---	R, M	---	X	X	X	---	M-12BG03	E-13BG51 E-13SB09	~~M-761-00042~~	~~NN0111~~	~~If charging pump suction fails to shift to RWST, locally open BNLCV0112D and close BGLCV0112B~~	0

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
NG03DEF110	1	Electro Hydraulic Damper Actuator (GMTZ1A)	5203	D-1	---	S	R, M, H	X	X	X	---	---	E-11NG21	---	NG03D	XX-E-013-003-CN006	4
NG03DEF111	1	Electro Hydraulic Damper Actuator (GMTZ1B)	5203	D-1	---	S	R, M, H	X	X	X	---	---	E-11NG21	---	NG03D	XX-E-013-003-CN006	4
NG03DEF4	1	Emergency Fuel Oil Xfer Pump Motor (DPJE01A)	5203	D-1	---	S	R, M, H	X	X	X	---	---	E-13JE01 E-11NG20	---	NG03D	XX-E-013-003-CN006	4
NG03T	1	480V Class 1E Motor Control Center	1410	A-18	---	S	R, M, H	X	X	X	---	---	E-03NG01 E-11NG01	---	NG0305	---	0
NG03TAF1	1	Containment Cooler Fan Motor (DSGN01C)	1410	A-18	---	S	R, M, H	X	X	X	X	---	E-13GN02 E-03NG01 E-11NG20	---	NG0305	---	0
NG04	4	480V Class 1E Load Center	3302	C-10	---	S	R, M, H	X	X	X	X	---	E-01NB02 E-13NB05 E-03NG01 E-11NG02 KD-7496	---	XNG04	---	0
NG0401	4	480V Class 1E Load Center Incoming Feeder	3302	C-10	---	S	R, M, H	X	X	X	X	---	E-11NG02 E-13NG01A E-13NG11A KD-7496	---	XNG04	XX-E-013-001-CN011	2
NG0403	4	125VDC Class 1E Battery Charger (NK22)	3302	C-10	---	S	R, M, H	X	X	X	X	---	E-11NG02	---	NG04	---	0
NG0405	4	480V Class 1E MCC (NG04T)	3302	C-10	---	S	R, M, H	X	X	X	X	---	E-11NG02	---	NG04	---	0
NG0406	4	480V Class 1E Auxiliary Building MCC (NG04C)	3302	C-10	---	S	R, M, H	X	X	X	X	---	E-11NG02	---	NG04	---	0
NG0407	4	480V Class 1E Diesel Gen Room MCC (NG04D)	3302	C-10	---	S	R, M, H	X	X	X	X	---	E-03NG01 E-11NG02	---	NG04	---	0
NG0409	4	125VDC Non-Class 1E Battery Charger (PK22)	3302	C-10	---	S	R, M, H	X	X	X	---	---	E-11NG02	---	NG04	---	0
NG0411	4	125VDC Class 1E Swing Battery Charger (NK26)	3302	C-10	---	S	R, M, H	X	X	X	---	---	E-11NG02	---	NG04	---	0
NG04C	4	480V Class 1E Auxiliary Building MCC	1501	A-21	---	S	R, M, H	X	X	X	X	---	E-03NG01 E-11NG02	---	NG0406	---	0
NG04CCF2	4	MDAFWP B Discharge to SG B Vlv - 120V (ALHV0005)	1501	A-21	---	S	H	X	X	X	X	---	E-13AL09 E-11NG20	---	NG04C	---	0
NG0410	4	125VDC Non-Class 1E Battery Charger (PK24)	3302	C-10	---	S	H	X	X	X	---	---	E-11NG02		NG04	---	5

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PG12KAF5	6	Main Steam to Steam Seal Iso Valve (ABHV0046)	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13AB22	E-11PG20	PG12K	Needed for MSIV failure, fire in A-15 or A-23	2
PG12KAF6	6	480V Non-Class 1E Load Center Incoming Feeder	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13PBG03	E-11PG20	PG1207	Needed for MSIV failure, fire in A-15 or A-23	2
PG12KEF3	6	Main Steam Iso to Aux Steam Reboiler (FBHV0080)	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13FB12	E-11PG20	PG12K	Needed for MSIV failure, fire in A-15 or A-23	2
PG1300	5	480V Non-Class 1E LC Feeder from PA0105	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13PG01 KD-7496	---	PA0105	Needed for MSIV failure, fire in A-15 or A-23	0
PG1400	6	480V Non-Class 1E LC Feeder from PA0207	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13PG04 KD-7496	---	PA0207	Needed for MSIV failure, fire in A-15 or A-23	0
PG1500	5	480V Non-Class 1E LC Feeder from PA0106	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13PG02	---	PA0106	Needed for MSIV failure, fire in A-15 or A-23	0
PG1600	6	480V Non-Class 1E LC Feeder from PA0206	4401W	TURB	---	S	R, H	X	X	X	---	---	E-13PG03 KD-7496	---	PA0206	Needed for MSIV failure, fire in A-15 or A-23	0
PG19	5	480V Non-Class 1E Load Center	1314	A-8	---	S	R, M, H	X	X	X	X	---	E-13PG02 KD-7496	---	XPG19	---	0
PG1900	5	480V Non-Class 1E LC Feeder from PG1500	1314	A-8	---	S	R, H	X	X	X	---	---	E-13PG02	---	PG1500	Needed for MSIV failure, fire in A-15 or A-23	0
PG1901	5	480V Non-Class 1E Load Center Incoming Feeder	1314	A-8	---	S	R, H	X	X	X	---	---	E-13PG02 KD-7496	---	XPG19	Needed for MSIV failure, fire in A-15 or A-23	0
PG1907	5	480V Non-Class 1E Auxiliary Bldg MCC (PG19G)	1314	A-8	---	S	R, M, H	X	X	X	X	---	E-13PG02	---	PG19	---	0
PG19G	5	480V Non-Class 1E Auxiliary Building MCC	1403	A-27	---	S	R, M, H	X	X	X	X	---	E-13PG02	E-11PG20	PG1907	---	2
PG19GAF1	5	5KVA Process Control Inverter (PN01)	1403	A-27	---	S	M	X	X	X	X	---	E-13SC12	E-11PG20	PG19G	---	2
PG19GAF8	5	Incoming Line from Load Center PG19	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG02	E-11PG20	PG1907	---	2
PG19GCR2	5	480VAC Non-Class 1E Distribution Panel	1403	A-27	---	S	R, M, H	X	X	X	X	---	E-11PG21 E-13AB04 E-13AB18 E-13RL07 E-13PG02	E-11PG20	PG19G	---	2
PG19GCF3	5	480V Non-Class 1E To PN03	1403	A-27	---	S	H	X	X	X	---	---	E-13PN02	E-11PG20	PG19G	---	5

PG20GAF4 | 6 | 480V Non-Class 1E To PN04 | 1403 | A-27 | --- | S | H | X | X | X | --- | --- | E-13PN02 | E-11PG20 | PG20G | --- | 5

APPENDIX 3
PFSSD COMPONENT LIST

Move this line to PN section

(Sorted by System / Component ID)

CALCULATION NO. XX-E-013
REVISION NO. 4 .

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PG19GCR217	5	MCB Misc. Power Circuits (RL023) NSSS Control Cabinet 05 (RP043) Pri. Supply	1403	A-27	---	S	R, H	X	X	X	---	---	E-13AB04 E-13AB18 E-13RL07 E-13PG02	E-11PG20	PG19G	Needed for MSIV failure, fire in A-15 or A-23	2
~~PG19GCR218~~ PN031001	5	~~Process Control Rack - Group 1 (RP043)~~	~~1403 3501~~	~~A-27 C-21~~	---	S	M	X	X	X	---	---	~~E-13PG02~~ E-13PN02	~~E-11PG20~~	~~PG19G~~ PN310		2
~~PG19GFR3~~	~~5~~	~~Instr Bus Transformer - Alt. Feed (XPN07D)~~	~~1403~~	~~A-27~~	~~---~~	~~S~~	~~H~~	~~X~~	~~X~~	~~X~~	~~---~~	~~---~~	~~E-13PN01~~	~~E-11PG20~~	~~PG19G~~	~~---~~	2
PG20	6	480V Non-Class 1E Load Center	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG04 E-13PA13 KD-7496	---	XPG20	---	0
PG2000	6	480V Non-Class 1E LC Feeder from PG2400	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG04 KD-7496	---	PG2400	Needed for MSIV failure, fire in A-15 or A-23	0
PG2001	6	480V Non-Class 1E Load Center Incoming Feeder	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PA13 KD-7496	---	XPG20	Needed for MSIV failure, fire in A-15 or A-23	0
PG2008	6	480V Non-Class 1E Auxiliary Bldg MCC (PG20G)	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG04 E-13PA13	---	PG20	---	0
PG20G	6	480V Non-Class 1E Auxiliary Building MCC	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG04 E-13PA13	E-11PG20	PG2008	---	2
PG20GAF1	6	Incoming Line from Load Center PG20	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG04 E-13PA13	E-11PG20	PG2008	---	2
~~PG20GAF2~~	~~6~~	~~5 kVA Process Control Inverter (PN02)~~	~~1403~~	~~A-27~~	~~---~~	~~S~~	~~M~~	~~X~~	~~X~~	~~X~~	~~---~~	~~---~~	~~E-13SC12~~	~~E-11PG20~~	~~PG20G~~	~~---~~	~~2~~
PG20GBR2	6	480VAC Non-Class 1E Distribution Panel	1403	A-27	---	S	R, H	X	X	X	---	---	E-13AB18 E-13RL07	E-11PG20	PG20G	Needed for MSIV failure, fire in A-15 or A-23	2
PG20GBR217	6	MCB Misc. Power Circuits (RL023) NSSS Control Cabinet 06 (RP047) Pri. Supply	1403	A-27	---	S	R, H	X	X	X	---	---	E-13AB18 E-13RL07	E-11PG20	PG20G	Needed for MSIV failure, fire in A-15 or A-23	2
~~PG20GBR219~~ PN041002	6	~~Process Control Rack - Group 2 (RP047)~~	~~1403 3501~~	~~A-27 C-21~~	---	S	M	X	X	X	---	---	~~E-13SC12~~ E-13PN02	~~E-11PG20~~	~~PG20G~~ PN410	---	2
PG20GER5	6	Instr Bus Transformer - Alt. Feed (XPN08D)	1403	A-27	---	S	H	X	X	X	---	---	E-13PN01A	E-11PG20	PG20G	---	2
PG22	6	480V Non-Class 1E Load Center	1409	A-17	---	M	---	X	X	---	X	---	E-13PG05	---	NB0208	Required for alternate shutdown per OFN RP-017 XX-E-013-002-CN007	3
PG2201	6	480V Non-Class 1E Load Center PG22 Feeder Breaker	1409	A-17	---	M	---	X	X	---	X	---	E-13PG05	---	NB0208	Required for alternate shutdown per OFN RP-017 XX-E-013-002-CN007	3

Move this line to PN section

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PG2400	6	480V Non-Class 1E LC Feeder from PG1400	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PG04 KD-7496	---	PG1400	Needed for MSIV failure, fire in A-15 or A-23	0
XPG11	5	480V Non-Class 1E LC Xfmr - Turbine Building	4351	T-2	---	S	R, H	X	X	X	---	---	E-13PG01 KD-7496	---	PG1100	Needed for MSIV failure, fire in A-15 or A-23	0
XPG12	6	480V Non-Class 1E LC Xfmr - Turbine Building	4351	T-2	---	S	R, H	X	X	X	---	---	E-13PG03 KD-7496	---	PG1200	Needed for MSIV failure, fire in A-15 or A-23	0
XPG19	5	480V Non-Class 1E LC Xfmr - Auxiliary Bldg	1314	A-8	---	S	R, H	X	X	X	---	---	E-13PG02 KD-7496	---	PG1900	Needed for MSIV failure, fire in A-15 or A-23	0
XPG20	6	480V Non-Class 1E LC Xfmr - Auxiliary Bldg	1403	A-27	---	S	R, H	X	X	X	---	---	E-13PA13 KD-7496	---	PG2000	Needed for MSIV failure, fire in A-15 or A-23	0
XPG22	6	480V Non-Class 1E LC Xfmr – Pressurizer Heaters Group B	1409	A-17	---	S	---	X	X	---	X	---	E-13PG05	---	NB0208	Required for alternate shutdown per OFN RP-017	3
PGHIS0002	5	13.8KV Non-Class 1E Load Center Feeder PA0106 Hand Switch	3601	C-27	RL016	S	R, H	X	X	X	---	---	E-13PG10	---	PK4103	Used to trip RDMG SF001 for fire in A-27	3
PGHIS0003	6	13.8KV Non-Class 1E Load Center Feeder PA0207 Hand Switch	3601	C-27	RL016	S	R, H	X	X	X	---	---	E-13PG11	---	PK6204	Used to trip RDMG SF002 for fire in A-27	3
PK01	5	125VDC Non-Class 1E Bus	4405	TURB	---	S	R, M, H	X	X	X	X	---	E-11PK01	---	PK11	---	0
PK0101	5	125VDC Non-Class 1E Line from/to PK11	4405	TURB	---	S	R, M, H	X	X	X	X	---	E-11PK01	---	PK21	---	0
PK0102	5	125VDC Non-Class 1E from Battery Chgr PK21	4405	TURB	---	S	M	X	X	X	---	---	E-11PK01	---	PK01	---	0
PK0104	5	125VDC Non-Class 1E Distr Swbd (PK41)	4405	TURB	---	S	R, H	x	X	X	---	---	E-11PK01	---	PK01	Needed for MSIV failure, fire in A-15 or A-23	0
PK0106	5	125VDC Non-Class 1E Distr Swbd (PK61)	4405	TURB	---	S	R, M, H	X	X	---	X	---	E-11PK01	---	PK01	---	0
PK0112	5	125VDC Non-Class 1E Distr Swbd (PK51)	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK12 PK22	---	0
PK02	6	125VDC Non-Class 1E Bus	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK12 PK22	---	0
PK0201	6	125VDC Non-Class 1E Line from/to PK12	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK22	---	0
PK0202	6	125VDC Non-Class 1E from Battery Chgr PK22	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK02	---	0
PK0105	5	125VDC Non-Class 1E To PN03	4405	TURB	---	S	H	X	X	X	---	---	E-11PK01	E-13PN02	PK01	---	5

PK04	6	125VDC Non-Class 1E Bus	3704	CC-1	---	S	H	X	X	X	---	---	E-11PK04	PK14 PK24	---	5
PK0407	6	125VDC Non-Class 1E To PN04	3704	CC-1	---	S	H	X	X	X	---	---	E-11PK04	PK04	---	5

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PK0204	6	125VDC Non-Class 1E Distr Swbd (PK42)	4405	TURB	---	S	M	X	X	X	---	---	E-11PK02	---	PK02	---	2
PK0206	6	125VDC Non-Class 1E Distr Swbd (PK62)	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-13PA14 E-11PK02 E-11PA02 KD7496	---	XMR01 PK6204	---	0
PK0211	5	125VDC Non-Class 1E Distr Swbd (PK52)	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK02	---	0
PK11	5	125VDC Non-Class 1E Battery	4404	TURB	---	S	R, M, H	X	X	---	X	---	E-11PK01	---	PK0101 PK21	---	0
PK12	6	125VDC Non-Class 1E Battery	4404	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK0201 PK22	---	0
PK21	5	125VDC Non-Class 1E Battery Charger	4405	TURB	---	S	R, M, H	X	X	---	X	---	E-11PK01 E-11NG01	---	NG0102	---	0
PK22	6	125VDC Non-Class 1E Battery Charger	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02 E-11NG02 E-13PK11	---	NG0409	XX-E-013-001-CN011	2
PK41	5	125VDC Non-Class 1E Distribution Switchboard	4405	TURB	---	S	R, H	X	X	X	---	---	E-11PK01	---	PK4100	Needed for MSIV failure, fire in A-15 or A-23	0
PK4100	5	125VDC Non-Class 1E Distr Swbd Incoming Fdr	4405	TURB	---	S	R, H	X	X	X	---	---	E-11PK01	---	PK0104	Needed for MSIV failure, fire in A-15 or A-23	0
PK4103	5	PA01 Breaker Control Power (Outgoing Brkrs)	4405	TURB	---	S	R, H	X	X	X	X	---	E-11PK01	---	PK41	Needed for MSIV failure, fire in A-15 or A-23	0
PK4114	5	Main Turbine Stop Valves Manual Trip (AC119D)	4405	TURB	---	S	R, H	X	X	X	---	---	E-11PK01	---	PK41	Needed for MSIV failure, fire in A-15 or A-23. XX-E-013-002-CN008	3
PK42	6	125VDC Non-Class 1E Distribution Switchboard	1403	A-27	---	S	M	X	X	X	---	---	E-11PK02	---	PK42	---	2
PK4200	6	125VDC Non-Class 1E Distr Swbd Incoming Fdr	1403	A-27	---	S	M	X	X	X	---	---	E-11PK02	---	PK42	---	2
PK4207	6	5 kVA Process Control Inverter (PN02)	1403	A-27	---	S	M	X	X	X	---	---	E-11PK02 E-13SC12	---	PK42	---	2
PK51	5	125VDC Non-Class 1E Distribution Switchboard	1403	A-27	---	S	R, M, H	X	X	X	X	---	E-11PK01	---	PK0112	---	0
PK5100	5	125VDC Non-Class 1E Distr Swbd Incoming Fdr	1403	A-27	---	S	R, M, H	X	X	---	X	---	E-11PK01	---	PK0112	---	0

PK24	6	125VDC Non-Class 1E Battery Charger	3704	CC-1	---	S	H	X	X	X	---	---	E-11PK04		NG0410	---	5
PK0402	6	125VDC Non-Class 1E from Battery Chgr PK24	3704	CC-1	---	S	H	X	X	X	---	---	E-11PK04		NG0410	---	5

PK14	6	125VDC Non-Class 1E Battery	3705	CC-1	---	S	H	X	X	X	---	---	E-11PK04		PK0401 PK24	---	5
PK0401	6	125VDC Non-Class 1E Line from/to PK14	3704	CC-1	---	S	H	X	X	X	---	---	E-11PK04		PK24	---	5

PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PK5113	5	Master Supervisory Station (RP060)	1403	A-27	---	S	R, M, H	X	X	---	---	---	E-11PK01	---	PK51	RP060 is required for a fire in area C-9 and C-10 to de-energize the NB bus.	1
PK5117	5	RC & Support Sys Control Panel (RL001/RL002)	1403	A-27	---	S	R, M	X	X	X	X	---	E-11PK01 E-13RL02	---	PK51	---	0
PK5123	5	Steam Generator Blowdown Control Pnl (BM157)	1403	A-27	---	S	R, M, H	X	X	---	X	---	E-11PK01	---	PK51	---	0
PK5126	5	Auxiliary Relay Rack (RP330)	1403	A-27	---	S	R, M	X	X	X	---	---	E-11PK01 E-13RP09	---	PK51	---	0
PK5129	5	Auxiliary Relay Rack (RP211)	1403	A-27	---	S	R, M	X	X	X	---	---	E-11PK01 E-13BM04 E-13BM06D E-13RP09	---	PK51	---	0
PK52	6	125 VDC Non-Class 1E Distribution Switchboard	1403	A-27	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK0211	---	0
PK5200	6	125VDC Non-Class 1E Distr Swbd Incoming Fdr	1403	A-27	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK0211	---	0
PK5213	6	Reverse Isolation Relay Rack (RP331)	1403	A-27	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK52	---	0
PK61	5	125VDC Non-Class 1E Distribution Switchboard	1403	A-27	---	S	R, M, H	X	X	X	X	---	E-11PK01	---	PK0106	---	0
PK6100	5	125VDC Non-Class 1E Distr Swbd Incoming Fdr	1403	A-27	---	S	M	X	X	X	---	---	E-11PK01	---	PK0106	---	0
PK6106	5	Transformer Protection Relay Panel (MA104E)	1403	A-27	---	S	R, M, H	X	X	X	---	---	E-13MR10 E-11PK01	---	PK61	---	0
~~PK6107~~	~~5~~	~~5KVA Process Control Inverter (PN01)~~	~~1403~~	~~A-27~~	~~---~~	~~S~~	~~M~~	~~X~~	~~X~~	~~X~~	~~X~~	~~---~~	~~E-13SC12~~	~~---~~	~~PK61~~	~~---~~	~~0~~
PK6108	5	Transformer Protection Relay Panel (MA104F)	1403	A-27	---	S	M	X	X	X	---	---	E-11PK01	---	PK61	---	0
PK6115	5	Site Related Control Panel (RL013/RL014)	1403	A-27	---	S	R, M, H	X	X	---	---	---	E-11PK01	---	PK61	Panel RL013/RL014 is included for a fire in areas C-9 and C-10 to de-energize the NB bus.	1
PK6116	5	ESF Control Panel (RL017/RL018)	1403	A-27	---	S	M	X	X	X	---	---	E-11PK01	---	PK61	---	0
PK62	6	125VDC Non-Class 1E Distribution Switchboard	4405	TURB	---	S	R, M, H	X	X	X	X	---	E-11PK02	---	PK0206	---	0

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PK6200	6	125VDC Non-Class 1E Distr Swbd Incoming Fdr	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-11PK02	---	PK0206	---	0
PK6204	6	PA02 Breaker Control Power (Outgoing Brkrs)	4405	TURB	---	S	R, M, H	X	X	X	X	---	E-13PA14 E-11PK02	---	PK62	---	0
PK6205	6	PB04 Breaker Control Power	4405	TURB	---	S	R, M, H	X	X	X	X	---	E-11PK02 E-13AE20 E-03PB13	---	PK62	If power not available, locally open PB0406	0
PK6216	6	Transformer Protection Relay Panel (MA104D)	4405	TURB	---	S	R, M, H	X	X	X	---	---	E-13MR10 E-11PK02	---	PK62	---	0
0PL09J	5, 6	Switchyard Remote Supervisory Cabinet	---	---	---	S	R, M, H	X	X	---	---	---	E-1005-SY01	---	---	Panel 0PL09J is included for a fire in areas C-9 and C-10 to de-energize the NB bus.	1
~~PN01~~	~~5~~	~~5KVA Process Control Inverter~~	~~1403~~	~~A-27~~	~~---~~	~~S~~	~~M~~	~~X~~	~~X~~	~~X~~	~~X~~	~~---~~	~~E-13SC12~~	~~---~~	~~PG19GAF1 PK6107~~	~~---~~	~~0~~
~~PN02~~	~~6~~	~~5KVA Process Control Inverter~~	~~1403~~	~~A-27~~	~~---~~	~~S~~	~~M~~	~~X~~	~~X~~	~~X~~	~~X~~		~~E-13SC12~~	~~---~~	~~PG20GAF2 PK4207~~	~~---~~	~~2~~
PN07	5	120VAC Non-Class 1E Distribution Switchboard	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A E-13RL01	---	PN07B	---	0
PN0712	5	Non Class 1E 120 VAC Inverter PN09	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	PN07	Needed for MSIV failure, fire in A-15 or A-23 XX-E-013-002-CN016	3
PN0736	5	ESF Control Panel (RL017/RL018)	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	PN07	---	0
PN0738	5	Reactor Auxiliary Control Pnl (RL021/RL022)	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	PN07	---	0
PN07A	5	Voltage Regulator Panel - 22.5KVA	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	XPN07D	---	0
PN07B	5	Auto Transfer Switch	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	XPN07B	---	0
PN07C	5	Voltage Regulator Panel - 22.5KVA	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	XPN07A	Added per CCN-XX-E-013-000-CN001	1
PN08	6	120VAC Non-Class 1E Distribution Switchboard	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01 E-13RL01	---	PN08B	---	0
PN0806	6	Non Class 1E 120 VAC Inverter PN10	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	PN08	Needed for MSIV failure, fire in A-15 or A-23 XX-E-013-002-CN016	3
PN0833	6	ESF Control Panel (RL017/RL018)	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	PN08	---	0
PN03	5	10KVA Inverter and Bypass Transformer	1403	A-27	---	S	H	X	X	X	---	---	E-13PN02		PG19GCF3 PK0105	---	5

PN04 6 10KVA Inverter and Bypass Transformer 1403 A-27 --- S H X X X --- --- E-13PN02 PG20GAF4 PK0407 --- 5

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
PN0835	6	Reactor Auxiliary Control Pnl (RL021/RL022)	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	PN08	---	0
PN08A	6	Voltage Regulator Panel - 22.5KVA	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	XPN08D	---	0
PN08B	6	Auto Transfer Switch	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	XPN08C	---	0
PN08C	6	Voltage Regulator Panel - 22.5KVA	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	XPN08A	Added per CCN-XX-E-013-000-CN001	1
PN09	5	Non Class 1E 120 VAC Inverter	3301	C-9	---	S	R, H	X	X	X	---	---	E-13RP10	---	PK3303	Needed for MSIV failure, fire in A-15 or A-23 XX-E-013-002-CN016	3
PN09A	5	Non Class 1E 120 VAC Distribution Switchboard	3301	C-9	---	S	R, H	X	X	X	---	---	E-13RP10	---	PK3303	Needed for MSIV failure, fire in A-15 or A-23 XX-E-013-002-CN016	3
PN10	6	Non Class 1E 120 VAC Inverter	3302	C-10	---	S	R, H	X	X	X	---	---	E-13RP10	---	PK0403	Needed for MSIV failure, fire in A-15 or A-23 XX-E-013-002-CN016	3
PN10A	6	Non Class 1E 120 VAC Distribution Switchboard	3302	C-10	---	S	R, H	X	X	X	---	---	E-13RP10	---	PK0403	Needed for MSIV failure, fire in A-15 or A-23 XX-E-013-002-CN016	3
XPN07A	1, 5	480/120V Instr 3-Phase Xfmr from NG01A	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	NG01ABF1	Revised per CCN-XX-E-013-000-CN001 and DCP 09803	1
XPN07D	5	480/120V Instr Xfmr from PG19G (Alt. Feed)	3409	C-16	---	S	H	X	X	X	---	---	E-13PN01A	---	PG19GFR3	---	0
XPN08A	4, 6	480/120V Instr 3-Phase Xfmr from NG02A	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	NG02ADF1	Revised per CCN-XX-E-013-000-CN001 and DCP 09803	1
XPN08D	6	480/120V Instr Xfmr from PG20G (Alt. Feed)	3403	C-15	---	S	H	X	X	X	---	---	E-13PN01	---	PG20GER5	---	0
QD01	1	Emergency Lighting - Control Room	3601	C-27	---	S	---	X	X	X	---	---	E-03QD01	---	NK51A	---	0
QD02	1	Emergency Lighting - Control Room	3601	C-27	---	S	---	X	X	X	---	---	E-03QD01	---	NK51A	---	0
QD03	1	Emergency Lighting - Control Room	3601	C-27	---	S	---	X	X	X	---	---	E-03QD01	---	NK51A	---	0
QD04	1	Emergency Lighting - Control Room	3601	C-27	---	S	---	X	X	X	---	---	E-03QD01	---	NK51A	---	0

PN031002 5 NSSS Control Cab. (RP047) Alt. Supply 3501 C-21 --- S H X X X --- --- E-13PN02 PN310 --- 5

PN041001 6 NSSS Control Cab. (RP043) Alt. Supply 3801 C-22 --- S H X X X --- --- E-13PN02 PN410 --- 5

PN310	5	120VAC Distribution Pnl	3501	C-21	---	S	H	X	X	X	---	---	E-13PN02	PN03	---	5
PN410	6	120VAC Distribution Pnl	3801	C-22	---	S	H	X	X	X	---	---	E-13PN02	PN04	---	5

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
QD05	1	Emergency Lighting - Control Room	3601	C-27	---	S	---	X	X	X	---	---	E-03QD01	---	NK51A	---	0
QD06	1	Emergency Lighting - Control Room	3601	C-27	---	S	---	X	X	X	---	---	E-03QD01	---	NK51A	---	0
QJS0001	6	CVCS Heat Tracing Transfer Switch	1101	A-1	---	S	R	---	X	---	X	---	E-13QJ07	---	NG02A	Required for OFN RP-017A to ensure alternate boration path. XX-E-013-002-CN012	3
QJTE6244A	6	QJTS6251 Sensing RTD	1113	A-2	---	S	R	---	X	---	X	---	E-13QJ07	---	NG02A	Required for OFN RP-017A to ensure alternate boration path. XX-E-013-002-CN012	3
QJTS6251	6	CVCS Heat Tracing	1113	A-2	---	S	R	---	X	---	X	---	E-13QJ07	---	NG02A	Required for OFN RP-017A to ensure alternate boration path. XX-E-013-002-CN012	3
RL001	1, 4	Reactor Coolant & Support System MCB	3601	C-27	---	S	R, M, H	X	X	X	---	---	E-13RL01 E-13RL02 E-11NK01 E-11NK02	---	NK4119 NK4407	XX-E-013-001-CN013	2
RL002	1, 4	Reactor Coolant & Support System MCB	3601	C-27	---	S	M	X	X	X	---	---	E-13RL01 E-13RL02 E-11NK01 E-11NK02	---	NN0111 NN0212	XX-E-013-001-CN013	2
RL003	1, 4	Reactor Control Main Control Board	3601	C-27	---	S	R	X	X	X	---	---	E-13NN01 E-13SE01	---	NN0113 NK4116 NK5410	XX-E-013-001-CN013	2
RL005	1, 2, 3, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	R, M, H	X	X	X	---	---	E-13RL01 E-13RL03 E-11NK01 E-11NK02	---	NK4409 NK4206	XX-E-013-001-CN011 XX-E-013-001-CN013	2
RL006	1, 2, 3, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	R, M, H	X	X	X	---	---	E-13RL01 E-13RL03 E-11NK01 E-11NK02	---	NK4206	XX-E-013-001-CN011 XX-E-013-001-CN013	2

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
RL022	1, 4	Reactor Auxiliaries Main Control Board	3601	C-27	---	S	H	X	X	X	---	---	E-13RL01 E-13RL06 E-11NK01 E-11NK02	---	NK4414 NK5109 PN0738 PN0835	XX-E-013-001-CN013	2
RL023	1, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	R, M, H	X	X	X	---	---	E-13RL01 E-13RL07	---	NK4411	---	0
RL024	1, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	R, M, H	X	X	X	---	---	E-13BM06A E-13RL01 E-13RL07 E-11NK01 E-11NK02	---	NK4411	XX-E-013-001-CN013	2
RL025	1, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	H	X	X	X	---	---	---	---	---	RL025 is included in the matrix because controls and indication are mounted on the panel. The controls and indication do not receive power from RL025. Revised per CCN-XX-E-013-000-CN005.	1
RL026	1, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	H	X	X	X	---	---	---	---	---	RL026 is included in the matrix because controls and indication are mounted on the panel. The controls and indication do not receive power from RL026. Added per CCN-XX-E-013-00-CN005.	1
RL027	1, 4	Turbine Generator & Feedwater MCB	3601	C-27	---	S	H	X	X	X	---	---	---	---	---	RL027 is included in the matrix because controls and indication are mounted on the panel. The controls and indication do not receive power from RL027	0
RP043	3	~~Process Control Rack - Group 1~~ NSSS Control Cabinet 05	3605	C-27	---	S	M	X	X	X	---	---	E-13BB19 E-13BG10 E-13SC03 E-13SC07 E-13SC12	~~M-761-00140~~ M-761-00141 ~~M-761-00174~~ M-761A-00019 M-761A-00025	~~PG19GCR218~~ ~~PN01~~ PN031001 PN041001		2

APPENDIX 3
PFSSD COMPONENT LIST

(Sorted by System / Component ID)

Component ID	S/G	Description	Room	Fire Area	Instrument Location	SSD Fun	Sprtd Fun	Hot Stdby	Cold Shdwn	Normal Shdwn	Alt Shdwn	P&ID	Schematic / One Line	Other Drawings	Power Source	Notes	REV
RP047	5, 6	~~Process Control Rack - Group 2~~ NSSS Control Cabinet 06	3605	C-27	---	S	M	X	X	X	---	---	E-13SC01 E-13SC07 E-13SC12	~~M-761-00142~~ M-761-00143 M-761A-00019 M-761A-00025	~~PG20GBR219~~ ~~PN02~~ PN031002 PN041002	---	2
RP053AA	1	BOP Instrumentation Rack	3605	C-27	---	S	H	X	X	X	---	---	E-13RP09 E-13NN01	---	NN0116 NN0120	---	0
RP053AB	1	BOP Instrumentation Rack	3605	C-27	---	S	H	X	X	X	---	---	E-13RP09 E-13NN01	---	NN0116 NN0120	XX-E-013-001-CN013	2
RP053AC	1	BOP Instrumentation Rack	3605	C-27	---	S	R, M, H	X	X	X	---	---	E-13RP09 E-13NN01	---	NN0116 NN0120	---	0
RP053BA	4	BOP Instrumentation Rack	3605	C-27	---	S	H	X	X	X	---	---	E-13RP09 E-13NN01	---	NN0416 NN0418	---	0
RP053BB	4	BOP Instrumentation Rack	3605	C-27	---	S	H	X	X	X	---	---	E-13RP09 E-13NN01	J-110-005592 J-110-00593 J-110-00596	NN0418	---	0
RP053BC	4	BOP Instrumentation Rack	3605	C-27	---	S	R, M, H	X	X	X	---	---	E-13RP09 E-13NN01	---	NN0416 NN0418	---	0
RP053DA	2	BOP Instrumentation Rack	3605	C-27	---	S	R, M, H	X	X	X	---	---	E-13RP09	---	NN0208	---	0
RP053DB	3	BOP Instrumentation Rack	3605	C-27	---	S	R, M, H	X	X	X	---	---	E-13RP09	---	NN0307	---	0
RP060	5, 6	Master Supervisory Station (Also 1PM01J)	3605	C-27	---	S	R, M, H	X	X	---	---	---	E-1005-SY01	---	PK5113	RP060 is used to open switchyard breaker 13-8 if a fire occurs in areas C-9 or C-10.	1
RP068	1, 4	Miscellaneous BOP Control Panel	3605	C-27	---	S	R, M, H	X	X	X	---	---	E-K3GD01 E-K3GD01A E-11NG21	---	NG01ACR142 NG02ACR136	---	0
RP118A	1, 3	Auxiliary Shutdown Panel	1413N	A-28	---	S	R, M, H	X	X	X	---	---	E-13AB20A E-13BG36	J-110-00216 J-110-00220 J-110-00584 J-110-00587 J-110-00588 J-110-00591	NN0116 NN0307	RP118A is used during alternate shutdown to attempt to close steam dumps ABPV001 and ABPV003 and open auxiliary feedwater valves ALHV-7 and ALHV-12. Use of RP118A is prudent but not required. XX-E-013-001-CN004	2

CALCULATION VERIFICATION REPORT	DOCUMENT NO. XX-E-013-004-CN008	REV. N/A

DOCUMENT TITLE: POST-FIRE SAFE SHUTDOWN (PFSSD) ANALYSIS

ORIGINATOR: Brian Fox

DESIGN VERIFIED:	SAFETY CLASSIFICATION:	VERIFICATION METHOD:
☐ PRELIMINARY	☐ SAFETY-RELATED	☒ DESIGN REVIEW
☒ FINAL	☒ SPECIAL SCOPE	☐ ALTERNATE CALCULATION
☐ REVISION	☐ NON-SAFETY RELATED	☐ TESTING

☒ **INDIVIDUAL VERIFICATION** **SIGNATURE:**  **DATE:** 07/22/2020

Print / Sign

QUALIFICATION REQUIRED: ES9280479

☐ **TEAM VERIFICATION**

Scope Verified:	SIGNATURE:	DATE:

TEAM LEADER SIGNATURE: **DATE:**

QUALIFICATION REQUIRED
ES9280479

PRINT / SIGN

*** Team leader signature certifies that adequate interfaces and overlaps have occurred.**

OVERVIEW (PURPOSE AND SCOPE):
The PFSSD interface with the NSSS includes certain functions that could cause spurious operation of the pressurizer Power Operated Relief Valves (PORVs), pressurizer normal spray valves and letdown isolation valves. For PFSSD, these valves are required to be closed. Proper identification of credited PFSSD power sources and components also included in scope.

CRUCIAL AREAS:
1. The PFSSD interface with the NSSS includes certain functions that could cause spurious operation of the pressurizer Power Operated Relief Valves (PORVs), pressurizer normal spray valves and letdown isolation valves. For PFSSD, these valves are required to be closed.
2. PFSSD credited power source identification and configuration.
3. PFSSD components identification and attributes.

CALCULATION VERIFICATION REPORT	DOCUMENT NO. XX-E-013-004-CN008	REV. N/A

ALTERNATE OR INDEPENDENT ITEMS USED FOR VERIFICATION:

1. WIP-E-15000-067-BT-1
2. WIP-E-1F9301-005-A-1
3. WIP-E-1F9304-002-A-1
4. WIP-E-1F9421-007-A-1
5. WIP-E-1F9422C-003-A-1
6. WIP-E-1F9424E-006-A-1
7. WIP-E-1F9910-016-A-1

CALCULATION VERIFICATION REPORT	DOCUMENT NO. XX-E-013-004-CN008	REV. N/A

COMMENTS:	ORIGINATOR'S RESPONSE:
1. Appendix 1 p22. Following sounds unresolved, why not include the evaluation determination here? E-1F9910 impact will/should address this. "SLIM stations included in the PFSSD design to evaluate whether they can be used to close spray valves if spuriously open" This is regard to Operator interface to the normal pressurizer Small Loop Interface Modules (SLIM) BBPK0455B & BBPK0455C. Final E-1F9910 evaluation determined fire area needed to rely on need for SLIMS to close spray valves, thereofore BBPK0455B & BBPK0455C were removed as PFSSD components.	Resolved as noted in originator's comments.
2. Appendix 3, p114 - PN031002 located in Room 3501, Fire Area C-21 (Lower Spreader) inside distibution panel PN310. Likewise PN041001 in room 3801, Area C-22.	Agreed. Corrected.
3.	

CONCLUSIONS:

Comments adequately address. CCN provides sufficient technically justification for the determination that the 7300 Controls upgrade is not adverse to PFSSD, including closure assurance of Pressurizer Power Operated Relief Valves (PORVs), pressurizer normal spray valves and letdown isolation valves. The population of required PFSSD components is sufficiently addressed.