Mark T. Finley
Senior Vice President, Regulatory Affairs & Engineering

750 East Pratt Street, Suite 1400
Baltimore, Maryland 21202

UniStar
NUCLEAR ENERGY

10 CFR 50.4
10 CFR 52.79

April 30, 2013

UN#13-052

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI 384, Fire Protection Building Ventilation System

References:
1) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 - FINAL RAI 384 SPCV 6956," email dated January 28, 2013

2) UniStar Nuclear Energy Letter UN#13-010, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 384, Fire Protection Building Ventilation System, dated February 13, 2013

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated January 28, 2013 (Reference 1). This RAI addresses the Fire Protection Building Ventilation System, as discussed in Section 9.4.16 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 9.

Reference 2 indicated that the response to RAI 384 Question 09.04.03-1 would be provided to the NRC by April 30, 2013.

Enclosure 1 provides our response to RAI 384 Question 09.04.03-1, and includes revised COLA content. Enclosure 2 provides the COLA impact of the response to RAI 384 Question 09.04.03-

D096
NRO

1. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA. Enclosure 3 provides a table of changes to the CCNPP Unit 3 COLA associated with the RAI 384 response.

This RAI response does not include any new regulatory commitments. This letter does not contain any proprietary information.

If there are any questions regarding this transmittal, please contact me at (410) 369-1907 or Mr. Wayne A. Massie at (410) 369-1910.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 30, 2013

Mark T. Finley

Enclosures:
1) Response to NRC Request for Additional Information RAI 384, Question 09.04.03-1, Fire Protection Building Ventilation System, Calvert Cliffs Nuclear Power Plant, Unit 3
2) Changes to CCNPP Unit 3 COLA Associated with the Response to RAI 384, Question 09.04.03-1, Calvert Cliffs Nuclear Power Plant, Unit 3
3) Table of Changes to CCNPP Unit 3 COLA Associated with Response to RAI No. 384 Calvert Cliffs Nuclear Power Plant Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn-Willingham, NRC Environmental Project Manager, U.S. EPR COL Application
Amy Snyder, NRC Project Manager, U.S. EPR DC Application, (w/o enclosures)
Patricia Holahan, Acting Deputy Regional Administrator, NRC Region II, (w/o enclosures)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2,
David Lew, Deputy Regional Administrator, NRC Region I (w/o enclosures)

Enclosure 1

Response to NRC Request for Additional Information
RAI 384, Question 09.04.03-1,
Fire Protection Building Ventilation System,
Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 385

02.05.01-70

RAI, Section 9.4.16 Fire Protection Building Ventilation System

In FSAR, Revision 8, Section 9.4.16, it is indicated that in the event of Loss of Offsite Power or in the event of Station Blackout, the emergency power system is supplied to the Fire Protection Building (FPB) Ventilation System to the two diesel engine driven pump room components to maintain the normal room design temperature conditions. This is to meet the requirements of RG 1.189 Section 3.2.2 for the diesel engine driven pump operation.

10 CFR 52.80 (a) requires that a COL application contain proposed Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC). Add the ITAAC for power supplies to diesel driven pump rooms to the existing ITAAC for the FPB Ventilation System or justify not providing an ITAAC for power supply.

Also provide a system flow diagram or piping and instrument diagram of FPB Ventilation System showing the key features of major components.

Response

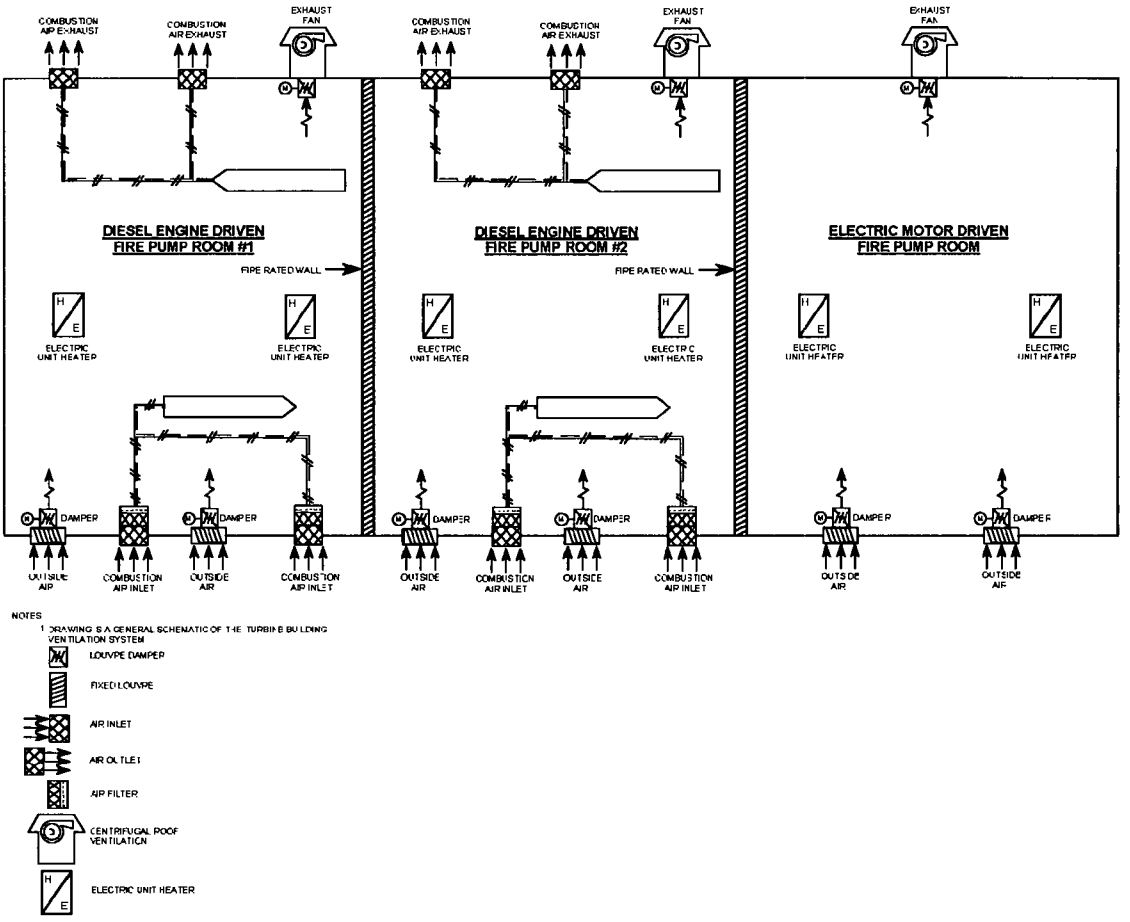
The Fire Protection Building Ventilation System provides an acceptable environmental condition for the operation of the Fire Protection System Equipment, including the diesel engine driven pumps located inside of the Fire Protection Building (FPB). Figure 9B-20, CCNPP Unit 3 Fire Barrier Location, Fire Protection Building Plan View at Elevation 85'0, provides schematic representation of the Fire Protection Building. This figure is updated to be consistent with the general arrangement fire protection storage tanks and buildings drawing. Figure-1 depicts the Fire Protection Building Ventilation System components. This ventilation system also provides safe and satisfactory indoor environmental conditions to support personnel access to the two diesel driven pump rooms and electric motor operated pump room. The Fire Protection Building Ventilation System, in the two diesel engine driven pump rooms, is a Nonsafety-Related augmented quality (NS-AQ) system designed to meet Conventional Seismic-I requirements. The ventilation system in the electric motor driven pump room is a Non-Seismic system. Each pump room contains independent components of the ventilation system to maintain the temperature in their respective rooms.

In the event of loss of offsite power (LOOP) or Station Blackout (SBO), a self-contained Standby Diesel Generator (SDG) provides AC power supply to the FPB ventilation system, heating system, and building normal and emergency lighting systems to the two diesel driven fire pump rooms. The SDG is a Nonsafety-Related augmented quality system designed to meet the Seismic requirement of Conventional Seismic-I. The SDG will be functional and provide power to the FPB ventilation system, heating system, and building normal and emergency lighting systems after a seismic event and loss of power to FPB. Based on the day tank fuel capacity, the Standby Diesel Generator will be able to provide power for up to 24 hours to maintain FPB room temperature within the design limits. The SDG is required to operate a minimum of 8 hours upon total loss of AC power to the FPB and when the diesel fire pump is running, to supply water to mitigate fire in accordance with the requirement of RG 1.189, Section 3.2.2.

The SDG has been added in FSAR Table 3.2-1, Classification Summary for Site-Specific SSCs, FSAR Table 3.10-1, Seismic and Dynamic Qualifications of Mechanical and Electrical Equipment, and FSAR Table 3.11-1, Site Specific Environmentally Qualified Electrical/I&C Equipment.

Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC) have been added to the Standby Diesel Generator system in the ITAAC Table 2.4-9 and Table 2.4-21.

Figure 1



COLA Impact

Enclosure 2 provides the COLA markups associated with the response to RAI 384 Question 09.04.03-1.

Enclosure 2

Changes to CCNPP Unit 3 COLA
Associated with the Response to RAI 384, Question 09.04.03-1,
Calvert Cliffs Nuclear Power Plant, Unit 3

3A CRITERIA FOR DISTRIBUTION SYSTEM ANALYSIS AND SUPPORT

This section of the U.S. EPR FSAR is incorporated by reference.

LBDCR CC3-13-0063

{with supplements described in the following sections}

{3A.2 Heating, Ventilation, and Air Conditioning Ducts and Supports
Fire Protection Building related HVAC ductwork and its associated support structures, designated as Conventional Seismic-I (CS-I), will follow the same seismic analysis and design methodology including seismic modeling, acceptance criteria and codes and standards, as described for Seismic Category I HVAC ductwork and its associated support structures in US EPR FSAR Appendix 3A.2, except that the seismic input will be based on site-specific SSE.}

LBDCR CC3-13-0077

3A.3 Cable Tray, Conduit, and Supports
Fire Protection Building related cable trays, conduits, and the associated supports and restraints designated as Conventional Seismic-I (CS-I) will follow the same seismic analysis and seismic design methodology, including seismic modeling, acceptance criteria, and codes and standards, as described for Seismic Category-I cable trays, conduits, and the associated supports and restraints in the U.S. EPR FSAR Appendix 3A.3, except that the seismic input will be based on site-specific SSE.

Table 3.2-1— {Classification Summary for Site-Specific SSCs}
(Page 5 of 10)

KKS System or Component Code	SSC Description	Safety Classification (Note 1)	Quality Group Classification	Seismic Category (Note 2)	10CFR50 Appendix B Program (Note 5)	Location (Note 3)	Comments/ Commercial Code (Note 10)
GK	Motors	NS	N/A	NSC	No		(Note 8)
GK	Potable Water System Electrical Distribution Equipment	NS	N/A	NSC	No		(Note 8)
SG, SGA, SGAO, SGM Fire Water Supply System							
SGA	Fire Water Distribution System, including valves and hydrants, Balance of Plant (Not providing Safe Shutdown Earthquake Protection)	NS-AQ	D	NSC	No		NFPA 24 NFPA 25 NFPA 214 NFPA 804 (Note 8)
SGA	Fire Water Distribution System, including valves and hydrants, Balance of Plant (Safe Shutdown Equipment Protection following SSE)	NS-AQ	D	II	Yes		NFPA 24 NFPA 25 NFPA 804 ANSI/ASME B31.1 (Notes 5 & 8)
USG	Fire Water Storage Tanks	NS-AQ	D	CS	No	USG/ UZT	NFPA 20 NFPA 22 NFPA 25 AWWA D100 ACI 349/ANSI/AISC N690/ASCE 4-98 ASCE 43 ANSI/ASME B31.1 ASCE 4 (Notes 5 & 8)
USQ	Fire Protection Building	NS-AQ	N/A	CS	No	USG/UZT	ASCE 43 (Note 5)
SGM	Diesel Engine Driven Pumps and Drivers and subsystems, including diesel fuel oil supply	NS-AQ	D	CG	No	USG	NFPA 20 NFPA 25 NFPA 804 ASCE 43 ANSI/ASME B31 (Notes 5 & 8)
SGM	Standby Diesel Generator for Fire Protection Building Ventilation System and subsystems, including diesel fuel oil supply	NS-AQ	D	CS-I	Yes	USG	NFPA 110 NFPA 804 NEMA NG-1-2003 (Note 8)
SGM	Electric Motor Driven Pump and Driver	NS-AQ	D	NSC	No	USG	NFPA 20 NFPA 25 NFPA 804 (Note 8)
SA	Ventilation Equipment	NS-AQ	D	CS	No3	USG	NFPA 20. NFPA 90A ASME AG-1 ASME N-509 ASCE 43 (Notes 5 & 8)
SGM	Jockey Pump and driver	NS-AQ	D	NSC	No	USG	NFPA 20 NFPA 25 NFPA 804 (Note 8)

Table 3.2-1— {Classification Summary for Site-Specific SSCs}
(Page 6 of 10)

KKS System or Component Code	SSC Description	Safety Classification (Note 1)	Quality Group Classification	Seismic Category (Note 2)	10CFR50 Appendix B Program (Note 5)	Location (Note 3)	Comments/ Commercial Code (Note 10)
SG	Fire Protection Makeup Piping and Valves From Raw (Desalinated) Water Supply System	NS-AQ	D	NSC	No	UZT	NFPA 22 NFPA 25 (Note 8)
INSERT A →							
Fire Suppression Systems							
	Fire Suppression Systems and Standpipes and Hose Stations for Site Specific Buildings other than UHS Makeup Water Intake Structure and Fire Protection Building	NS-AQ	D	NSC	No	UST UTG UYF UPQ	NFPA 13 NFPA 14 NFPA 25 NFPA 804 (Note 8)
	Fire Suppression Systems for UHS Makeup Water Intake Structure and Fire Protection Building	NS-AQ	D	II	Yes	UPF, USG	NFPA 13 NFPA 14 NFPA 25 NFPA 804 ANSI/ASME B31.1 (Notes 5 & 8)
	Standpipes and Hose Stations for UHS makeup Water Intake Structure	NS-AQ	D	II	Yes	UPF	NFPA 14 NFPA 25 NFPA 804 ANSI/ASME B31.1 (Notes 5 & 8)
Other Site-Specific Structures							
UMA, UBA	Turbine Building, Switchgear Building	NS-AQ	NA	II	Yes	UMA, UBA	Steel - AISC N690 Concrete - ACI 349 (Note 5)
UKE	Access Building	NS-AQ	NA	II	Yes	UKE	Steel - AISC N690 Concrete - ACI 349 (Note 5)
UAC	Grid Systems Control Building	NS	N/A	CS	No	UAC	IBC
UQZ	Electrical Duct Banks traversing from the Safeguards Buildings to the Four Essential Service Water Buildings and Both Emergency Power Generating Buildings	S	N/A	I	Yes	UJK/ UZT/ UQB/ UBP	ACI-349
UQZ	Electrical Duct Banks traversing from the Safeguards Buildings to the Switchgear Building	NS	N/A	CS	No	UJK/ UZT/ UBA	IBC
	Electrical Duct Banks traversing from the Emergency Auxiliary Transformers to the Safeguard Buildings	NS	N/A	CS	No	UBE/ UZT/ UJK	IBC

INSERT A

SG	Fire Protection Electrical Distribution System for normal power operation	NS	N/A	NSC	No	USG	IBC
SG	Fire Protection Electrical Distribution System supporting Fire Protection distribution system components designated as Conventional Seismic-I	NS-AQ	N/A	CS-I	Yes	USG	IEEE-344

Table 3.8-5— {Observed Chemical Properties of Groundwater}

Properties	Surficial aquifer	Upper Chesapeake unit
pH (average)	5.2	7.4
Sulfate (ppm, maximum)	68.6	365
Chloride (ppm, maximum)	47.4	370

Notes:
Sulfate and chloride concentrations indicate the maximum observed values at the powerblock and intake areas.
ppm = parts per million.

LBDCR CC3-13-0063

INSERT 6 →

INSERT 6

LBDCR CC3-13-0063

Table 3.8-6— {Fire Protection Conventional Seismic-I SSC Seismic Design Criteria Summary}

Site-Specific FPS CS-I SSC	Seismic Input	Seismic Model	Methods of Seismic Analysis	Acceptance Criteria	Codes and Standards
Buried FPS Piping	CCNPP Unit 3 Site SSE	As described for SC I buried piping in CCNPP Unit 3 FSAR Section 3.8.4.4.5	As described for SC I buried piping in CCNPP Unit 3 FSAR Section 3.8.4.4.5	As described for SC I buried piping in CCNPP Unit 3 FSAR Section 3.8.4.4.5	As described for SC I buried piping in CCNPP Unit 3 FSAR Section 3.8.4.4.5
FPS HVAC Ducts and Supports	CCNPP Unit 3 Site SSE	As described for SC I HVAC Ducts and supports in CCNPP Unit 3 FSAR Appendix 3A.2	As described for SC I HVAC Ducts and supports in CCNPP Unit 3 FSAR Appendix 3A.2	As described for SC I HVAC Ducts and supports in CCNPP Unit 3 FSAR Appendix 3A.2	As described for SC I HVAC Ducts and supports in CCNPP Unit 3 FSAR Appendix 3A.2
FPS Mechanical & Electrical Equipment and supports	CCNPP Unit 3 Site SSE	As described for SC I mechanical & electrical equipment and supports in CCNPP Unit 3 FSAR Section 3.10 markup	As described for SC I mechanical & electrical equipment and supports in CCNPP Unit 3 FSAR Section 3.10 markup	As described for SC I mechanical & electrical equipment and supports in CCNPP Unit 3 FSAR Section 3.10 markup	As described for SC I mechanical & electrical equipment and supports in CCNPP Unit 3 FSAR Section 3.10 markup
Above Ground FPS Piping and Supports	CCNPP Unit 3 Site SSE	As described in CCNPP Unit 3 FSAR Section 3.9.3	As described in CCNPP Unit 3 FSAR Section 3.9.3	As described in CCNPP Unit 3 FSAR Section 3.9.3	As described in CCNPP Unit 3 FSAR Section 3.9.3

LBDCR CC3-13-0077

INSERT B

INSERT B

FPS Cable Tray, Conduit & Support	CCNPP Unit 3 Site SSE	As described for SC I cable tray, conduit and supports in CCNPP Unit 3 FSAR Appendix 3A.3	As described for SC I cable tray, conduit and supports in CCNPP Unit 3 FSAR Appendix 3A.3	As described for SC I cable tray, conduit and supports in CCNPP Unit 3 FSAR Appendix 3A.3	As described for SC I cable tray, conduit and supports in CCNPP Unit 3 FSAR Appendix 3A.3

Table 3.10-1— {Seismic and Dynamic Qualifications of Mechanical and Electrical Equipment}

(Page 15 of 17)

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)		Safety Class (Note 4)		EQ Program Designation (Note 5)	
UHS Makeup Water Traveling Screen Train 4	-	-	M	M	-	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Motor Train 4	-	30UPF02009	M	M	ES	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Wash Throttling Valve Train 4	30PED40AA007	30UPF02009	M	M	ES	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Wash Pressure Instrument Train 4	30PED40CP003	30UPF02009	M	M	ES	SI	S		Y(5)	
UHS Makeup Water Traveling Screen Wash Pressure Instrument Root Valve Train 4	30PED40AA306	30UPF02009	M	M	ES	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Room Unit Heater Train 4	-	30UPF02009	M	M	ES	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Room Vane Axial Exhaust Fan Train 4	-	30UPF02009	M	M	ES	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Room Vane Axial Exhaust Fan Motor Train 4	-	30UPF02009	M	M	ES	SI	S	C/NM	Y(5)	
UHS Makeup Water Traveling Screen Room Unit Heater Train 4	-	30UPF02009	M	M	ES	SI	S		Y(5)	
UHS Makeup Water Intake Structure Level Measurement (All) Train 4	-	-	M	M	ES	SI	S		Y(5)	
POST-DBA UHS Makeup Keep-Fill Line Orifice Train 4	-	34UQB	M	M	ES	SI	S		Y(5)	
POST-DBA UHS Makeup Keep-Fill Line Isolation Valve Train 4	30PED40AA029	34UQB	M	M	ES	SI	S		Y(5)	
POST-DBA UHS Makeup Keep-Fill Line Check Valve Train 4	30PED40AA223	34UQB	M	M	ES	SI	S		Y(5)	
UHS Makeup Keep-FIll Line Isolation Valve Train 4	30PED40AA028	34UQB	M	M	ES	SI	S		Y(5)	
UHS Makeup Keep-Fill Line Check Valve Train 4	30PED40AA222	34UQB	M	M	ES	SI	S		Y(5)	
Fire Protection System										

INSERT C

Table 3.10-1— {Seismic and Dynamic Qualifications of Mechanical and Electrical Equipment}

(Page 16 of 17)

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)		Safety Class (Note 4)	EQ Program Designation (Note 5)	
Fire Protection Diesel Engine(s)/Diesel Engine Pump(s)		30USG	M	M		CS	NS-AQ	Y (5)	I
Fire Protection Diesel Engine(s)/Pump(s) Instrument(s)		30USG	M	M		CS	NS-AQ	Y (5)	I
Fire Protection Diesel Engine(s)/Pump(s) Valve(s)		30USG	M	M		CS	NS-AQ	Y (5)	I
Fire Protection System Isolation Valve(s)		30USG	M	M		CS	NS-AQ	Y (5)	I
Fire Protection System Check Valve(s)		30USG	M	M		CS	NS-AQ	Y (5)	I
Fire Protection System Pressure Relief Valve(s)		30USG	M	M		CS	NS-AQ	Y (5)	I
Fire Protection Water Storage Tanks Isolation Valve(s)			M	M		CS	NS-AQ	Y (5)	I
Fire Protection System Post Indicator Valve(s)		30UZT	M	M		CS	NS-AQ	Y (5)	I
Fire Protection System Hydrant Isolation Valve(s)		30UZT	M	M		CS	NS-AQ	Y (5)	I
Hydrants Supplying Protection to SSE Buildings		30UZT	M	M		CS	NS-AQ	Y (5)	I
UHS Makeup Water Intake Structure Hose Station(s)		30UPF	M	M		CS	NS-AQ	Y (5)	I
Fans/Motors		30USG	M	M		CS	NS-AQ	Y (5)	I
Electric Heaters		30USG	M	M		CS	NS-AQ	Y (5)	I
Ductwork		30USG	M	M		CS	NS-AQ	Y (5)	I
Damper Motors		30USG	M	M		CS	NS-AQ	Y (5)	I
Class 1E Emergency Power Supply (EPSS)									
31BMT05 6.9 kV to 480 V (XFMR)	31BMT05GT0		M	M	ES	SI	S	Y (5)	
32BMT05 6.9 kV to 480 V (XFMR)	32BMT05GT0		M	M	ES	SI	S	Y (5)	
33BMT05 6.9 kV to 480 V (XFMR)	33BMT05GT0		M	M	ES	SI	S	Y (5)	
34BMT05 6.9 kV to 480 V (XFMR)	34BMT05GT0		M	M	ES	SI	S	Y (5)	
31BNG 1E 480 V Bus (MCC)	31BNG01GW0		M	M	ES	SI	S	Y (5)	
32BNG 1E 480 V Bus (MCC)	32BNG01GW0		M	M	ES	SI	S	Y (5)	

INSERT C

Standby Diesel Generator for Fire Protection Building Ventilation System		30 USG	M	M		CS-I	NS-AQ		Y (5)
Standby Diesel Generator for Fire Protection Building Ventilation System Instrument(s)		30 USG	M	M		CS-I	NS-AQ		Y (5)

Table 3.11-1— {Site-Specific Environmentally Qualified Electrical/I&C Equipment}

(Page 9 of 11)

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)		Safety Class (Note 4)			EQ Program Designation (Note 5)	
UHS Makeup Water Traveling Screen Room Vane Axial Exhaust Fan Motor Train 4	-	30UPF02009	M	M	ES	SI	S	1E	EMC	Y(5)	Y(6)
Fire Protection System											
Fire Protection Diesel Engine(s)/Diesel Engine Pump(s)		30USG	M	M		CS	NS-AQ		EMC	Y(5)	Y(6)
Fire Protection Diesel Engine Batteries		30USG	M	M		CS	NS-AQ		EMC	Y(5)	Y(6)
Fire Protection Diesel Engine(s)/Pump(s) Instrument(s) (local)		30USG	M	M		CS	NS-AQ		EMC	Y(5)	Y(6)
Fire Protection Diesel Engine(s)/Pump(s) Valve(s)		30USG	M	M		CS	NS-AQ		EMC	Y(5)	Y(6)
Fire Protection System Isolation Valve(s)		30USG	M	M		CS	NS-AQ		EMC**	Y(5)	Y(6)
Fire Protection Water Storage Tanks Isolation Valve(s)			M	M		CS	NS-AQ		EMC**	Y(5)	Y(6)
Fire Protection System Post Indicator Valve(s)		30UZT	M	M		CS	NS-AQ		EMC**	Y(5)	Y(6)
Fire Protection System Hydrant Isolation Valve(s)		30UZT	M	M		CS	NS-AQ		EMC**	Y(5)	Y(6)
Fans/Motors		30USG	M	M		CS	NS-AQ			Y (5)	Y (6)
Class 1E Emergency Power Supply (EPSS)											
31BMT05 6.9 kV to 480 V (XFMR)	31BMT05GT0	30UPF03002	M	M	ES	SI	S	1E	EMC	Y(5)	Y(6)
32BMT05 6.9 kV to 480 V (XFMR)	32BMT05GT0	30UPF03005	M	M	ES	SI	S	1E	EMC	Y(5)	Y(6)
33BMT05 6.9 kV to 480 V (XFMR)	33BMT05GT0	30UPF03007	M	M	ES	SI	S	1E	EMC	Y(5)	Y(6)

INSERT D

INSERT D

Standby Diesel Generator for Fire Protection Building Ventilation System		30 USG	M	M		CS-I	NS-AQ		EMC	Y (5)	Y (6)
Standby Diesel Generator for Fire Protection Building Ventilation System Instrument(s)		30 USG	M	M		CS-I	NS-AQ		EMC	Y (5)	Y (6)

task analysis portion of the emergency operating procedure program shall include an analysis of instrumentation adequacy during a station blackout.

8.4.2.7 Quality Assurance

No departures or supplements.

8.4.3 References

{**NRC, 1982.** Supplement 1 to NUREG-0737 – Requirements for Emergency Response Capability, Generic Letter 82-33, U.S. Nuclear Regulatory Commission, December 1982.

NRC, 1988. Station Blackout, Regulatory Guide 1.155, U.S. Nuclear Regulatory Commission, August 1988.

NRC, 2003. Regulatory Effectiveness of the Station Blackout Rule, NUREG-1776 U.S. Nuclear Regulatory Commision, August 2003.}

INSERT E →

INSERT E

8.5 STANDBY DIESEL GENERATOR FOR FIRE PROTECTION BUILDING VENTILATION SYSTEM

8.5.1 Description

The ventilation and heating systems for the two diesel driven pump rooms, located inside the Fire Protection Building (FPB), are required to be functional after a Safe Shutdown Earthquake (SSE) to maintain the normal room design temperature conditions (see Section 9.4.16 for details). FPB ventilation and heating systems are also required to be functional upon loss of normal AC power (due to LOOP or SBO) to the FPB to maintain designed room temperature, so that the diesel fire pump can start immediately without any malfunction upon receipt of start diesel pump signal. Under the normal plant operating mode, the Normal Power Supply System (NPSS) provides power to ventilation loads, heating loads, control circuits, battery charging circuit load for the diesel driven pumps and lighting loads via dedicated power distribution panel. The seismically qualified Conventional Seismic-I (CS-I) Standby Diesel Generator (SDG) System is provided as an emergency power source to supply power to the FPB's ventilation system, heating system, building normal and emergency lighting system. The SDG is provided to meet the requirements of RG 1.189, Section 3.2.2 for the diesel driven pump operation.

8.5.1.1 Standby Diesel Generator

The SDG set is a three phase, 60 Hz, 240 V/120 V unit with its self-contained starting circuit, internal exciter system, battery system, radiator and cooling fan, exhaust system and fuel day tank. The SDG is sized utilizing the guidance in RG 1.9. Upon total loss of normal AC power (LOOP or SBO) to the FPB, SDG starts automatically and provides power to the existing ventilation loads, heating loads, control circuits, battery charging circuit load for the diesel driven pumps, and normal and emergency lighting loads via automatic transfer switch. The SDG is located inside the FPB. The SDG unit, control and protection circuit, and its associated components, panel and power transfer switch, are seismically qualified per the requirement of the CS-I designation. The SDG system is Nonsafety-Related Augmented Quality NS-AQ.

8.5.1.2 Diesel Fuel Day Tank

The SDG fuel day tank is located per the requirements of the RG 1.189, Sections 6.1.8 and 7.4.

8.5.1.3 SDG Indication and Alarm

The following SDG indications are provided at the MCR:

1. Voltage - Indication
2. Current - Indication
3. Frequency - Indication

4. Power - Indication
5. Breaker Position - Indication
6. Engine Trouble - Alarm
7. Fuel - Indication

Detailed SDG indications and alarms are provided at the local panel.

8.5.1.4 SDG AC Power System Performance

During normal plant operation, SDG remains in standby mode with the diesel engine ready to be started and supply power to FPB ventilation system, heating system, and normal and emergency lighting systems. Under the normal operating mode, NPSS provides power to the FPB ventilation loads, heating loads, control circuits, battery charging circuit load for the diesel driven pumps, and normal lighting loads, via dedicated power distribution panel. Upon loss of electrical power to the FPB, automatic transfer switch will transfer power source from the NPSS to the SDG. Based on the day tank fuel capacity, the SDG will be able to provide power for 24 hours to maintain designed room temperature for the FPB. The SDG is required to operate a minimum of 8 hours upon the total loss of AC power to the FPB, and the diesel fire pump is running to supply water to mitigate fire per the requirement of RG 1.189, Section 3.2.2

When NPSS is restored, the operator will manually shut down the SDG and reconnect NPSS to the dedicated power distribution panel.

8.5.1.5 SDG Testing

Preoperational site acceptance and periodic tests are performed utilizing the guidance provided in RG 1.9, Table 1 to demonstrate SDG capacity to perform its intended function to supply power to FPB. During this testing, the generator is protected by its protective device to prevent damage to equipment.

ANSI, 1987. Certified Ratings Program-Product Rating Manual for Fan Air Performance, ANSI/AMCA-211-1987, American National Standards Institute/Air Movement and Control Association International, Inc.,1987.

ANSI, 1999. Laboratory Methods of Testing Fans for Aerodynamic Performance Rating, ANSI/AMCA-210-1999, American National Standards Institute/Air Movement and Control Association International, Inc.,1999.

ASME, 1989. Testing of Nuclear Air-Treatment Systems, ASME N510-1989, American Society of Mechanical Engineers, 1989.

ASME, 2003. Code on Nuclear Air and Gas Treatment, ASME AG-1, American Society of Mechanical Engineers, 2003.}

9.4.16 FIRE PROTECTION BUILDING VENTILATION SYSTEM

This section was added as a supplement to the U.S. EPR FSAR.

{ The Fire Protection Building Ventilation System provides an environment suitable for the operation of the Fire Protection System pumps. This system provides an ambient air flow quantity to maintain a safe and satisfactory indoor environment for the operation of the fire protection pumps as well as to support personnel access to the three pump rooms.

9.4.16.1 Design Bases

The Fire Protection Building Ventilation System, located in the two, 100% capacity diesel engine driven pump rooms, is an augmented quality system designed to meet SSE requirements. The ventilation system in the electric motor driven pump room is a non-seismic, augmented quality system.

The Fire Protection Building Ventilation System maintains acceptable ambient conditions for the fire protection system diesel engine driven pumps, diesel fuel oil tanks, electric motor driven pump, jockey pump, pump drivers and controllers. The diesel engine driven pumps and associated equipment are required to operate after a seismic event.

The Fire Protection Building Ventilation System maintains a minimum temperature of 40°F, based on an ambient temperature of -10°F, and a maximum temperature of 120°F, based on an outside ambient temperature of 100°F. This system will support operation of the Fire Protection System pumps and drivers, as well as to support personnel access to these spaces.

Components of the Fire Protection Building Ventilation System are located inside the two diesel engine driven pump rooms and one electric motor driven pump room. Each pump room contains components of the ventilation system to modulate the temperature in ~~there~~ their respective rooms.

9.4.16.2 System Description

9.4.16.2.1 General Description

The Fire Protection Building Ventilation System ventilates the two diesel engine driven pump rooms and the electric motor driven pump room, using outside air as the cooling medium. Wall mounted outside air intake louvers with motor operated dampers, electric unit heaters and exhaust fans service the Fire Protection Building. Each pump room has a separate and independent heating and ventilation system.

The Fire Protection Building Ventilation System includes the Standby Diesel Generator (SDG) to supply AC power to the components of the ventilation system, heating system, and normal and emergency lighting systems, for the two diesel engine driven pump rooms following a SSE and loss of offsite power (LOOP) or Station Blackout (SBO).

The heating and ventilation systems for each of the diesel engine driven pump rooms are identical. Each diesel pump room is supplied with wall mounted outside air intake louvers, with motor operated dampers, electric unit heaters, exhaust fans, engine combustion air inlet ductwork with air intake filter, and combustion gas exhaust ductwork for proper pump performance.

The electric motor driven pump room is supplied with wall mounted outside air intake louvers with motor operated dampers, electric unit heaters and an exhaust fan.

Ventilation of the Diesel Engine Driven Pump Rooms

During normal operating conditions the diesel engine driven pump rooms' ventilation system will use two 50% wall mounted intake air louvers for room ventilation air and ventilation air shall be exhausted by one 100% exhaust fan. The intake air louvers and exhaust fan are supplied with motor operated dampers. Both intake louvers and the exhaust fan are interlocked to modulate air flow based on the required minimum and maximum design temperatures.

During winter conditions, when the diesel engine driven pumps are not in operation, the air in the diesel engine driven pump room is heated by two electric unit heaters. These heaters are controlled by local thermostats to maintain the required minimum temperature.

Combustion air for the diesel engine driven pumps is supplied through duct located in each diesel engine driven pump room. Each combustion air inlet is supplied with an air intake filter, and each diesel pump supplied with a combustion gas exhaust duct for proper pump performance.

The combustion air for the SDG is supplied through duct located in the diesel engine driven pump room. The SDG combustion air inlet is supplied with an air intake filter and the SDG is supplied with a combustion gas exhaust duct for proper performance.

Ventilation of the Electric Motor Driven Pump Room

During normal operating conditions the electric motor driven pump room ventilation system uses two 50% wall mounted intake air louvers for room ventilation air. Ventilation air is exhausted by one 100% exhaust fan. The intake air louvers and exhaust fan are supplied with motor operated dampers. Both intake louvers and the exhaust fan are interlocked to modulate air flow based on the required minimum and maximum design temperatures.

During winter conditions the air in the electric motor driven pump room is heated by two electric unit heaters. These heaters are controlled by local thermostats to maintain the required minimum temperature.

9.4.16.2.2 Component Description

The major components for the Fire Protection Building Ventilation System are listed in the following paragraphs, along with the applicable codes and standards. Refer to Section 3.2 for more discussion of seismic and system quality group classifications.

Ductwork and Accessories

The supply air and exhaust gas ducts are constructed of galvanized sheet steel and are structurally designed for fan shutoff pressure. The ductwork meets the design, construction and testing requirements of ASME AG-1a-2004 (ASME, 2004).

Fans

The exhaust fans are centrifugal or propeller type with an electrical motor driver. Fan performance is rated in accordance with ANSI/AMCA 210-99 (ANSI, 1999), ANSI/AMCA-211-05 (ANSI, 2005a), and ANSI/AMCA-300-05 (ANSI, 2005b).

Electric Heater

Each electric heater is factory assembled with a fan, electric heating coil, adjustable air defectors and hanger support bracket. The unit heaters are provided with a local thermostat and control switch accessible from the floor area to maintain minimum room temperature.

Louver

Louver performance data shall be rated under the AMCA Certified Rating Program and shall bear the AMCA certified rating seal. The certified performance data shall include air flow pressure loss and water penetration (ANSI, 1995).

Motor Operated Dampers

The motor-operated dampers fail to the "open" position in the case of power loss. The performance and testing requirements of the dampers are in accordance with ASME AG-1a-2004 (ASME, 2004).

9.4.16.2.3 System Operation

Normal Plant Operation

During normal plant operation, the fire protection system pumps are not in operation, except for the jockey pump and periodic performance surveillance tests. The Fire Protection Building Ventilation System functions to maintain acceptable room temperatures for starting and operating the fire pumps. The room temperature is monitored by temperature sensors located in each pump room.

INSERT F →

Abnormal Operating Conditions

Failure of Diesel Engine Driven Pump Room Air Supply

If one or more components for the ventilation system of a diesel engine driven pump room fails, the ventilation system for that room is unable to maintain the required ambient conditions. Since there are two redundant diesel engine driven pump rooms, with a separate ventilation system and air supply, the failure of the air supply in one diesel engine driven pump room does not affect the other diesel engine driven pump room.

Failure of Pump Room Electric Heating Coils

Each fire protection pump room has two electric unit heaters. In the case of failure of one electric heater, the other electric heater is able to maintain the required temperature in the pump room.

Failure of Electric Motor Driven Pump Room Air Supply

In the case of failure of a component on the ventilation system for the electric motor driven pump room, the required ambient conditions may not be maintained in the electric motor driven pump room. However, the diesel engine driven pumps are available to provide necessary fire protection if an event should occur.

INSERT F

Emergency Power System

A self-contained Standby Diesel Generator (SDG) AC power source is provided to supply AC power to the Fire Protection Building (FPB) ventilation system, heating system, building normal and emergency lighting system components of the diesel driven pump rooms, in the event of loss of offsite power (LOOP) or Station Blackout (SBO). The SDG provides power to the FPB Ventilation System to maintain the required ambient conditions in the two diesel engines driven pump rooms. The SDG will be functional and provide power to the FPB ventilation system, heating system, building normal and emergency lighting system after a Safe Shutdown Earthquake (SSE) and loss of AC power or SBO. The SDG will provide AC power for twenty four hours, and thereafter it can provide AC power continuously by refueling the diesel engine, if the power is not restored within 24 hours.

Failure of Exhaust Components

In the case of failure of any of the Fire Protection Building Ventilation System exhaust components, proper ambient conditions may not be maintained. However, components in the other unaffected pump rooms are available to provide necessary ventilation for the unaffected pump rooms during an event.

Loss of Offsite Power

In the event of Loss of Offsite Power, the emergency power system is supplied to the Fire Protection Building Ventilation System diesel engine driven pump room components. Emergency power supply to the system enables it to maintain normal room design temperature conditions.

Station Blackout

In the event of Station Blackout, the emergency power system is supplied to the Fire Protection Building Ventilation System components. Emergency power supply to the system enables it to maintain normal room design temperature conditions.

9.4.16.3 Safety Evaluation

The Fire Protection Building Ventilation System is designed to maintain ambient conditions inside the Fire Protection Building to allow safe and reliable operation of the fire pumps. The maximum temperature of 120°F in the pump rooms is the design temperature based on an outside ambient temperature of 100°F and room equipment heat loads. The equipment inside the pump rooms is designed to withstand a temperature of 120°F. A minimum temperature of 40°F will be maintained in the building based on a minimum ambient temperature of -10°F.

In the event of loss of offsite power (LOOP) or Station Blackout (SBO) the Fire Protection Building Ventilation System, Heating System, and Normal and Emergency Lighting Systems are provided with a Self-Contained Standby Diesel Generator.

The Fire Protection Building Ventilation System is located inside each pump room of the Fire Protection Building, which is designed to withstand the effects of a safe shutdown earthquake (SSE). Chapter 3 provides the bases for adequacy of the structural design of the Fire Protection Building.

The diesel engine pump rooms' ventilation systems remain functional after an SSE event. Chapter 3.2 provides additional discussion of the seismic requirements for the Fire Protection System.

The two identical diesel engine driven pumps and diesel pump room ventilation systems provides redundancy to the ventilation system. Therefore, no single failure of the ventilation system compromises the safety function of the system. Vital power is supplied from onsite or offsite power systems.

9.4.16.4 Inspection and Testing Requirements

Acceptance testing of the Fire Protection Building Ventilation System components is performed in accordance with ASME AG-1a-2004 (ASME, 2004) and ASME N510-1989 (ASME, 1995).

Testing of the Standby Diesel Generator (SDG) is conducted in accordance with IEEE Standard 387, 1995 (IEEE, 1995)

9.4.16.5 Instrumentation Requirements

Indication of the operational status of the equipment, position of dampers, instrument indications and alarms are provided in the Main Control Room (MCR). Fans, motor-operated

dampers, and electric unit heaters can be operated from the MCR. The fire detection and sensor information is delivered to the fire detection system.

9.4.16.6 References

ASME, 2004. Code on Nuclear Air and Gas Treatment, ASME AG-1a-2004, American Society of Mechanical Engineers, 2004.

ASME, 1995. Testing of Nuclear Air-Treatment Systems, ASME N510-1989, American Society of Mechanical Engineers, 1995.

ANSI, 1999. Laboratory Methods of Testing Fans for Aerodynamic Performance Rating, ANSI/AMCA-210-99, American National Standards Institute/Air Movement and Control Association International, December 1999.

ANSI, 2005a. Certified Ratings Program-Air Performance, ANSI/AMCA-211-05, American National Standards Institute/Air Movement and Control Association International, 2005.

ANSI, 2005b. Reverberant Room Method of Testing Fans for Rating Purposes, ANSI/AMCA-300-05, American National Standards Institute/Air Movement and Control Association International, Inc., 2005.

ANSI, 1995. Laboratory Methods of Testing Fans for Rating Purposes, ANSI/AMCA 500-L, American National Standards Institute/Air Movement and Control Association International, Inc., 1995.}

IEEE, 1995. IEEE Standard Criteria for Diesel-Generator Units Applied as Standard Power Supplies for Nuclear Power Generating Stations, IEEE Std. 387-1995, Institute of Electrical and Electronics Engineers, 1995}

Table 9B-2— {Fire Area Parameters}

(Page 10 of 18)

Column	26	27	28	29	30
Fire Area	FA-UTG-03	FA-UAC-01	FA-UAC-02	FA-USG-01	FA-USG-02
Building or Area	UTG	UAC	UAC	USG	USG
Figures	Figure 9B-18	Figure 9B-19	Figure 9B-19	Figure 9B-20	Figure 9B-20
Fire Barriers (Notes 3,4,5,6)	See Figures	See Figures	See Figures	See Figures	See Figures
SSC: important to safety	None	None	None	None	None
SCC: post-fire safe shutdown	None	None	None	None	None
In situ Loading (Note 1)	a, c, f, g, j	a, b, c, d, e, f, g, j, m, r, s, v	a, b, c, d, e, f, g, j, m, r, s, v	a, c, d, g, j, n	a, c, d, g, j, n
Transient Fire Loading	THL-1	THL-2	THL-2	THL-2	THL-2
Common Ignition Source (Note 2a)	a, m	a, b, j, m	a, b, j, m	a, b, d, m	a, b, d, m
Atypical Ignition Sources (Note 2b)	bb	None	None	ee	ee
Hazard Classification (Note 13)	EH Group-2	OH Group-1	OH Group-1	EH Group-2	EH Group-2
Automatic Fire Detection	No (H2 gas detection w/ exhaust auto-start)	Yes	Yes	No	No
Manual Fire Alarms	Yes	Yes	Yes	Yes	Yes
Automatic Fixed Fire Suppression	Yes	No	No	Yes	Yes
Manual Fixed Fire Suppression	No	No	No	No	No
Standpipe and Hose System (Note 7)	No	No	No	No	No
Portable Fire Extinguishers (Note 8)	Yes	Yes	Yes	Yes	Yes
Suppression Affects	Note 14	Note 14	Note 14	Note 14	Note 14
Plant Drains	Note 9	Note 9	Note 9	Note 9	Note 9
Radiological Affects	None	None	None	None	None
HVAC	Note 10	Note 10	Note 10	Note 10	Note 10
Emergency Lighting (Note 11)	aa	aa	aa	aa	aa
Communication (Note 12)	Yes	Yes	Yes	Yes	Yes
Engineering Evaluations	None	None	None	None	None

INSERT G

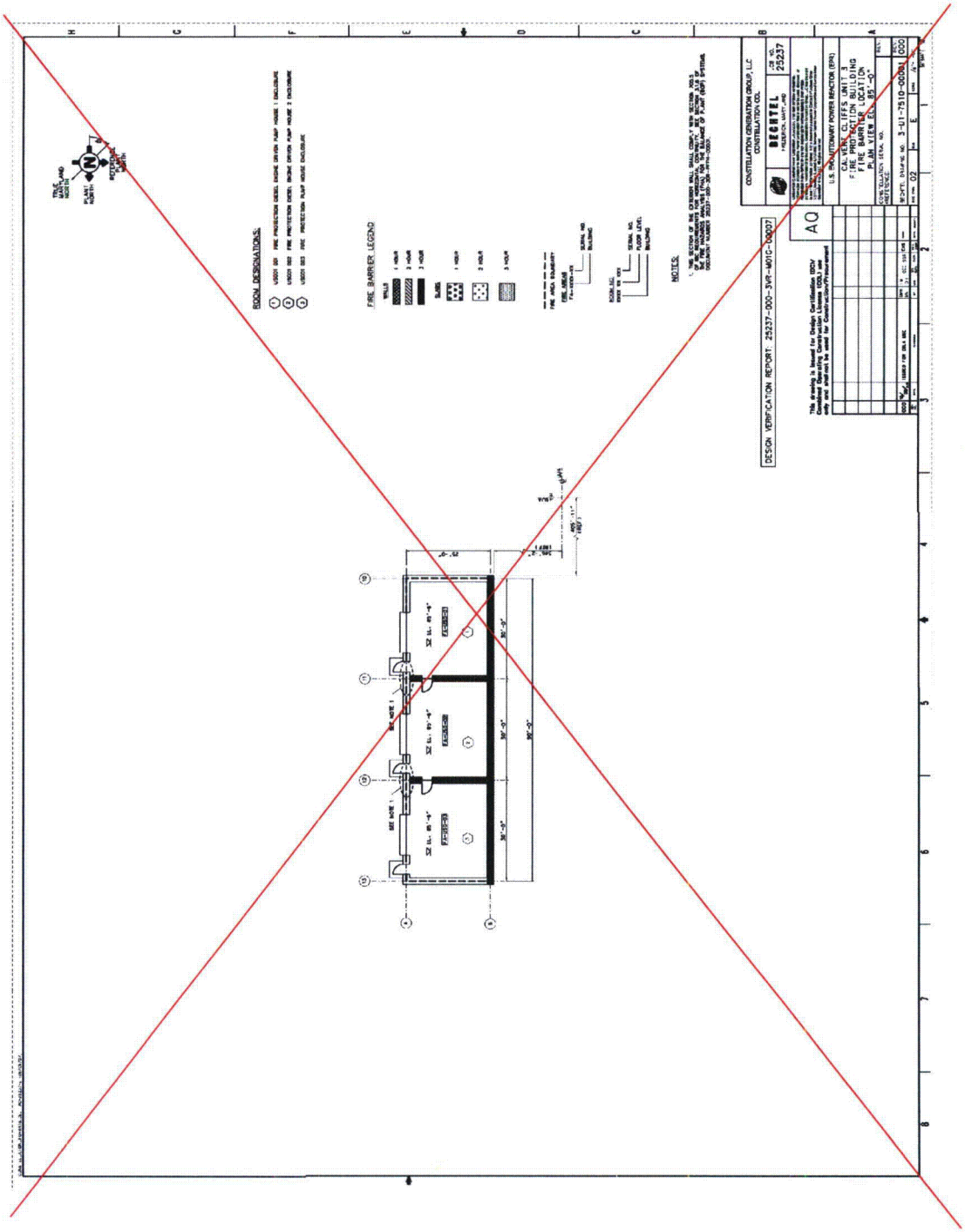
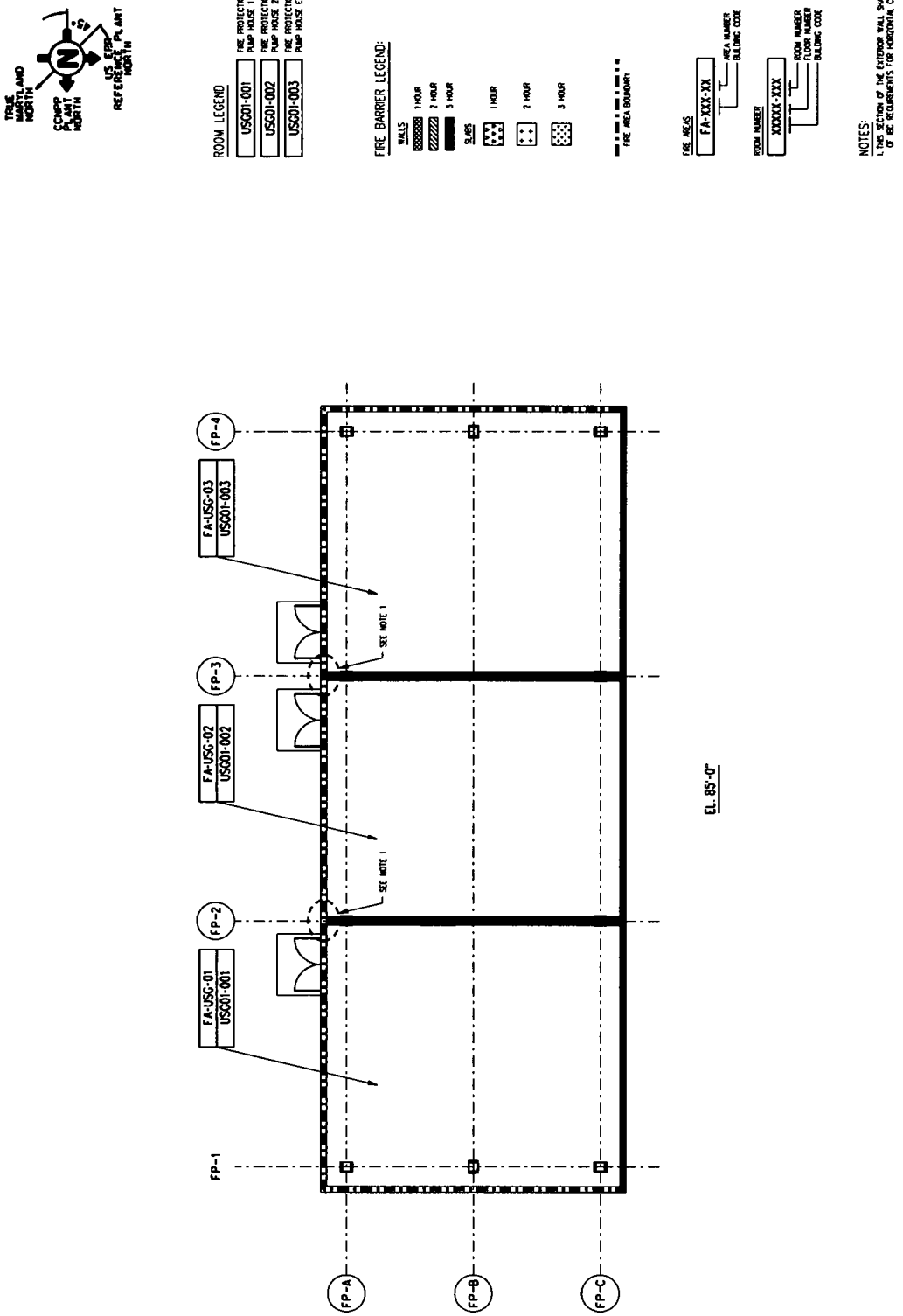


Figure 9B-20— (CCNPP Unit 3 Fire Barrier Location, Fire Protection Building Plan View at Elevation 85'0")

INSERT G


TRUE NORTH AND NORTH
COMPASS AZIMUTH NORTH
US EPR REFERENCE PLANT NORTH
ROOM LEGEND
USG01-001
FIRE PROTECTION DIESEL ENGINE DRIVEN PUMP HOUSE 1 ENCLOSURE
USG01-002
FIRE PROTECTION DIESEL ENGINE DRIVEN PUMP HOUSE 2 ENCLOSURE
USG01-003
FIRE PROTECTION ELECTRIC AND JOCKEY PUMP HOUSE ENCLOSURE
FIRE BARRIER LEGEND:
WALLS
1 HOUR
2 HOUR
3 HOUR
SLABS
1 HOUR
2 HOUR
3 HOUR
FIRE AREA BOUNDARY
FIRE AREAS
FA-XXX-XX
AREA NUMBER
BUILDING CODE
ROOM NUMBER
XXXXX-XXX
ROOM NUMBER
FLOOR NUMBER
BUILDING CODE
NOTES:
1. THIS SECTION OF THE EXTERIOR WALL SHALL COMPLY WITH SECTION 705.5 OF IBC REQUIREMENTS FOR HORIZONTAL CONTINUITY.
FP-1
FP-2
FP-3
FP-4
FP-A
FP-B
FP-C
FA-USG-01
USG01-001
FA-USG-02
USG01-002
FA-USG-03
USG01-003
SEE NOTE 1
SEE NOTE 1
EL. 85'-0"

h. Verify that the communication system responds as designed to actual or simulated limiting malfunctions or failures.

4. DATA REQUIRED

a. Record the results of communication attempts from each system and its locations.

5. ACCEPTANCE CRITERIA

a. The intraplant communication system operates in the UHS Makeup Water Intake Structure to the same level of performance as described in the U.S. EPR FSAR Section 9.5.2.

b. The communications equipment in the UHS Makeup Water Intake Structure is capable of operating under maximum noise conditions.

c. Safety-related I&C equipment performance is not adversely impacted by the portable phones and radios of the communications system.}

d. The portable wireless communication system provides radio coverage throughout the plant, except in areas restricted due to potential EMI/RFI considerations.

e. The portable wireless communication system provides an interconnection to the public switched telephone network (PSTN) to allow offsite communications.

f. The digital telephone system provides plant-wide intercom capability.

g. The digital telephone system provides an interconnection to the PSTN to allow offsite communications.

h. The public address and alarm system operates as described in the design specification.

i. The sound powered system operates as described in the design specification.

j. The security communication system operates as described in the design specification.

14.2.14.13 Turbine Island Ventilation Systems

1. OBJECTIVE

a. To demonstrate that the turbine building ventilation system (TBVS) provides a suitable operating environment for equipment and personnel during normal operations.

b. To demonstrate that the switchgear building ventilation system, turbine island (SWBVS) provides a suitable operating environment for equipment and personnel during normal operations.

2. PREREQUISITES

a. Construction activities on the TBVS have been completed.

b. Construction activities on the SWBVS have been completed.

c. TBVS instrumentation has been calibrated and is operating satisfactorily prior to performing the following test.

d. SWBVS instrumentation has been calibrated and is operating satisfactorily prior to performing the following test.

e. Support systems required for operation of the TBVS are complete and functional.

f. Support systems required for operation of the SWBVS are complete and functional.

3. TEST METHOD

a. Verify control logic.

b. Verify that operation of inlet air dampers and damper controls meets design requirements.

c. Verify that operation of the exhaust fan units and dampers meets design requirements.

d. Verify that operation of protective devices, controls, interlocks, instrumentation, and alarms meets design requirements.

4. DATA REQUIRED

a. Fan and damper operating data.

b. Setpoints at which alarms and interlocks occur.

5. ACCEPTANCE CRITERIA

a. The SWBVS operates as designed (refer to Section 9.4.4)

b. SWBVS alarms, interlocks, protective devices, and controls (manual and automatic) function as designed.

c. SWBVS fan performance meets design requirements.

d. SWBVS dampers/valve performance (i.e., thrust, opening times, closing times, and ability to control flow) meets design requirements.

e. SWBVS air balance meets design requirements.

f. The TBVS operates as designed (refer to Section 9.4.4)

g. TBVS alarms, interlocks, protective devices, and controls (manual and automatic) function as designed.

h. TBVS fan performance meets design requirements.

i. TBVS dampers/valve performance (i.e., thrust, opening times, closing times, and ability to control flow) meets design requirements.

j. TBVS air balance meets design requirements.

INSERT H →

INSERT H

14.2.14.14 Fire Protection Building Ventilation Systems

1. OBJECTIVES
    a. To demonstrate that the Fire Protection Building Ventilation System provides a suitable operating environment for equipment and personnel during normal and emergency operations
    b. To demonstrate that the Fire Protection Building Ventilation System Standby Diesel Generator system operates as designed
2. PREREQUISITES
    a. Construction activities on the Fire Protection Building Ventilation System have been completed
    b. Fire Protection Building Ventilation System instrumentation is complete, functional and has been calibrated
    c. Support systems required for the operation of the Fire Protection Building Ventilation System are complete and functional, e.g. Fire Protection Building Ventilation System Standby Diesel Generator
    d. Test instrumentation is available and calibrated
3. TEST METHOD
    a. Verify control logic
    b. Verify operation of dampers and damper controls per design requirements
    c. Verify operation of fan units (supply and exhaust) and dampers per design requirements
    d. Verify each room ventilation air flow meets design requirements
    e. Verify Automatic Bus Transfer Switch function by providing a loss of power signal to the Automatic Bus Transfer Switch
    f. Verify each room unit heaters meet design requirements
    g. Verify that operation of protective devices, controls, interlocks, instrumentation and alarms meets design requirements
    h. Verify Fire Protection Building Ventilation System Standby Diesel Generator can be started manually and automatically in the event of Loss of Offsite Power (LOOP) or in the event of Station Blackout (SBO)
    i. Verify Fire Protection Building Ventilation System Standby Diesel Generator capacity to support design requirements
4. DATA REQUIRED
    a. Fan and damper operating data
    b. Setpoints at which alarms and interlocks occur
    c. Unit heater operating data
    d. Standby Diesel Generator operating parameters
    e. Automatic Bus Transfer Switch operating parameters
    f. Air flow and temperature measurements
5. ACCEPTANCE CRITERIA
    a. The Fire Protection Building Ventilation System operates as designed (refer to Section 9.4.16)
    b. The Fire Protection Building Ventilation System alarms, interlocks, protective devices, and controls (manual and automatic) function as designed
    c. The Fire Protection Building Ventilation System exhaust fan performance meets design requirements

d. The Fire Protection Building Ventilation System unit heaters performance meets design requirements
e. The Automatic Bus Transfer Switch transfers to the alternate power source (SDG)
f. The Fire Protection Building Ventilation System dampers performance meets design requirements
g. The Fire Protection Building Ventilation System Standby Diesel Generator meets design requirements

Table 2.4-9— {Fire Protection Building Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
1	The Fire Protection Building will house the following equipment: a. Diesel Driven Fire Pumps, Drivers, and associated piping, valves, equipment, instruments and controls. b. Diesel Fuel Oil Supply Day Tank and associated piping, valves, equipment, instruments, and controls.	An inspection of the as-built structure will be performed.	The as-built Fire Protection Building houses the: a. Diesel Driven Fire Pumps, Drivers and associated piping, valves, equipment, instruments and controls. b. Diesel Fuel Oil Supply Day Tank and associated piping, valves, equipment, instruments, and controls.
2	The Fire Protection Building is classified as Conventional Seismic and is designed and constructed to withstand the applicable structural design basis loads without a loss of structural integrity and remain functional during and after an SSE. ◆ Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads). ◆ Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, cubicle pressurization loads, and missile impact loads). ◆ External events (including wind, rain, snow, flood, tornado, tornado-generated missiles and earthquake).	An inspection and analysis will be performed to verify the as-built Fire Protection Building will withstand design basis loads.	A report concludes that the Fire Protection Building will withstand design basis loads, as specified below, without loss of structural integrity and safety-related functions: ◆ Normal plant operation (including dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic, hydrodynamic, and temperature loads). ◆ Internal events (including internal flood loads, accident pressure loads, accident thermal loads, accident pipe reactions, and pipe break loads, including reaction loads, jet impingement loads, cubicle pressurization loads, and missile impact loads). ◆ External events (including wind, rain, snow, flood, tornado, tornado-generated missiles and earthquake).
3	For the Fire Protection Building's concrete foundation and walls exposed to ground water, a low water to cementitious materials ratio concrete mixture will be utilized.	Tests, inspections, or a combination of tests and inspections will be performed to ensure the concrete meets the low water to cement ratio limit.	A report concludes that the concrete utilized to construct the as-built Fire Protection Building's below grade concrete foundation and walls have a maximum water to cementitious materials ratio of 0.45.

c. Ventilation System Standby Diesel Generator, Diesel Fuel Supply Tank, and associated piping, valves, equipment, and instrumentations, and controls.

c. Ventilation System Standby Diesel Generator, Diesel Fuel Supply Tank, and associated piping, valves, equipment, and instrumentations, and controls.

Table 2.4-21— {Fire Protection Building Ventilation System Inspections, Tests, Analyses, and Acceptance Criteria}

(Page 3 of 4)

	Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
4	The Fire Protection Building Ventilation System starts upon receipt of an initiation signal.	A test of the as-built system will be performed by supplying a test input signal to the system.	The as-built Fire Protection Building Ventilation System starts upon receipt of a test input signal.
5	a. The Fire Protection Building Ventilation System equipment that could impact the capability of Seismic Category I structures, systems, or components to perform its safety function are designated as Conventional Seismic in the part (e) analysis, and can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function.	a. Type tests, analyses, or a combination of type tests and analyses will be performed on the Fire Protection Building Ventilation System equipment identified in the part (e) analysis using analytical assumptions, or under conditions which bound the Conventional Seismic design requirements, to verify the equipment can withstand seismic design basis loads without impacting the capability of equipment designated Seismic Category I from performing its safety function.	a. Seismic qualification reports (SQDP, EQDP, or analyses) conclude that the Fire Protection Building Ventilation System equipment identified as Conventional Seismic in the part (e) analysis can withstand seismic design basis loads without impacting the capability of equipment designated Seismic Category I from performing its safety function.
	b. The Fire Protection Building Ventilation System equipment that could impact the capability of Seismic Category I structures, systems, or components to perform its safety function are designated as Conventional Seismic in the part (e) analysis, and can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function.	b. Inspections will be performed of the Conventional Seismic Fire Protection Building Ventilation System to verify that the as-built equipment identified in the part (e) analysis, including anchorage, are installed per the approved design requirements.	b. Inspection reports conclude that the as-built Conventional Seismic Fire Protection Building Ventilation System equipment identified in the part (e) analysis, including anchorage, are installed per the approved design requirements.
	c. The Fire Protection Building Ventilation System piping and ducting that could impact the capability of Seismic Category I structures, systems, or components to perform its safety function are identified as Conventional Seismic in the part (e) analysis, and can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function.	c. Type tests, analyses or a combination of type tests and analyses, will be performed on the Fire Protection Building Ventilation System piping and ducting identified as Conventional Seismic in the part (e) analysis using analytical assumptions, or under conditions, which bound the Seismic Category design requirements.	c. Seismic qualification reports (SQDP, EQDP, or analyses) conclude that the Fire Protection Building Ventilation System piping and ducting identified as Conventional Seismic in the part (e) analysis can withstand seismic design basis loads without impacting the capability of equipment designated Seismic Category I from performing its safety function.

Table 2.4-21— {Fire Protection Building Ventilation System Inspections, Tests, Analyses, and Acceptance Criteria}

(Page 4 of 4)

Commitment Wording	Inspection, Test, or Analysis	Acceptance Criteria
d. Fire Protection Building Ventilation System piping and ducting that could impact the capability of Seismic Category I structures, systems, or components to perform its safety function are identified as Conventional Seismic in the part (e) analysis, and can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function.	d. Inspections will be performed of the Conventional Seismic Fire Protection Building Ventilation System to verify that the as-built piping and ducting identified in the part (e) analysis, including anchorage, are installed per the approved design requirements.	d. Inspection reports conclude that the as-built Conventional Seismic Fire Protection Building Ventilation System piping and ducting identified in the part (e) analysis, including anchorage, are installed per the approved design requirements.
e. The Fire Protection Building Ventilation System equipment, piping, and ducting and piping that could impact the capability of Seismic Category I structures, systems, or components to perform its safety function are designated as Conventional Seismic and can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function.	e. An analysis to identify the Conventional Seismic equipment, piping, and ducting of the Fire Protection Building Ventilation System will be performed.	e. A report indicates which equipment, piping, and ducting of the Fire Protection Building Ventilation System is designated Conventional Seismic.

INSERT I →

INSERT I

4	The Fire Protection Building Ventilation System Self-Contained Standby Diesel Generator (SDG) provides power to FPB ventilation, heating, and emergency lighting systems upon loss of normal power supply to the FPB.	A test of the as-built system will be conducted by disconnecting the normal power supply system of the FPB to initiate the automatic start of the self-contained Standby Diesel Generator (SDG).	The as-built Fire Protection Building Ventilation System Self-Contained Standby Diesel Generator (SDG) starts upon loss of normal power supply to the FPB and provides power to FPB ventilation, heating, and emergency lighting systems.
5	Standby Diesel Generator has a fuel oil storage tank.	A test and analysis will be performed to verify the as-built SDG fuel oil storage tank capacity is greater than the volume of fuel oil consumed by the SDG operating at the continuous rating for 24 hours.	The SDG fuel oil storage tank capacity is greater than the volume of fuel oil consumed by the SDG operating at the continuous rating for 24 hours.

Enclosure 3

Table of Changes to CCNPP Unit 3 COLA Associated with Response to RAI No. 384
Calvert Cliffs Nuclear Power Plant, Unit 3

Table of Changes to CCNPP Unit 3 COLA

Associated with the Response to RAI No. 384

Change ID #	Subsection	Type of Change	Description of Change
PART 2 FSAR			
CC3-11-0221	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 253[1].	Changed the seismic category of "II-SSE" to "CS" and the 10 CFR 50 Appendix B Program entry from "Yes" to "No" on Page 5 of 10 of Table 3.2-1, in the rows for "Fire Water Storage Tanks," "Fire Protection Building," "Diesel Engine Driven Pumps and Drivers and subsystems, including diesel fuel oil supply," and "Ventilation Equipment." The RAI 358, Question 03.02.01-6 response[2] makes changes to the Comments column text for the same Table 3.2-1 (Page 5 of 10) rows identified above.
CC3-11-0221	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 253[1].	Changed the seismic category of "II-SSE" to be "II" on Page 6 of 10 of Table 3.2-1 in the rows for "Fire Suppression Systems for UHS Makeup Water Intake Structure and Fire Protection Building," and "Standpipes and Hose Stations for UHS Makeup Water Intake Structure." The RAI 358, Question 03.02.01-6 response[2] makes changes to the Comments column text for the same Table 3.2-1 (Page 6 of 10) rows identified above.
CC3-11-0221	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 253[1].	Changed the seismic category of "II-SSE" to be "II" on Page 5 of 10 of Table 3.2-1 in the row for "Fire Water Distribution System, including valves and hydrants, Balance of Plant (Safe Shutdown Equipment Protection following SSE)."

[1] UniStar Nuclear Energy Letter UN#12-055, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 253, Seismic System Analysis, Calvert Cliffs Nuclear Power Plant, Unit 3, dated June 21, 2012

[2] UniStar Nuclear Energy Letter UN#12-095, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 358, Seismic Classification, Calvert Cliffs Nuclear Power Plant, Unit 3, dated September 20, 2012

Change ID #	Subsection	Type of Change	Description of Change
CC3-11-0221	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 253[1].	Changed the seismic category of "II-SSE" to "CS" and the 10 CFR 50 Appendix B Program entry from "Yes" to "No" on Page 5 of 10 of Table 3.2-1, in the rows for "Fire Water Storage Tanks," "Fire Protection Building," "Diesel Engine Driven Pumps and Drivers and subsystems, including diesel fuel oil supply," and "Ventilation Equipment."
CC3-11-0221	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 253[1].	Changed the seismic category of "II-SSE" to be "II" on Page 6 of 10 of Table 3.2-1 in the rows for "Fire Suppression Systems for UHS Makeup Water Intake Structure and Fire Protection Building," and "Standpipes and Hose Stations for UHS Makeup Water Intake Structure."
CC3-11-0221	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 253[1].	The response to RAI 253 Question 03.07.02-45 involved deleting the "II-SSE" definition from Note 2 of FSAR Table 3.2-1.
CC3-12-0241	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 330, Question 09.02.05-20[3].	The response to RAI 330, Question 09.02.05-20 involves updating the UHS Makeup Water traveling screen classification to Safety-Related and Seismic Category I in the applicable CCNPP Unit 3 Part 2, FSAR sections and Part 10, ITAAC Tables.
CC3-12-0233	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 333, Question 03.08.04-29[4].	Selected commercial codes associated with buried intake pipes were deleted as part of the RAI 333, Question 03.08.04-29 response.
CC3-12-0164	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 358, Question 03.02.01-6[2].	Various revisions are made to Table 3.2-1 as part of the response to RAI 358, Question 03.02.01-6.

[3] UniStar Nuclear Energy Letter UN#12-153, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 330, Ultimate Heat Sink, Calvert Cliffs Nuclear Power Plant, Unit 3, dated December 20, 2012

[4] UniStar Nuclear Energy Letter UN#12-155 from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 333, Other Seismic Category I Structures, Calvert Cliffs Nuclear Power Plant, Unit 3, dated December 20, 2012

Change ID #	Subsection	Type of Change	Description of Change
CC3-12-0164	Table 3.2-1	Incorporate COLA markups associated with the response to RAI 358, Question 03.02.01-6[2].	Changed the text for the following items in Table 3.2-1: PED (Ventilation Equipment), PED (Isolation Valves for Equipment), PED (Instrument and Controls in the UHS Makeup Water Intake Structure), PED (Instrument and Controls in the UHS Makeup Water Intake Structure), UPF (UHS Makeup Water System Electrical Distribution System Equipment), PED (Miscellaneous piping and valves), PED (Traveling Screens), PED (Screen Wash Pumps), PED (Bar Screens), UPE (Circulating Water System Makeup Intake Structure), 30PAA10/20/30 AT001 (Removable Screens), PAB (Instrumentation and Controls in Circ Water Piping), PAA (Traveling Screens), PAB (Instrumentation and Controls in Makeup Piping), PAA (Removable Trash Screen / Drive), GW (Blowers), GR (Aeration Blower), SGA (Fire Water Distribution System, including valves and hydrants, Balance of Plant (Safe Shutdown Equipment Protection following SSE)), USG (Fire Water Storage Tanks), USQ (Fire Protection Building), SGM (Diesel Engine Driven Pumps and Drivers and subsystems, including diesel fuel oil supply), SA (Ventilation Equipment), Fire Suppression Systems (Fire Suppression Systems for UHS Makeup Water Intake Structure and Fire Protection Building), Fire Suppression Systems (Standpipes and Hose Stations for UHS makeup Water Intake Structure), UMA, UBA (Turbine Building, Switchgear Building), UKE (Access Building), and Notes 11 and 12 are deleted.
CC3-11-0221	Table 3.10-1	Incorporate COLA markups associated with the response to RAI 253[1].	The response to RAI 253 Question 03.07.02-451 involved changing the seismic category of "SII-SSE" to be "CS" on Pages 13 and 14 of Table 3.10-1 for the equipment listed under "Fire Protection System."

Change ID #	Subsection	Type of Change	Description of Change
CC3-11-0221	Table 3.10-1	Incorporate COLA markups associated with the response to RAI 253[1].	The response to RAI 253 Question 03.07.02-451 involved deleting text associated with the seismic category of "SII-SSE" and replacing it with "CS (Conventional Seismic)" in Note 3 of Table 3.10-1 (page 15 of 15).
CC3-13-0063	Table 3.10-1	Incorporate COLA markups associated with the response to RAI 378[5].	The seismic category of "CS" is changed to be "CS-I" on Pages 16 of 17 of Table 3.10-1 for the equipment listed under "Fire Protection System" as part of the RAI 378, Question 03.07.02-75 response. A Local Area KKS ID (Room Location) is also provided to the Fire Protection Water Storage Tanks Isolation Valve(s) and the CS-I classification is added to Note 3 of Table 3.10-1 (page 17 of 17) as part of the RAI 378, Question 03.07.02-75 response.
CC3-11-0221	Table 3.11-1	Incorporate COLA markups associated with the response to RAI 253[1].	The response to RAI 253 Question 03.07.02-451 involved changing the seismic category of "SII-SSE" to be "CS" on Pages 7 and 8 of Table 3.11-1 for the equipment listed under "Fire Protection System."
CC3-11-0221	Table 3.11-1	Incorporate COLA markups associated with the response to RAI 253[1].	The response to RAI 253 Question 03.07.02-451 involved deleting text associated with the seismic category of "SII-SSE" and replacing it with "CS (Conventional Seismic)" in Note 3 of Table 3.11-1 (page 9 of 9).
CC3-13-0063	Table 3.11-1	Incorporate COLA markups associated with the response to RAI 378[5].	The seismic category of "CS" is changed to be "CS-I" on Pages 9 of 11 of Table 3.11-1 for the equipment listed under "Fire Protection System" as part of the RAI 378, Question 03.07.02-75 response. A Local Area KKS ID (Room Location) is also provided to the Fire Protection Water Storage Tanks Isolation Valve(s) and the CS-I classification is added to Note 3 of Table 3.11-1 (page 11 of 11) as part of the RAI 378, Question 03.07.02-75 response.

[5] UniStar Nuclear Energy Letter UN#13-031 from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 378, Seismic System Analysis, Calvert Cliffs Nuclear Power Plant, Unit 3, dated March 29, 2013

Change ID #	Subsection	Type of Change	Description of Change
CC3-13-0063	3A	Incorporate COLA markups associated with the response to RAI 378[5].	One supplement was added to Section 3A, "Criteria for Distribution System Analysis and Support" (3A.2 Heating, Ventilation, and Air Conditioning Ducts and Supports) as part of the RAI 378, Question 03.07.02-75 response.
CC3-13-0063	9.4.16.1	Incorporate COLA markups associated with the response to RAI 378[5].	The term Conventional Seismic-I is added in the first paragraph of Section 9.4.16.1 as part of the RAI 378, Question 03.07.02-75 response.
CC3-13-0077	Tables 3.2-1, 3.8-6, 3.10-1 and 3.11-1, and Appendix 3A.3	Incorporate COLA markups associated with the response to RAI 384.	Requirements for the Standby Diesel Generator for the Fire Protection Building Ventilation System as part of RAI 384 Q 02.05.01-70.
CC3-13-0077	8.5	Incorporate COLA markups associated with the response to RAI 384.	Requirements for the Standby Diesel Generator for the Fire Protection Building Ventilation System as part of RAI 384 Q 02.05.01-70.
CC3-13-0077	9.4.16.1, 9.4.16.2.1, 9.4.16.2.3, 9.4.16.3, 9.4.16.4, 9.4.16.6. Table 9B-2. Appendix 9B, Figure 9B-20	Incorporate COLA markups associated with the response to RAI 384.	Requirements for the Standby Diesel Generator for the Fire Protection Building Ventilation System as part of RAI 384 Q 02.05.01-70.
CC3-13-0077	14.2.14.14	Incorporate COLA markups associated with the response to RAI 384.	Requirements for the Standby Diesel Generator for the Fire Protection Building Ventilation System as part of RAI 384 Q 02.05.01-70.
Part 10 – ITAAC			
CC3-13-0031	2.4-9 Item 1	Incorporate COLA markups associated with the submission of CCNPP Unit 3 COLA Rev 9 for consistency with U.S. EPR DC Rev 4[6].	Format and wording changes are made as part of the submittal of the CCNPP Unit 3 COLA Rev 9.
CC3-13-0077	2.4-9 Item 1	Incorporate COLA markups associated with the response to RAI 384.	New ITAAC parts are added for the Standby Diesel Generator for the Fire Protection Building Ventilation System as part of RAI 384 Q 02.05.01-70.

[6] UniStar Nuclear Energy Letter UN#13-021 from Mark T. Finley to Document Control Desk, U.S. NRC, Submittal of Revision 9 to the Combined License Application for the Calvert Cliffs Nuclear Power Plant, Unit 3, dated March 28, 2013

Change ID #	Subsection	Type of Change	Description of Change
CC3-13-0077	2.4-21 Items 4 and 5	Incorporate COLA markups associated with the response to RAI 384.	New ITAAC are added for the Standby Diesel Generator for the Fire Protection Building Ventilation System as part of RAI 384 Q 02.05.01-70.