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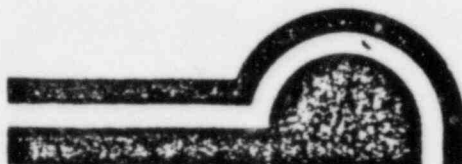
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Revision Number 0

Revision Date 6/82

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U.S. Department of Energy



Clinch River Breeder Reactor Plant System Design Description

Nuclear Island Heating, Ventilating and Air Conditioning System

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Prepared for
Clinch River Breeder Reactor
Plant Project Office
by

Burns and Roe, Inc.
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SYSTEM DESIGN DESCRIPTION NO. 25A

SECTIONS 4, 5 and 6

NUCLEAR ISLAND HEATING, VENTILATING AND AIR CONDITIONING SYSTEM

for

CLINCH RIVER BREEDER REACTOR PLANT

June, 1982

DESIGN PHASE: Project Information

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NOTE: This document contains unbaselined information


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CLATCH HEVIA BREIDEN REACTOR PLANT FACILITY
DOCUMENT HOLD REPORT BY OCCIDENT NUMBER
WITH PAGE THREE

REPORT: DM37

DOCUMENT NUMBER	HOLD NUMBER	HOLD TYPE	SUD NUMBER	HOLD RES	DOCMT RESP	HELD DATE	MAINTENANCE DATE	COMMENT/ACTION/IMPACT
S0025A	25000144	D	25	B	B	10/20/82	05/03/82	EMGR EFFORT REQUIRED TO ESTABLISH IEM PARAMETERS, OPERATION, MAINTENANCE AND CASUALTY PROCEDURES. EMGR EFFORT WILL BE COMPLETED 6 MONTHS AFTER RECEIPT OF ALL VENDOR DATA AND FINAL SYSTEM DESIGN REVIEW.
	25000540	D	25	H	B	07/22/82	04/12/82	APPROVED ECP 110-125 ALLOWS REMOVAL OF HOLD. DUGS WILL BE UPDATED 08/13/82 AND SUD REVISED BY 11/12/82, NEED DATE IS 8 WEEKS PRIOR TO FOR.
	25000557	D	25	H	B	07/22/82	04/12/82	ECPS 025A063 025A072 ARE APPROVED (IRC TO REVISE DUGS BY 08/31/82 NEED DATE IS 8 WEEKS PRIOR TO SYS 25A FINAL DESIGN REVIEW
	25000566	V	25	B	B	12/17/82	04/12/82	THIS HOLD WILL BE REMOVED UPON RECEIPT OF ALL VENDOR COMPONENT INFORMATION BY 09/24/82. NEED 8 FORECAST DATES ARE BASED ON SUD 23 FOR.
	25000567	D	25	H	B	08/05/82	04/13/82	HOLD WILL BE REMOVED FOLLOWING DEVELOPMENT OF LEAK DETECTION METHOD AND IMCORPORATION INTO EASEL JMD DOCUMENTS
	25000568	D	25	B	B	08/05/83	03/14/83	HOLD WILL BE REMOVED WHEN METHOD OF DETRAINING SUITABILITY OF PORTABLE FILTER PAN/UNIT FOR CELL DRAINING IS OBTAINED

DOCUMENT NUMBER	HOLD NUMBER	HOLD TYPE	SDD NUMBER	HOLD WLS PESP	DCCM PLSP	HOLD DATE	MAINTENANCE DATE	COMMENT/ACTION/IMPACT
SDD25A	25000569	D	25	U	0	08/05/83	04/12/82	08/05/83
								HOLD WILL BE REMOVED WHEN METHOD OF REMOTE / LOCAL CONTROL IS DEVELOPED FOR FANS 25A0333 & 344.
	25000570	D	25	U	0	07/22/83	04/05/82	07/22/83
								HOLD WILL BE REMOVED WHEN ALL REQUIRED INFORMATION IS INCLUDED IN SECTION 3
	25000571	D	25	U	0	08/05/83	04/05/82	08/05/83
								HOLD WILL BE REMOVED FOLLOWING INCORPOR- ATION OF MOPS INTO SECTION 6 OF SDD.
	25000572	D	25	U	0	08/05/83	04/05/82	08/05/83
								HOLD WILL BE REMOVED WHEN METHOD OF TESTING COMPONENTS HAS BEEN INCLUDED IN SDD.
	25000573	D	25	U	0	08/05/83	04/05/82	08/05/83
								HOLD WILL BE REMOVED AT SYSTEM 25A UPDATE FOLLOWING DEVELOPMENT OF SYSTEM 260 PAR'S
	25000575	D	25	U	0	08/05/83	04/05/82	08/05/83
								HOLD WILL BE REMOVED UPON INCLUSION OF PARS IN DOCUMENT
	27000369	D	25	L	0	01/28/83	04/27/82	08/05/83
								LRM MUST COMPLETE SECTIONS 4, 5, 6 OF SDC- 27 FOR THE APLLOCKS AND THE EQUIPMENT HATCH, FORECAST DATE IS BASED ON MEET SCHED SDD-27 UPDATE AFTER EXPECTED COMPLETION DATE. MEED DATE IS BASED ON SDD-27 FINAL DESIGN REVIEW
	75001097	D	25	U	0	07/22/83	04/12/82	12/31/82
								ELC 075-110 IS BEING PROCESSED ECP EXP TO BE APPR BY 7-16-82, EXP TO INCORP ECP TO ALL DOCUMENTS BY 12-31-82 MEED DATE BASED ON 25A FOR DATE 9-16-82
	75001604	D	25	U	0	07/22/83	04/12/82	12/31/82
								ELC 075-110 IS BEING PROCESSED, ECP EXP TO BE APPR BY 7-16-82 AND MEED APPR BY 9-30-82. REMOVE HOLD ON 25A LOGIC BY 12-31-82. MEED DATE BASED ON SDD 25A FOR DATE 04/12/82

REV. NO./ DATE		CHANGE RELEASE/ SIGNATURE	PAGES AFFECTED	REMARKS
<div style="display: flex; justify-content: space-between;"> <div>  <p>CHANGE CONTROL RECORD</p> </div> <div> <p>TITLE</p> <p>Nuclear Island Heating, Ventilation & Air Conditioning System</p> </div> <div> <p>DOCUMENT NO.</p> <p>SDD-25A</p> </div> </div>				
11/79	Rev. 0 Draft I	All	Initial approved draft of SDD-25A	
6/81	B	All All All 4-179 through 4-202 5-177 through 5-191 6-69 through 6-136 I-1 through I-11 & II-1 through II-12	Reformatted Sections 4, 5 and 6 to conform with PO guidelines. Added new information required by PO guide- lines Incorporated approved ECP's B25A-051, 055, 057, 048, 053, B12- 042, and L10-104 Added operational valve position table Added Plant Alarm Response Index Added MOP pages Deleted page control pages	
11/81	C	5-110a x	Incorporated TM29 key systems review requirement(5.3.10) Included EOI 25A-14 (5.3.10)	


 CHANGE CONTROL RECORD		TITLE	DOCUMENT NO.
REV. NO./ DATE	CHANGE RELEASE/ SIGNATURE	PAGES AFFECTED	REMARKS
D 6/82		ix xii xvi 4-36, 4-37, 4-37a thru 4-37b, 4-45 thru 4-49, 5-25 thru 5-27, 5-27a thru 5-27n, 5-28, 5-28a thru 5-28g. 5-26, 5-27, 6-14, 6-14a, 6-14b, 6-65, 6-65a, 6-68, 6-137 thru 6-144 5-40, 5-40a, 5-41, 5-41a, 5-42, 5-42a, 5-42b, 5-42c, 5-43, 5-44, 5-44a 4-45 thru 4-49, 5-27k 4-1, 4-44 5-41, 5-42, 5-42a, 5-42b, 5-42c 5-192	Included Sections on TMBDB event. Included containment isolation valves. Revised referenced document list. Incorporated TMBDB key systems review task force requirements, Part III.4.2. Incorporated CIS key systems review task force requirements. APPENDIX vi-13, vi-15, vi-16. Incorporated LMW Task Force requirements. APPENDIX B. Incorporated approved ECP B25A-063. Editorial corrections. Incorporated spent fuel transport, storage and cooling systems review task force requirements. Included more PARs in the PAR index.

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REFERENCED DOCUMENT REVISION STATUS

The following is a listing of referenced documents used in writing sections 4, 5 and 6 of this SDD:

<u>Document</u>	<u>Revision</u>	<u>Date</u>
1. SDD-12, Sections 4, 5 & 6	C	12/81
2. SDD-22, Sections 4, 5 & 6	E	03/82
3. SDD-23, Sections 4, 5 & 6	B	02/82
4. SDD-75A, Sections 4, 5 & 6	C	07/81
5. SDD-82, Sections 4, 5 & 6	Draft 2	08/80
6. SDD-96, Sections 4, 5 & 6	Draft 1	04/79
7. TMBDB Key Systems Review Task Force Final Report		03/80
8. CIS Key Systems Review Task Force Final Report Volume 1		01/80
9. LMW Reaction Design Review Task Force Report Part 1, Volume II		01/80
10. Spent Fuel Key Systems Task Force Final Report		01/80
11. SDD-21, Sections 4, 5, and 6	D	02/82
12. SDD-31, Sections 4, 5, and 6	Draft 6	12/81
13. SDD-51A, Sections 4, 5, and 6	80	01/82
14. SDD-27, Sections 1 and 2	17	12/81
15. SDD-66, Sections 4, 5, and 6	Draft 2	07/81
16. SDD-96, Sections 1 and 2	14	08/81
17. Integrated Plant Operating Procedure Outline BDB-10-1	D-5	11/81

REFERENCED DOCUMENT REVISION STATUS

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SDD-12, Sections 4, 5 & 6	B	10/80
SDD-22, Sections 4, 5 & 6	C	04/80
SDD-23, Sections 4, 5 & 6	A	01/80
SDD-75A, Sections 4, 5 & 6	B	10/80
SDD-82	Draft 2	08/80
SDD-96, Sections 4, 5 & 6	Draft 1	04/79

B

DEFINITIONS

AIR CONDITIONING UNIT - factory or field fabricated, modular unit, consisting of the following, but not necessarily all of the following components:

Mixing plenum with dampers, filters, heating and cooling coils, moisture eliminators, fans and access sections between each component.

The components are joined together in an insulated casing to form a complete unit.

AIR HANDLING UNIT - similar to the air conditioning units except that the fans are provided separately and mounted external to the unit.

FILTER UNIT - a factory fabricated, modular, draw-through unit, consisting of the following, but not necessarily all of the following components:

Heating coil, moisture eliminator, roll-type filter, HEPA filter, charcoal filters, after HEPA filters and access sections.

The components are joined together in an insulated casing with other accessories as required to form a packaged unit.

NORMAL DESIGN TEMPERATURE - the specified design temperature which will be maintained in each Nuclear Island Building during normal (plant, system or component) operation.

NORMAL RELATIVE HUMIDITY - the specified design humidity which will be maintained in specified areas of the Nuclear Island Buildings during normal (plant, system or component) operation.

NORMAL VENTILATION REQUIREMENTS - the specified design air quantities which will be provided for each Nuclear Island Building during normal (plant, system or component) operation.

NUCLEAR SAFETY RELATED - all systems and components which are required for the safe shutdown of the reactor, maintenance of the safe shutdown condition and required to minimize the release of airborne radioactivity for the protection of the general public.

OFF-NORMAL CONDITIONS - off-normal conditions means those steady state and transient conditions not part of normal operation which (1) individually might occur one or more times during the life of the nuclear power unit and include but are not limited to an inadvertent control rod withdrawal, tripping of sodium circulating pumps, failure of all offsite power, and tripping of the turbine generator set. This class of events is termed Anticipated Faults or (2) a condition which individually is not expected to occur during the plant lifetime; however, when integrated over all plant components and systems, events in this category may be expected to occur

DEFINITIONS (Continued)

only a number of times. This class of events is termed Unlikely Faults.

UPSET DESIGN TEMPERATURE - the upset design temperature is the specified design temperature which will be maintained in each Nuclear Island Building during off-normal (plant, system or component) conditions based on the maximum long range requirements for the equipment and instrumentation cooling.

UNIT COOLER - a factory fabricated unit consisting of fan and coil section with or without filter.

ACRONYMS

AB	- i.e. SGB-AB, Auxiliary Building
A/C	- Air Conditioning (System, Unit, etc.)
25AC	- System 25, Control Building System
25AD	- System 25, Diesel Generator Building System
ADC	- American Diffusion Council
25AE	- System 25, Emergency Cooling Tower Structure System
25AG	- System 25, Steam Generator Building System
AHU	- Air Handling Unit
AMCA	- Air Moving and Conditioning Association Inc.
ANSI	- American National Standards Institute
25AR	- System 25, Reactor Containment Building System
ARI	- Air Conditioning and Refrigeration Institute
25AS	- System 25, Reactor Service Building System
ASHRAE	- American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASME	- American Society of Mechanical Engineers
ASTM	- American Society of Testing and Materials
CAPS	- Cell Atmosphere Processing System
CB	- Control Building
CCC	- Containment Clean-Up Cells
CCW	- Counter Clockwise
CFR	- Code of Federal Regulations
CIS	- Containment Isolation Signal
CRBRP	- Clinch River Breeder Reactor Plant
CRDM	- Control Rod Drive Mechanism
CW	- Clockwise
DB	- Temperature, Dry Bulb
DGB	- Diesel Generator Building
DH & DS	- System, Data Handling and Display
DHRS	- Decay Heat Removal System
DP	- Temperature, Dew Point
E	- Orientation, East
EC	- System, Emergency Chilled Water (SDD-23EC)
ECT	- Emergency Cooling Tower Structure
EL	- Elevation Above Sea Level

B

ACRONYMS (Continued)

EPSW	- System, Emergency Plant Service Water (SDD-75EP)
ESF	- Engineered Safety Features
F	- Degree Temperature, Fahrenheit
FA	- Fresh Air
FHA	- i.e. RSB-FHA, Fuel Handling Area
FPI	- Fins Per Inch
FPM	- Velocity, Feet Per Minute
FPS	- Velocity, Feet Per Second
H&V	- Heating and Ventilating
HAA	- Head Access Area
HEPA	- Filter, High Efficiency Particulate Air
HTS	- Heat Transport System
HVAC	- Heating, Ventilation and Air Conditioning
IB	- i.e. SGB-IB, Intermediate Bay
I&C	- Instrumentation and Controls
IEEE	- Institute of Electrical and Electronics Engineers
IHTS	- Intermediate Heat Transport System
ILRT	- Integrated Leak Rate Test
ISA	- Instrument Society of America
IUHA	- Industrial Unit Heater Association
LCCV	- Large Component Cleaning Vessel
MOP	- Maintenance Outline Procedure
MCR	- Main Control Room
MG	- Equipment, Motor Generator
N	- Orientation, North
N/A	- Not Applicable
NC	- System, Normal Chilled Water (SDD-23NC)
NE	- Orientation, North East

B

ACRONYMS (Continued)

NEC	- National Electrical Code
NEMA	- National Electrical Manufacturers Association
NEPIA	- Nuclear Energy Property Insurance Association
NFPA	- National Fire Protection Association
NI	- Nuclear Island
NPSW	- System, Normal Plant Service Water (SDD-75NP)
NW	- Orientation, North West
OA	- Outside Air
OBE	- Operating Basis Earthquake
OPDD	- Overall Plant Design Description (OPDD-10)
OSHA	- Occupational Safety and Health Act
PPS	- Plant Protection System
RAM	- Reliability Availability and Maintainability
RAPS	- Radioactive Argon Processing System
RCB	- Reactor Containment Building
RDT	- Reactor Development Technology
RH	- Relative Humidity
RSB	- Reactor Service Building
RWA	- i.e. RSB-RWA, Radioactive Waste Handling Area
S	- Orientation, South
SB	- i.e. SGB-SB, Steam Generator Bay
SBCC	- Southern Building Code Congress
SDD	- System Design Description
SE	- Orientation, South East
SGAHS	- System, Steam Generator Auxiliary Heat Removal
SGB	- Steam Generator Building
SMACNA	- Sheet Metal and Air Conditioning Contractors National Association
SSE	- Safe Shutdown Earthquake
SW	- Orientation, South west

B

ACRONYMS (Continued)

SWGR	- Switchgear
TBD	- To Be Determined
TMBDB	- Thermal Margin Beyond Design Basis
TVA	- Tennessee Valley Authority
UC	- Unit Cooler
UL	- Underwriters' Laboratories Inc.
USAEC	- United States Atomic Energy Commission
W	- Orientation, West
WB	- Temperature, Wet Bulb
WARD	- Westinghouse Advanced Reactor Division
WG	- Water Gauge

B

SECTION 4.0 OPERATION

4.1 REACTOR CONTAINMENT BUILDING

NOTE: All equipment and instrument numbers are prefixed by 25AR.

| D

Instrument panel numbers are prefixed by 25NI (Local) and 25AA (Back Panel).

4.1.1 Initial Fill - Cooling and Heating Coils (SOI 25A-1)

1. Fill the following HVAC components as described by the indicated SDD.

<u>System</u>	<u>SDD</u>	<u>SOI</u>
Chilled Water	23	23-1/23-8
Plant Service Water	75A	75A-3

- a. RCB Supply Air Handling Unit (200)
- b. A/C Unit Cooling Coils (010, 011)
- c. Unit Cooler Cooling Coils (020A, 020B, 020C, 021, 022, 023, 024 & 053)

4.1.2 Startup (SOI 25A-2)

4.1.2.1 RCB A/C System (200)

4.1.2.1.1 Initial Condition

1. The following systems are operating as described by the indicated SDD.

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10
d. Plant Service Water	75A	75A-7
e. Radiation Monitoring	96	96-5

2. Containment Isolation Signal (System 99) is not present.

4.1.2.1.2 Procedure

1. Place Exhaust Fan (165A) control (HS-165A), located on Local Panel (23AGB001A), in the "START" position.

NOTE: Start of Exhaust Fan will energize the control system, open discharge damper (AOD-78A) and isolation valves (AOV-47A, B and C). Verify containment isolation valves position on Main Panel (90CSB016) and the following indication is energized. If a containment isolation signal (System 99) exists, Valve (AOV 46A, B & C: 47A, B & C) will not open.

	<u>Panel</u>	<u>Indicator</u>
a. Exhaust Fan 165A	B001A	XL-165AA
b. Damper AOD-078A	B001A	XL-078AA

2. Upon reaching a 1/8" W.G. negative pressure in the RCB, as indicated on Local Panel (B001A) by PDISH-143A, B & C, place Supply Fan (240A) control (HS-240A), located on Local Panel (B001A), in the "START" position. Verify fan start as indicated by energized status light (XL-240AA) located on Local Panel (B001A).

NOTE: Starting Supply Fan (240A) will open the following dampers and valves, (in addition to starting the HW Recirc Pump if outside air temperature is <50°F as sensed by TT-36). Verify "open" status as indicated by energized lights listed below:

		<u>Panel</u>	<u>Indicator</u>
a.	Discharge damper AOD-43A	B001A	XL-043AA
b.	Outside air damper AOD-37	B001A	XL-037A
c.	Isolation Valves AOV-46A	90CSB016	99ESCVZ1004A
d.	Isolation Valve AOV-46B	90CSB016	99ESCVZ1003A
e.	Isolation Valve AOV-46C	90CSB016	99ESCVZ1021A
f.	HW Recirc Pump 75HWP013	B001A	75HWXL-013A

3. Place Exhaust Fan (165B) control (HS-165B) located on Local Panel (B001A), in the "AUTO" position.
4. Place Supply Fan (240B) control (HS-240B) located on Local Panel (B001A), in the "AUTO" position.
5. Verify (locally) air flow as indicated by FI-60 is within the range specified in Section 3 Table 3-1 of this SDD.
6. Verify Roll Filter and Bag Filter d/p is within limits specified in Section 3 Table 3-1 of this SDD and indicated locally by PDISH-39 & 40.
7. Verify temperature of the outside air, heating coil outlet and supply air is within limits as described by Section 3 Table 3-1 of this SDD and indicated by (TIS-36, TI-42 & TIC-44) on Local Panel (B001A).

4.1.2.2 Above Operating Floor, Unit Cooler (020A, 020B, 020C)

4.1.2.2.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD and section:

	<u>System</u>	<u>SDD</u>	<u>S01</u>
a.	Electrical Power	12	12-10
b.	Compressed Gas	22	22-4
c.	Chilled Water	23	23-3/23-10

2. Unit throwaway filter is installed.
3. Fan controls are in the "STOP" position.

4.1.2.2.2 Procedure

1. Place Unit Cooler (020A) Supply Fan control (HS-020A), located on Local Panel (B001C), in the "START" position.

NOTE: Starting Supply Fan will energize control system and open Unit Cooler (020A) Discharge Damper (A0D69A). Verify energized status lights on Local Panel (B001C).

a.	U.C. 020A Supply Fan	020A	B001C	XL-020AA
b.	Discharge Damper	A0D-069A	B001C	XL-069AA

2. Verify throwaway Filter d/p is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by PDI-161A.
3. Verify Unit Cooler (020A) outlet temperature is within limits specified by Section 3 (Table 3-1) of this SDD and indicated by TI-063A on Local Panel (B001C).
4. Place Unit Cooler (020B) Supply Fan control (HS-020B), located on Local Panel (B001C), in the "START" position. This will open damper (A0D-69B). Verify energized fan and damper status lights on Local Panel (B001C).

			<u>Panel</u>	<u>Indicator</u>
a.	U.C. Supply Fan	020B	B001C	XL-020BA
b.	Discharge Damper	A0D-069B	B001C	XL-069BA

5. Verify Throwaway Filter d/p is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by PDI-161B.
6. Verify Unit Cooler (020B) outlet temperature is within limits specified by Section 3 (Table 3-1) of this SDD and indicated by TI-63B on Local Panel (B001C).

7. Place Unit Cooler (020C) Supply Fan control (HS-020C), located on Local Panel (B001C), in the "START" position. This will open damper (AOD-69C). Verify energized fan and damper status light as indicated on Local Panel (B001C).

		<u>Panel</u>	<u>Indicator</u>
a.	U.C. Supply Fan 020C	B001C	XL-020CA
b.	Discharge Damper AOD-069C	B001C	XL-069CA

8. Verify Throwaway Filter d/p is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by PDI-161C.
9. Verify Unit Cooler (020C) outlet temperature is within limits specified by Section 3 (Table 3-1) of this SDD and indicated by (TI-63C) on Local Panel (B001C).
10. Starting three Unit Coolers (020A, 020B & 020C) will open Discharge Dampers (AOD-95, 96, 97 & 98). Verify energized damper status indication on Local Panel (B001C).

		<u>Panel</u>	<u>Indication</u>
a.	Discharge Damper AOD-095	B001C	XL-095A
b.	Discharge Damper AOD-096	B001C	XL-096A
c.	Discharge Damper AOD-097	B001C	XL-097A
d.	Discharge Damper AOD-098	B001C	XL-098A

4.1.2.3 LCCV Cell Unit Cooler (053)

4.1.2.3.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD:

	<u>System</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10
b.	Compressed Gas	22	22-4
c.	Chilled Water	23	23-3/23-10

2. Unit throwaway filter is installed.

4.1.2.3.2 Procedure

1. Place Unit Cooler (053) control (HS-053), located on Local Panel (B001C), in the "START" position. This will energize the control system. Verify energized fan status light (XL-053A) on Local Panel (B001C).
2. Verify Throwaway Filter d/p is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by PDISH-125.
3. Verify Unit Cooler (053) supply air temperature is within limits specified by Section 3 (Table 3-1) of this SDD and indicated by TI-127 locally.

4.1.2.4 HAA Unit Cooler (024)

4.1.2.4.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD and section:

	<u>System</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10
b.	Compressed Gas	22	22-4
c.	Chilled Water	23	23-3/23-10

4.1.2.4.2 Procedure

1. Place Unit Cooler (024) Control (HS-024), located on Local Panel (B001C), in the START position. This will energize the control system. Verify Fan status indication is energized (XL-024A) on Local Panel (B001C).
2. Verify Throwaway Filter d/p is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (PDI-149).
3. Verify Unit Cooler (024) Supply Air temperature is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (TI-151).

4.1.2.5 RCB Portable Filter/Fan Unit (070)

Refer to Cell deinerting procedure outline (Section 4.1.7.2) for fan start-up.

4.1.2.6 EI&C Cubicle Unit Cooler (021, 022, 023)

4.1.2.6.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD and section:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-22/12-49
b. Chilled Water	23	23-3/23-10

2. Unit throwaway filters are installed and fan controls are in the "STOP" position.

4.1.2.6.2 Procedure

1. Place SSPLS control (HS-SS6A) and EI&C cubicle U.C. (021 and 023) SSPLS Control (HS-021 & 023), located on SSPLS panel (12SSB351A), in the REMOTE position.
2. Place SSPLS control (HS-SS6B) and EI&C cubicle U.C. (022) SSPLS control (HS-022), located on SSPLS panel (12SSB351B), in the REMOTE position.
3. Place Unit Cooler (021) control (HS-021B), located on Back Panel (B002), in the "START" position. This will energize the control system. Verify energized fan status light (XL-021C) on Back Panel (B002).
4. Verify Unit Cooler (021) cooling coil leaving air temperature and filter pressure drop are within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (TI-115) and (PDISH-113).
5. Place Unit Cooler (022) control (HS-022B), located on Back Panel (B002), in the "START" position. This will energize the control system. Verify energized fan status light (XL-022C) on Back Panel (B002).
6. Verify Unit Cooler (022) cooling coil leaving air temperature and filter pressure drop are within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (TI-119) and (PDISH-117).
7. Place Unit Cooler (023) control, (HS-023B), located on Back Panel (B002), in the "START" position. This will energize the control system. Verify energized fan operating status light (XL-022C).
8. Verify Unit Cooler (023) cooling coil leaving air temperature and filter pressure drop are within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (TI-123) and (PDISH-121).

4.1.2.7 Below Operating Floor A/C System (010, 011)

4.1.2.7.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD:

	<u>System</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10
b.	Compressed Gas	22	22-4
c.	Chilled Water	23	23-3/23-10

2. Unit throwaway filters are installed.
3. Fan controls are in the "STOP" position.
4. RCB A/C System (200) is operating as described by Section 4.1.2.1 of this SDD.

4.1.2.7.2 Procedure

1. Place Return Fan (050) control (HS-050) located on Local Panel (B001C), in the "AUTO" position.
2. Place Supply Fan (010) control (HS-010), located on Local Panel (B001C), in the "START" position. Verify status (XL-010A), light located on Local Panel (B001C) is energized.

NOTE: Starting Supply Fan will energize the control system and start Return Fan (050). Verify energized fan status light (XL-050A) on Local Panel (B001C).

3. Verify Filter (010) pressure drop is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (PDISH 48).

4. Verify A/C Unit (010) supply air temperature is within limits described by Section 3 (Table 3-1) of this SDD and indicated on Local Panel (B001C) by (TI-159).
5. Place Return Fan (051) control (HS-051), located on Local Panel (B001C), in the "AUTO" position.
6. Place Supply Fan (011) control (HS-011), located on Local Panel (B001C), in the "START" position. Verify fan status light (XL-011A) on Local Panel (B001C).

NOTE: Starting Supply Fan will energize the control system and start Return Fan (051). Verify fan status light (XL-051A) on Local Panel (B001C).

7. Verify Filter (011) pressure drop is within limits specified by Section 3 (Table 3-1) of this SDD and indicated locally by (PDISH-157).
8. Verify A/C Unit (011) supply air temperature is within limits described by Section 3 Table 3-1) of this SDD and indicated on Local Panel (B001C) by (TI-56).

4.1.2.8 Inerted Cells Booster Fan (061, 062)

Inerted cells booster fans operate only during RCB cell deinerting.

4.1.2.8.1 Initial Conditions

1. Electrical Power is available as described by SDD-12, (SOI 12-10).
2. System 82 is aligned for service as described by SDD-82, (SOI 82-40).

3. RCB Supply and Exhaust Fans (240A, 165A or 240B, 165B) are operating as described by Section 4.1.2.1 of this SDD.

4.1.2.8.2 Procedure

Refer to SDD-82 (SOI 82-40) to establish necessary system conditions before use of this procedure outline as these fans do not normally operate.

1. Place Supply Fan (061 or 062) control (HS-061 or 062), located on Local Panel (B001C), in the "START" position. Verify energized fan operating status light (XL-061A or 062A) on Local Panel (B001C).

4.1.2.9 Dome Recirculating Fan (052A, 052B)

4.1.2.9.1 Initial Conditions

1. Electrical Power is available as described by SDD-12, (SOI 12-10).

4.1.2.9.2 Procedure

1. Place Dome Recirculating Fan (052A) control (HS-052A), located on Local Panel (B001C), in the "START" position.
2. Place Dome Recirculating Fan (052B) control (HS-052B), located on Local Panel (B001C) in the "START" position.
3. Verify energized Fans (052A & 052B) start, on Local Panel (B001C), as indicated by status lights (XL-052AA & 52BA).

4.1.2.10 Annulus Filtration System

4.1.2.10.1 Annulus Pressure Maintenance Fan (172A, 172B) and Filter Unit (182A, 182B)

4.1.2.10.1.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10 & 12-49
b. Radiation Monitoring	96	96-2

3. Verify Unit Coolers (146 & 132) are aligned for service as described in section 4.2.2.7 of this SDD.

4.1.2.10.1.2 Procedure

1. Place SSPLS control (HS-SS3A) and annulus pressure maintenance fan (172A) SSPLS control (HS-172A), located on SSPLS panel (12SSB350A), in the REMOTE position.
2. Place SSPLS control (HS-SS3B) and annulus pressure maintenance fan (172B) SSPLS control (HS-172B), located on SSPLS panel (12SSB 350B), in the REMOTE position.
3. Place Annulus Pressure Maintenance Fan (172A or 172B) control (HS-172AB or 172BB), located on Back Panel (B002), in the "START" position.

NOTE: Starting Fan will energize control system and open Fan Discharge Damper (MOD-015A or 015B). Verify fan and damper status lights on Back Panel (B002).

<u>Train "A"</u>		<u>Panel</u>	<u>Indicator</u>
a. Fan	172A	B002	XL-172AC
b. Discharge Damper	015A	B002	XL-015AC

<u>Train "B"</u>		<u>Panel</u>	<u>Indicator</u>
a. Fan	172B	B002	XL-172BC
b. Discharge Damper	015B	B002	XL-015BC

4. Verify the following annulus filter unit indications are within the range as specified in Section 3 (Table 3-1) of this SDD.

a. Annulus Filter Unit 182A.

	<u>Inst. #</u>	
Bag Filter Pressure Drop	PDISH-006A	LOCAL
Filter Unit Pressure Drop	PDISH-007A	LOCAL
HEPA Filter Pressure Drop	PDISH-075A	LOCAL
Adsorbent Filter Pressure Drop	PDISH-076A	LOCAL
HEPA Filter Pressure Drop	PDISH-012A	LOCAL
Moisture Separator Pressure Drop	PDISH-030A	LOCAL
Filter Unit Air Entering Relative Humidity	MI-004A	PANEL 8001G
Adsorbent Filter Entering Air Temperature	TI-032A	PANEL 8001G
Adsorbent Filter Leaving Air Temperature	TI-031A	PANEL 8001G

b. Annulus Filter Unit 182B.

Bag Filter Pressure Drop	PDISH-006B	LOCAL
Filter Unit Pressure Drop	PDISH-007B	LOCAL
HEPA Filter Pressure Drop	PDISH-075B	LOCAL
Adsorbent Filter Pressure Drop	PDISH-076B	LOCAL
HEPA Filter Pressure Drop	PDISH-012B	LOCAL
Moisture Separator Pressure Drop	PDISH-030B	LOCAL
Filter Unit Air Entering Relative Humidity	MI-004B	PANEL 8001H
Adsorbent Filter Entering Air Temperature	TI-032B	PANEL 8001H
Adsorbent Filter Leaving Air Temperature	TI-031B	PANEL 8001H

5. Place remaining Annulus Pressure Maintenance Fan (172A or 172B) control (HS172BB or 172AB), located on Back Panel (B002) in the "AUTO" position.

4.1.2.10.2 Annulus Filter Fan (173A, 173B)

This procedure outline describes steps necessary to place the Annulus Filter Fans (173A & B) in a standby position since they are required to operate only during containment isolation, and open hatch refueling.

4.1.2.10.2.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Radiation Monitoring	96	96-2

4.1.2.10.2.2 Procedure

1. Place SSPLS control (HS-SS3A) and annulus filter fan (173A) SSPLS control (HS-173A), located on SSPLS panel (12SSB350A), in the REMOTE position.
2. Place SSPLS control (HS-SS3B) and annulus filter fan (173B) SSPLS control (HS-173B), located on SSPLS panel (12SSB350B) in the REMOTE position.

3. Place Annulus Filter Fans (173A & B) controls (HS-173AB & 173BB), located on Back Panel (B002), in the "AUTO" position.
4. Place Annulus Filter Fans (173A & B) controls (HS-173AA & 173BA), located on Local Panel (B001G & B001H), in the "AUTO" position.

NOTE: For operating procedure outline refer to section 4.1.7.3 of this SDD.

NOTE: When fuel is being transported or waste products are being removed from the RSB the vent line from the equipment and personnel airlock to the annulus filtration system shall be opened, venting the RCB bypass leakage into the annulus.

4.1.2.10.3 Annulus Filter Cells Unit Cooler (132, 146)

Unit coolers (132 & 146) operate when their related annulus pressure maintenance fan (172B or 172A) starts. Refer to Section 4.1.2.10 of this SDD, for filter unit startup.

4.1.2.10.3.1 Initial Condition

1. Unit coolers (132 & 146) cooling coil are filled and aligned for operation as described in Section 4.1.2 of this SDD.
2. Throwaway filter of unit coolers are installed.
3. The following systems are operating as described by the indicated SDD, and SOI:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10

4.1.2.10.3.2 Procedure

1. Place SSPLS control (HS-SS3A) and U.C. (132) SSPLS control (HS-132), located on SSPLS panel (12SSB350A), in the REMOTE position.
2. Place SSPLS control (HS-SS3B) and U.C. (146) control (HS-146) located on SSPLS panel (12SSB350B), in the REMOTE position.
3. Place unit coolers (132 and 146) controls (HS-132B & 146B), located on back panel (B002), in the "AUTO" position.

NOTE: This procedure will start unit coolers (146), energize the control system, and place unit cooler (132) in standby condition. Upon activation of low air flow alarm, unit cooler (146) and its related annulus filter (182A) system will stop. The redundant annulus filter (182B) system and unit cooler (146) will be started automatically.

4. Verify filter d/p, as indicated by (PDISH-46A) locally, is within range specified in Section 3 (Table 3-1) of this SDD.
5. Verify cooling coil air inlet and outlet temperature indication (TI-167A and 44A), on local panel (B005C) is within range specified in Section 3 (Table 3-1) of this SDD.
6. Place annulus filter cell unit coolers (132 & 146) controls (HS-132A & 146A), located on local panels (B005C & B005B), in the "AUTO" position.

4.1.2.11 RCB Annulus Cooling System (Fans 174A, C, E; B, D, F)

Annulus Cooling System is provided as TMBDB feature and is to be used only during TMBDB event. This procedure outline places the Annulus Cooling System components in a position to properly function during a TMBDB event. For operating procedure outline, (startup) refer to section 4.1.7.7 of this SDD.

4.1.2.11.1 Initial Conditions

1. Electrical Power is available as described by SDD-12, (SOI 12-22).

4.1.2.11.2 Procedure

1. Verify Annulus Cooling System "DISABLE/ENABLE" control (HS-183 & 184), located on Back Panel (B002), is in the "DISABLE" position.
2. Place Fan Discharge Dampers (MOD 1A, 1C, 1E & 1B, 1D, 1F) control (HS-001A, 001C, 001E & 001B, 001D, 001F), located on TMBDB Back Panel (B002), in the "AUTO" position.
3. Place Exhaust Dampers (MOD 90A, C & B, D) controls (HS-090A, 090C & 090B, 090D), located on Back Panel (B002), in the "AUTO" position.

4.1.2.12 Containment Cleanup System

Containment Cleanup System is provided as TMBDB feature and is to be used only during TMBDB event. This procedure places the Containment Cleanup System components in a position to properly function during a TMBDB event. For operating procedure outline, refer to Section 4.1.7.8 of this SDD.

4.1.2.12.1 Purge Valves (MOV 19A, C; 19B, D)

Purge valves are used only following a TMBDB event. Refer to Section 4.1.7.8 of this SDD to place purge valves in service.

4.1.2.12.2 Containment Cleanup Valves (MOV106A, C; MOV108A) (MOV106B, D; MOV 108B)

Containment cleanup system is used only following a TMBDB event. Refer to Section 4.1.7.8 of this SDD to place containment cleanup valves in service.

4.1.2.12.3 Containment Cleanup Scrubber Exhaust Fans (175A & 175B)

Containment cleanup system is used only following a TMBDB event. Place Fan Discharge Dampers (MOV-109A & 109B) controls (HS-109A & 109B), located on Back Panel (B002), in the "AUTO" position.

4.1.3 Normal Operation (SOI 25A-14)

The following sections describe the operation of the RCB components. The RCB HVAC components will be placed in normal operation by completing Section 4.1.2 of this SDD.

4.1.3.1 RCB Outside Air System (AHU-200, Supply Fans 240A & 240B, Exhaust Fans -165A & 165B)

The Outside Air System normal operation consists of AHU (200) in addition to one Supply Fan (240A or 240B) and one Exhaust Fan (165A or 165B) operating.

Cooling and heating coils provided in AHU (200) maintain the temperature of the supply air downstream of the Supply Fans (240A & 240B). Differential pressure controllers (PDT-143A, 143B and 143C) adjust inlet vanes of the operating Exhaust Fan (165A or 165B) to maintain 1/8" WG negative pressure inside the RCB. Hot water recirculating pump (75HWP013) provides hot water to the heating coil when outside air temperature is below 50°F.

RAPS cells are maintained under negative pressure, as air infiltrates into the RAPS cell from the normal atmospheric areas of the RCB, and is exhausted (by a separate duct) to the RCB main exhaust duct.

4.1.3.2 Above Operating Floor Unit Coolers (020A, 020B, 020C)

Unit Coolers (020A, 020B & 020C) are located above the EI&C cubicles, and

are provided to supplement the cooling capacity of the 100% outside air system, and operate continuously during normal operation. Air is drawn into the Unit Coolers (020A, 020B & 020C) passed over the cooling coil and returned to the operating floor atmosphere.

4.1.3.3 EI&C Cubicle Unit Coolers (021, 022 & 023)

Unit Coolers (021, 022 & 023) are provided to cool the EI&C cubicles, and operate continuously. Air is drawn into the Unit Coolers, from the cells (165, 163 & 167), passed over a cooling coil and returned to the cells atmosphere.

4.1.3.4 Head Access Area Unit Cooler (024)

Unit Cooler (024) is provided to cool the Head Access Area (Cell 151), and operates continuously. Air is drawn from the atmosphere of Cell 151 passed over the cooling coil and discharged, through a duct, to Cell 151.

4.1.3.5 Dome Recirculating Fan (052A, 052B)

Recirculating Fans (052A & 052B) prevent stagnation of air above the operating floor, and operate continuously.

4.1.3.6 Below Operating Floor A/C System (010, 011)

The Below Operating Floor A/C Systems (010 and 011) are located in cells (105I and 105K) and operate continuously.

4.1.3.7 Annulus Pressure Maintenance Fans (172A, 172B) and Annulus Filter Unit (182A, 182B)

One Annulus Pressure Maintenance Fan (172A or 172B) and associated Annulus Filter Unit (182A or 182B) operate to maintain a minimum of 1/4" W.G. nega-

tive pressure in the annulus, following startup as described by section 4.1.2.10 of this SDD. Upon a containment isolation signal and open hatch refueling condition the redundant Annulus Pressure Maintenance Fan (172A or 172B) and Annulus Filter Fans (173A and 173B) will start.

4.1.3.8 Annulus Cooling System Fans (174A, C, E: 174B, D, F)

Annulus Cooling System (Fans 174A, C, E and 174B, D, F) does not normally operate. Fans are provided as TMBDB feature and operate only following a TMBDB event. During TMBDB event, three fans (174A, C, E or 174B, D, F) operate to cool the annulus while the remaining three fans (174A, C, E or 174B, D, F) are provided for redundancy.

4.1.3.8.1 RCB Annulus Cooling System (Fans 174A, C, E or 174B, D, F)

Annulus Cooling System is provided as TMBDB feature and is to be used following a TMBDB event. This procedure places the Annulus Cooling System components in an inoperative condition.

4.1.3.8.1.1 Initial Conditions

Redundant Cooling Fans (174A, C, E or 174B, D, F) are operable and in standby condition.

4.1.3.8.1.2 Procedure

1. Place Annulus Cooling System (train A or B) to be operated, Enable/Disable Control (HS-183) or (HS-184), located on Back Panel (B002), in the "ENABLE" position.
2. Place component to be operated control (as listed below) in the "START/OPEN" position, on Back Panel (B002). Verify operating status light as indicated below:

	<u>Component</u>	<u>HS</u>	<u>Indicator</u>
<u>TRAIN A</u>			
a.	Cooling Fan - 174A	174A	XL-174AC
b.	Cooling Fan - 174C	174C	XL-174CC
c.	Cooling Fan - 174E	174E	XL-174EC
d.	MOD001A	001A	XL-001C
e.	MOD001C	001C	XL-001CC
f.	MOD001E	001E	XL-001EC
g.	MOD090A	090A	XL-090AC
h.	MOD090C	090C	XL-090CC
<u>TRAIN B</u>			
a.	Cooling Fan - 174B	174B	XL-174BC
b.	Cooling Fan - 174D	174D	XL-174DC
c.	Cooling Fan - 174F	174F	XL-174FC
d.	MOD001B	001B	XL-001BC
e.	MOD001D	001D	XL-001DC
f.	MOD001F	001F	XL-001FC
g.	MOD090B	090B	XL-090BC
h.	MOD090D	090D	XL-090DC

4.1.3.9 Containment Cleanup System

Containment Cleanup System consists of the following components as train A or B:

Quench Tank (187)
 Jet Venturi Scrubber (186)
 Fibrous Scrubber (176)
 Scrubber Exhaust Fan (175A, 175B)
 Fan Discharge Valves (109A, 109B)
 Purge Valves (MOV019A, 019C; MOV019B, 019D)
 Containment Cleanup Valves (MOV-106A, 106C; MOV-106B, 106D)
 Pressure Reducing Valves (FMV-107A, 107B)
 Fan Bypass Valves (MOV-108A, 108B)

The Containment Cleanup System does not normally operate. The system is provided as a TMBDB feature and operates following a TMBDB event. Refer to Section 4.1.7.8 of this SDD.

4.1.3.10 RCB HVAC Component Shift (weekly) (SOT 25A-29)

4.1.3.10.1 RCB A/C System (200)

4.1.3.10.1.1 Initial Conditions

RCB AC System (200) is operating following a startup as described by Section 4.1.2.1 of this SDD.

4.1.3.10.1.2 Shift to B Train from A Train Operation

1. Verify Supply Fan (240B) Control (HS-240B), located on Local Panel (B001A), in the "AUTO" position.
2. Maintain Exhaust Fan (165B) control (HS165B), located on Local Panel (B001A), in the "START" position.
3. Verify energized fan operating status light (XL-165BA) and damper (A00-78B) open status light (XL-078BA) on Local Panel (B001A).
4. Place Exhaust Fan (165A) control (HS-165A), located on Local Panel (B001A), in the "STOP" position. Verify energized operating status light (XL-165AB) located on Local Panel (B001A).
5. Allow Exhaust Fan (165B) control (HS-165B), located on Local Panel (B001A), to return to the "AUTO" position.

NOTE: This will start Supply Fan (240B).

6. Verify energized Fan (240B) operating status light (XL-240BA) and damper (AOD-43B) open status light (XL043BA) on Local Panel (B001A).
7. Place Supply Fan (240A) control (HS-240A), located on Local Panel (B001A), in the "STOP" position. Verify energized operating status light (XL-240AB) located on Local Panel (B001A).
8. Verify the following indication energized, located on Main Panel (90CSB016).

		<u>Status</u>	<u>Indication</u>
Isolation Valve	AOV-046A	Open	99ESCZ1004A
Isolation Valve	AOV-046B	Open	99ESCZ1003A
Isolation Valve	AOV-046C	Open	99ESCZ1021A
Isolation Valve	AOV-047A	Open	99ESCZ1002A
Isolation Valve	AOV-047B	Open	99ESCZ1001A
Isolation Valve	AOV-047C	Open	99ESCZ1022A

9. Verify the following energized indications and parameters (within range specified in section 3 (Table 3-1) of this SDD on Local Panel (B001A).

<u>Parameter</u>	<u>Inst.</u>
Exhaust Fan Air Flow	FI-60
RCB Differential Pressure	PDISH-143A, 143B & 143C

<u>Component</u>		<u>Status</u>	<u>Indicator</u>
Supply Fan Damper	AOD-43B	OPEN	XL-043BA
Supply Fan Damper	AOD-43A	SHUT	XL-043AB
Exhaust Fan Damper	AOD-78B	OPEN	XL-078BA
Exhaust Fan Damper	AOD-78A	SHUT	XL-078AB
Outside Air Damper	AOD-37	OPEN	XL-037A
Supply Fan	240A	STOP	XL-240AB

<u>Component</u>		<u>Status</u>	<u>Indicator</u>
Supply Fan	240B	START	XL-240BA
Exhaust Fan	165A	STOP	XL-165AB
Exhaust Fan	165B	START	XL-165BA

4.1.3.10.1.3 Shift to A Train from B Train Operation

1. Verify Supply Fan (240A) control (HS-240A), located on Local Panel (B001A), in the "AUTO" position.
2. Maintain Exhaust Fan (165A) control (HS-165A), located on Local Panel (B001A), in the "START" position.

NOTE: This will start Supply Fan (240A).

3. Verify the energized Fan operating status light and damper (A0D-078A) open status light (XL-078AA) on Local Panel (B001A).
4. Place Exhaust Fan (165B) control (HS-165B), located on Local Panel (B001A), in the "STOP" position. Verify energized fan operating status light (XL-165BB).
5. Allow Exhaust Fan (165A) control (HS-165A), located on Local Panel (B001A), to return to the "AUTO" position.
6. Verify energized Fan (240A) operating status light (XL-240AA) and damper (A0D-043A) open status light (XL-043AA) on Local Panel (B001A).
7. Place Supply Fan (240B) control (HS-240B), located on Local Panel (B001A), in the "STOP" position. Verify energized fan operating status light (XL-240BB), located on Local Panel (B001A).
8. Place Exhaust Fan (165B) Control (HS-165B), located on Local Panel (B001A), in the "AUTO" position.

9. Verify the following indication energized, on Main Panel (90CSB016).

		<u>Status</u>	<u>Indication</u>
Isolation Valve	AOV-046A	OPEN	99ECSZ1004A
Isolation Valve	AOV-046B	OPEN	99ECSZ1003A
Isolation Valve	AOV-046C	OPEN	99ECSZ1021A
Isolation Valve	AOV-047A	OPEN	99ECSZ1002A
Isolation Valve	AOV-047B	OPEN	99ECSZ1001A
Isolation Valve	AOV-047C	OPEN	99ECSZ1022A

10. Verify the following indications energized and parameters, within range specified in Section 3 (Table 3-1) of this SDD on Local Panel (B001A).

<u>Parameter</u>	<u>Inst.</u>
Exhaust Fan Air Flow Indicator	FI-60
RCB Differential Pressure Indicator	PDISH-143A, 143B & 143C

B

<u>Component</u>		<u>Status</u>	<u>Indicator</u>
Supply Fan Damper	AOD-043A	OPEN	XL-043AA
Supply Fan Damper	AOD-043B	SHUT	XL-043BB
Exhaust Fan Damper	AOD-078A	OPEN	XL-078AA
Exhaust Fan Damper	AOD-078B	SHUT	XL-078BB
Outside Air Damper	AOD-037	OPEN	XL-037A
Supply Fan	240B	STOP	XL-240BB
Supply Fan	240A	START	XL-240AA
Exhaust Fan	165B	STOP	XL-165BB
Exhaust Fan	165A	START	XL-165AA

4.1.3.10.2 Annulus Pressure Maintenance Fan (172A, 172B) and Filter Units (182A, 182B) Shift

CAUTION: Annulus Filter System components operate in related trains (A or B). Annulus Filter Fans (173A or 173B) must not be taken out of service if related Annulus Pressure Maintenance Fan (172A or 172B) or Filter Unit (182A or 182B) is operating.

4.1.3.10.2.1 Initial Conditions

1. One Annulus Filter Train (A or B) is operating, while the standby Annulus Pressure Maintenance Fan (172A or 172B), Filter Unit (182A or 182B) and Filter Fan (173A & 173B) is aligned for operation.
2. Annulus filter cell unit coolers (132, 146) are aligned for service as described by Section 4.1.2.10.3 of this SDD.

4.1.3.10.2.2 Procedure Shift from Train A Operation to Train B

1. Verify Annulus Filter Fan (173B) control (HS-173BB) is in the "AUTO" position on Back Panel (B002).
2. Place Annulus Pressure Maintenance Fan (172B) control (HS-172BB), located on Back Panel (B002), in the "START" position.
3. Verify energized filter fan (172A & 172B) operating status lights (XL-172AC & 172BC) on Back Panel (B002).
4. Verify Filter Unit (182A & 182B) operation by observing the appropriate indications (as listed below) locally, are within the limits specified in section 3 (Table 3-1) of this SDD.

Train A

PDISH-6A, 7A, 12A, 30A
75A, 76A

Train B

PDISH-6B, 7B, 12B
30B, 75B, 76B

5. Place Annulus Pressure Maintenance Fan (172A) Control (HS-172AB) located on Back Panel (B002) in the "STOP" position. Verify operating status light (XL-172AD) energized.
6. Return Annulus Pressure Maintenance Fan (172A) (of step 5 above) control (HS-172AB) to the "AUTO" position.
7. Verify related RSB Annulus Filter cell Unit Cooler (146) has started and is operating as described in section 4.2.2.7 of this SDD.

4.1.3.10.2.3 Procedure Shift from Train B Operation to Train A

1. Verify Annulus Filter Fan (173A) Control (HS-173AB) is in the "AUTO" position on Back Panel (B002).
2. Place Annulus Pressure Maintenance Fan (172A) Control (HS-172AB), located on Back Panel (B002), in the "START" position.
3. Verify Filter Fan (172A) operating status light (XL-172AC) on Back Panel (B002).
4. Verify Filter Unit (182A & 182B) operation by observing the appropriate indications (as listed below) locally, are within the limits specified in Section 3 (Table 3-1) of this SDD.

Train A

PDISH-6A, 7A, 12A, 30A
75A, 76A

Train B

PDISH-6B, 7B, 12B
30B, 75B, 76B

5. Place Annulus Pressure Maintenance Fan (172B) Control (HS-172BB) located on Back Panel (B002) in the "STOP" position. Verify operating status light (XL-172BD) energized.
6. Return Annulus Pressure Maintenance Fan (172B) (of step 5 above) control (HS-172BB) to the "AUTO" position.
7. Verify related RSB Annulus Filter Cell Unit Cooler (132) has started and is operating as described in Section 4.2.2.7 of this SDD.

4.1.4 Shutdown (S01 25A-30)

For component shutdown, which does not require immediate attention (i.e., maintenance) advantageous use of prevailing weather conditions should be made to minimize the effect of component outages.

To assure TMBDB features will be fully functional and available on demand, shutdown of components may not be such that both trains (A&B) are out of service. The specific active TMBDB features are the Containment Purge system, Containment vent system, Containment cleanup system and the Annulus cooling system.

4.1.4.1 RCB Outside Air System (Air 200)

One Supply and Exhaust Fan (240A, B & 165A, B) is normally in standby and not operating, therefore one Supply and Exhaust Fan may be shutdown with minimal affect on normal system operation. This procedure outline describes the shutdown of A/C System (200), for shutdown of one Supply and/or Exhaust Fan (240A, B & 165A, B). Refer to Section 4.1.3.10.1 of this SDD.

This procedure will shutdown Supply Fans (240A & 240B) Exhaust Fans (165A & 165B). For shutdown on one operating train (A or B), refer to Section 4.1.3.10.1 of this SDD.

1. Place Supply Fan (240A & 240B) controls (HS-240A & 240B), located on Local Panel (B001A), in the "STOP" position.

NOTE: Stopping (operating) Supply Fan (240A or B) will close the following dampers and valves, verify as indicated by energized status light located on Panel listed.

		<u>Status</u>	<u>Panel</u>	<u>Indicator</u>
a.	Supply Fan 240A	STOP	B001A	XL-240AB
b.	Supply Fan 240B	STOP	B001A	XL-240BB
c.	Discharge Damper A0D-043A	CLOSED	B001A	XL-043AB
d.	Discharge Damper A0D-043B	CLOSED	B001A	XL-043BB
e.	Outside Air Damper A0D-037	CLOSED	B001A	XL-037B
f.	Containment			
	Isolation A0V-046A	CLOSED	90CSB016	99ESCZ10043
g.	Containment			
	Isolation A0V-046B	CLOSED	90CSB016	99ESCZ1003B
h.	Containment			
	Isolation A0V-046C	CLOSED	90CSB016	99ESCZ1021B

2. Place Exhaust Fan (165A & 165B) control (HS-165A & 165B), located on Local Panel (B001A), in the "STOP" position.

NOTE: Stopping (operating) Exhaust Fan (165A or 165B) will deenergize the control system and CLOSE the following dampers and valves. Verify closed status lights energized on Panel listed.

		<u>Status</u>	<u>Panel</u>	<u>Indicator</u>
a.	Return Fan 165A	STOP	B001A	XL-165AB
b.	Return Fan 165B	STOP	B001A	XL-165BB
c.	Discharge Damper A0D-078A	CLOSED	B001A	XL-078AB
d.	Discharge Damper A0D-078B	CLOSED	B001A	XL-078BB

		<u>Status</u>	<u>Panel</u>	<u>Indicator</u>
e. Containment				
Isolation	AOV-047A	CLOSED	90CSB016	99ESCZ1002B
f. Containment				
Isolation	AOV-047B	CLOSED	90CSB016	99ESCZ1001B
g. Containment				
Isolation	AOV-047C	CLOSED	90CSB016	99ESCZ1022B

4.1.4.2 Above Operating Floor Unit Cooler (020A, 020B, 020C)

One Above Operating Floor Unit Cooler (020A, 020B or 020C) may be shutdown with minimal affect on cooling above the operating floor of the RCB.

4.1.4.2.1 Initial Conditions

Above Operating Floor Unit Coolers (020A, 020B & 020C) are operating.

4.1.4.2.2 Procedure

1. Place Unit Cooler (to be shutdown) control, (HS-020A, 020B or 020C), located on Local Panel (B001C), in the "STOP" position. This will close the indicated outlet damper, which may be verified by energized status light on Local Panel (B001C):

<u>Fan</u>	<u>HS</u>	<u>Damper</u>	<u>Indicator</u>
020A	020A	A0D-069A	XL-069AB
020B	020B	A0D-069B	XL-069BB
020C	020C	A0D-069C	XL-069CB

2. When Unit Cooler (020A, 020B or 020C) is shutdown, Discharge Dampers (A0D-095, 096, 097 & 098) will close. Verify position on Local Panel (B001C).

<u>Damper</u>	<u>Indicator</u>
AOD-095	XL-095B
AOD-096	XL-096B
AOD-097	XL-097B
AOD-098	XL-098B

4.1.4.3 LCCV Cell Unit Cooler (053)

Shutdown of the LCCV Cell Unit Cooler (053) will cause loss of cooling to the LCCV Cell (125).

4.1.4.3.1 Initial Conditions

LCCV unit is not operating.

4.1.4.3.2 Procedure

1. Place Unit Cooler (053) control (HS-053), located on Local Panel (B001C), in the "STOP" position.

NOTE: This will deenergize the control system.

2. Verify energized Unit Cooler (053) Supply Fan status (XL-053B) indication on Local Panel (B001C).

4.1.4.4 HAA Unit Cooler (024)

Shutdown of the HAA Unit Cooler (024) will cause a reduction of cooling to the head access area (Cell 151).

1. Place Unit Cooler (024) control (HS-024), located on Local Panel (B001C), in the "STOP" position.

NOTE: This will deenergize the control system.

2. Verify energized Unit Cooler (024) Supply Fan status indication (XL-024B) on Local Panel (3001C).

4.1.4.5 RCB Portable Filter/Fan Unit (070)

Refer to Section 4.1.7.2.3 of this SDD for Filter Fan (070) shutdown procedure outline.

4.1.4.6 EI&C Cubicle Unit Cooler (021, 022, 023)

One EI&C Cubicle (Cell 165, 163 or 167) Unit Cooler (021, 022 or 023) may be shutdown without loss of EI&C cubicle operation.

Place Unit Cooler (021, 022 or 023), to be shutdown, control (HS-021B, 022B or 023B), located on Back Panel (B002), in the "STOP" position. Verify energized, supply fan status light (XL-021D, 022D or 023D) on Back Panel (B002).

NOTE: This will deenergize related control system.

B

4.1.4.7 Below Operating Floor A/C System (010, 011)

Shutdown of the Below Operating Floor A/C System (010 or 011) will cause loss of cooling to the area served.

1. Place Return Fan (050 or 051) control (HS-050 or 051), located on Local Panel (B001C), in the "STOP" position.
2. Verify energized return fans operating status light (XL-050B or 051B), on Local Panel (B001C).
3. Place related Supply Fan (010 or 011) control (HS-010 or 011), located on Local Panel (B001C), in the "STOP" position. This will deenergize the related control system. Verify supply fan status indicating light (XL-10B or 011B) energized.

4.1.4.8 Inerted Cell Booster Fan (061, 062)

Inerted Cell Booster Fan (061 & 062) operate only during RCB cell deinerting.

4.1.4.8.1 Initial Conditions

Refer to SDD-82, (S01 82-40).

4.1.4.8.2 Procedure

1. Place Inerted Cell Booster Fan (061 or 062) control (HS-061 or 062), located on Local Panel (B001C), in the "STOP" position.
2. Verify energized Booster Fan (061 or 062) status indication light (XL-061B or 062B) on Local Panel (B001C).

4.1.4.9 Dome Recirculating Fan (052A, 052B)

Dome Recirculating Fan (052A or 052B) may be shutdown with minimal affect on RCB cooling.

1. Place Dome Recirculating Fan (052A or 052B) control (HS-052A or 052B), located on Local Panel (B001C), in the "STOP" position.
2. Verify energized Recirculating Fan (052A or 052B) operating status light (XL-052AB or 052BB) on Local Panel (B001C).

4.1.4.10 Annulus Filtration System

Annulus Filtration components may not be shutdown such that both Annulus Filtration train (A&B) (as listed below) are inoperable:

<u>Component</u>	<u>Train A</u>	<u>Train B</u>
Filter Unit	182A	182B
Pressure Maintenance Fan	172A	172B
Filter Fan	173A	173B
AOD	017A	017B
AOD	018A	018B
MOD	015A	015B
MOD	016A	016B

4.1.4.10.1 Annulus Pressure Maintenance Fan (172A, 172B) and Filter Unit (182A, 182B)

4.1.4.10.1.1 Initial Conditions

1. Redundant Fan (172A or 172B) and Filter Unit (182A or 182B) is operable and in standby condition.
2. If Fan or filter to be shutdown is operating, shift to standby condition as described by section 4.1.3.10.2 of this SDD.

B

4.1.4.10.1.2 Procedure

Place Annulus Pressure Maintenance Fan (172A or 172B) control (HS172AB or 172BB), located on Back Panel (B002), in the "STOP" position. Verify energized, fan operating status light (XL-172AD or 172BD) on Back Panel (B002).

NOTE: This will deenergize the control system and close related damper (MOD 15A or 15B) and shutdown related RSB Unit Cooler (132 or 146). Refer to section 4.2.4.7 of this SDD.

2. Verify energized, Unit Cooler (132 or 146) operating status light (XL-132D or 146D), located on Back Panel (B002).

4.1.4.11 RCB Annulus Cooling System (Fans A174A, C, E or A174B, D, F)

Annulus Cooling System is provided as a TMBDB feature and is to be used following a TMBDB event. This procedure places the Annulus Cooling System components in standby condition after the TMBDB event when the situation permits.

4.1.4.11.1 Initial Conditions

Redundant Cooling System Train "A" or Train "B" is operating per SOI 25A-2 and 25A-37.

4.1.4.11.2 Procedure

1. Place key operated switch (HS-183) located on BP (B002) in the "ENABLE" position. Place Train "A" or Train "B" components control switches in the "STOP" position on the Back Panel (B002) and verify energized status lights (as listed below) on BP (B002). Verify the discharge and Annulus Roof Exhaust Dampers are closed by their status lights on BP (B002).

	<u>Component</u>		<u>Control Switch #</u>	<u>Indicator</u>
<u>TRAIN A</u>				
a.	Cooling Fan -	A174A	HS174A	XL-174AB
b.	Cooling Fan -	A174C	HS174C	XL-174CB
c.	Cooling Fan -	A174E	HS174E	XL-174EB
d.	Discharge Damper	MOD-001A		XL-001AB
e.	Discharge Damper	MOD-001C		XL-001CB
f.	Discharge Damper	MOD-001E		XL-001EB
g.	Roof Exhaust Damper	MOD-090A		XL-090AB
h.	Roof Exhaust Damper	MOD-090C		XL-090CB

TRAIN B

a.	Cooling Fan -	A174B	HS174B	XL-174BB
b.	Cooling Fan -	A174D	HS174D	XL-174DB
c.	Cooling Fan -	A174F	HS174F	XL-174FB
d.	Discharge Damper	MOD-001B		XL-001BB
e.	Discharge Damper	MOD-001D		XL-001DB
f.	Discharge Damper	MOD-001F		XL-001FB
g.	Roof Exhaust Damper	MOD-090B		XL-090BB
h.	Roof Exhaust Damper	MOD-090D		XL-090DB

D

2. Place Annulus Cooling System (train A or B) Enable/Disable Control Switches (HS-183 or 184), located on Back Panel (B002), in the "DISABLE" position.

4.1.4.12 Containment Cleanup System

Containment Cleanup System is provided as a TMBDB feature and is used only during a TMBDB event. This procedure places the Containment Cleanup System in standby condition after the TMBDB event when the situation permits.

D

4.1.4.12.1 Initial Conditions

Containment Cleanup System is operating per SOI 25A-2 and SOI 25A-33.

4.1.4.12.2 Procedure

1. Place the components Control Switches (listed below) located on the Back Panel (B002) in the STOP position. Verify their position status lights on BP (B002).

D

	<u>Component</u>	<u>Component #</u>	<u>Control Switch #</u>	<u>Component Status</u>
1)	Containment Clean-up Scrubber Exhaust Fan	A175A-B	HS175A-B	STOPPED

D

<u>Component</u>	<u>Component #</u>	<u>Control Switch #</u>	<u>Component Status</u>
ii) Fan A175A-B Discharge Damper	MOV109A-B	-	CLOSED
iii) Fan A175A-B Suction Damper	FMD27A-B	-	OPEN
iv) Containment Purge Valve	MOV19A	HS19A	CLOSED
Containment Purge Valve	MOV19B	HS19B	CLOSED
Containment Purge Valve	MOV19C	HS19C	CLOSED
Containment Purge Valve	MOV19D	HS19D	CLOSED
v) Containment Vent Valve	MOV106A	HS106A	CLOSED
Containment Vent Valve	MOV106B	HS106B	CLOSED
Containment Vent Valve	MOV106C	HS106C	CLOSED
Containment Vent Valve	MOV106D	HS106D	CLOSED

D

	<u>Component</u>	<u>Component #</u>	<u>Control Switch #</u>	<u>Component Status</u>
vi)	Containment Vent Flow Control Valve	FMV107A-B	HS107A-B	CLOSED
vii)	Containment Clean-up Pump	75CCP001A-B	TBD	STOPPED

HOLD
75001097

2. Shut down the containment cleanup water system per SOI 75A-16.

4.1.5 Draining (SOI 25A-31)

4.1.5.1 Heating and Cooling Coils

1. Drain the following HVAC components as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
Chilled Water	23	23-5/23-12
Plant Service Water	75A	75A-19

- a. RCB Supply Air Handling Unit (200)
- b. Unit Cooler Cooling Coils (010, 011, 020A, 020B, 020C, 021, 022, 023, 024, & 053).

4.1.6 Refilling (SOI 25A-15)

1. Refill the following HVAC components as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
Chilled Water	23	23-1/23-8
Plant Service Water	75A	75A-3

- a. RCB Supply Air Handling Unit (200)
- b. Units Cooler Cooling Coils (010, 011, 020A, 020B, 020C, 021, 022, 023, 024 & 053).

4.1.7 Infrequent Operations

4.1.7.1 Open Hatch Refueling (SOI 25A-24)

4.1.7.1.1 RCB HVAC Alignment

4.1.7.1.1.1 Initial Conditions

RCB HVAC System is operating as described in Sections 4.1.2.1 through 4.1.2.10 and 4.1.3.1 through 4.1.3.6 of this SDD.

4.1.7.1.1.2 Procedure

1. Place the following component (Annulus Filter Train A or B) controls in the START position.

	<u>HS</u>	<u>Panel</u>
Annulus Filter Fan	173AB	B002
Annulus Filter Fan	173BB	B002

2. Verify Annulus Filter Fan and Pressure Maintenance Fan (173A & 172A or 173B & 172B) operation as indicated by (FR-14A or 14B), located on Back Panel (B002).
3. Verify RSB Cleanup Filter Unit (184A or 184B) is operating as described by Section 4.2.2.10 of this SDD.
4. Shutdown RCB Supply and Exhaust Fans (240A, 240B, 165A & 165B) as described by Section 4.1.4.1 of this SDD.
5. Open Damper AOD-017A & 017B, Close Damper AOD-018A & 018B by placing Controls located on Back Panel (B002) in the appropriate position.
6. Verify 1/4" W.G. negative pressure for the combined RSB/RCB as indicated by POI-138, located on SGB Local Panel (B001A), then restart RCB Supply Fans (240A, 240B) as described in Section 4.1.2.1 of this SDD.

4.1.7.1.2 RCB HVAC Return to Normal Alignment

4.1.7.1.2.1 Initial Conditions

HVAC System is aligned and operating as described by Section 4.1.7.1.1 of this SDD.

4.1.7.1.2.2 Procedure

1. Place RCB Supply and Exhaust Fan (240A & 165A or 240B & 165B) in service as described by Section 4.1.2.1 of this SDD.
2. Shutdown operating Annulus Filter Fan (173A or 173B) as described by Section 4.1.4.10.2 of this SDD.

4.1.7.2 Cell Deinerting/Inerting (SOI 25A-25)

4.1.7.2.1 Initial Conditions

1. Electrical Power is available (recepticle 480V-AC).
2. Portable radiation monitor (96PPRQI-004A) is available for use. Refer to SDD-96 (SOI 96-8).
3. System 28 supply and return piping to appropriate cell is aligned as described by SDD-28, (SOI 28-1, 28-5 or 28-9) to accomplish the inerting or deinerting procedure.

4.1.7.2.2 Deinerting

1. Remove blank flange (refer to P&ID NV501) and connect Portable Filter Fan (070) flexible duct to System 28 return line from the cell.
2. Connect Portable Filter Fan (070) outlet flexible duct to the nearest System 25A Exhaust duct (Refer to P&ID NV501).
3. Connect and align for operation System 96 radiation monitor, as described by SDD-96, (SOI 96-8).
4. Place Filter/Fan (070) control (HS-070), located on portable skid, in the "START" position.
5. Refer to SDD-96 (SOI 96-8) to verify start of Filter Fan (070) as indicated by (FI-004A), located on portable radiation monitor skid.
6. Remove blind flange located on System 28 supply line to cell to allow air flow into cell being deinerted.

4.1.7.2.3 Inerting

1. Replace blind flange located on System 28 supply line to cell.
2. Introduce gas into cell as described by SDD-28, (SOI 28-1, 28-5 or 28-9) and (SOI 82-33).
3. After the cell atmosphere has been completely replaced by gas, as indicated by (SDD-82) AISHL-53A (located on Local Panel 82AABN011), place Portable Filter Fan (070) control (HS-070), located on portable skid, in the "STOP" position.
4. Shutdown System 96 monitor as described by SDD-96, (SOI 96-8).
5. Disconnect flexible fan inlet duct from System 28 return line and immediately replace blind flange.
6. Disconnect flexible fan outlet duct from System 25A exhaust duct and replace blind flange.

4.1.7.3 RCB HVAC Operation During Containment Isolation (SOI 25A-26)

4.1.7.3.1 Isolation

Upon receiving a containment isolation signal, the following will occur and may be verified on Back Panel (B002).

1. Operating Supply Fans (240A or 240B) stops and standby Fan (240A or 240B) does not start, as indicated by energized, status lights (XL-240AB or 240BB).
2. Operating Exhaust Fans (165A or 165B) stops and standby Fan (165A or 165B) does not start, as indicated by energized, status lights (XL-165AB or 165BB).

3. Containment Isolation Valves (AOV-046A, 046B, 046C, 047A, 047B & 047C) close, as indicated on Main Panel (90CSB016) by energized status indication.

<u>Containment Isolation Valve</u>	<u>Indicator</u>
AOV-046A	99ESCZ1004A
AOV-046B	99ESCZ1003A
AOV-046C	99ESCZ1021A
AOV-047A	99ESCZ1002A
AOV-047B	99ESCZ1001A
AOV-047C	99ESCZ1022A

4. Redundant Annulus Pressure Maintenance Fan (172A or 172B) will start, as indicated by operating status light (XL-172AC or 172BC) located on Back Panel (B002).
5. Annulus Filter Fans (173A & 173B) start. When all Annulus Filter and Pressure Maintenance Fans (172A, 172B, 173A & 173B), are proven to be in operation as indicated by (FR-014A & 014B) located on Back Panel (B002), shutdown (manually) one Annulus Filter train by placing control (HS-172AB & 173AB or 172BB and 173BB) located on Back Panel (B002), in the "STOP" position.
6. Remaining RCB HVAC components shall continue to operate.

4.1.7.3.2 RCB HVAC Return to Normal

1. Following containment isolation signal clearing, restart RCB Supply and Exhaust Fans (240A & 165A or 240B & 165B) as described by Section 4.1.2.1 of this SDD.
2. Shutdown operating Annulus Filter Fan (173A or 173B)

4.1.7.4 HVAC Operation During ILRT (SOI 25A-27)

(TBD)

HOLD 25000144

4.1.7.5 RCB RAPS Cell Exhaust System Operation During High Radiation
in RAPS Cell (SOI 25A-28)

4.1.7.5.1 Initial Conditions

1. System 96 monitor (96PMBRX067) have detected radiation and closed RAPS Cell Exhaust System isolation damper (AOD-079).
2. System 82 has determined source (cell) of high radiation.

4.1.7.5.2 Procedure

1. Close affected cell outlet isolation valve. (V-025, 026, 027, 028, 029, 030, 031, 032 or 033)
2. Institute cleanup of RAPS cell exhaust duct as described by Section 4.1.7.9 of this SDD.
3. When exhaust duct cleanup is complete, place (AOD-079) control (HS-079), located on Local Panel (B0050), in the "OPEN" position.
4. Verify energized Damper (AOD-079) operating status light (XL-079A) on Local Panel (B0050). This will allow maintenance of negative pressure in remainder of RAPS cells (153-156 & 105BC-105BG), and cleanup of containment cell by System 82.

4.1.7.6 RCB RAPS Cell Exhaust System Operation During RAPS Cell Maintenance (SOI 25A-36)

4.1.7.6.1 Initial Conditions

Cell atmosphere is acceptable for maintenance as indicated by not having a RCB RAPS Exhaust Air Radiation High Alarm (PAR 25-286), located on Local Panel (B005Q).

4.1.7.6.2 Procedure

1. Open cell (105BC-105BG, 153-156) purging port (Refer to P&ID NV512), to allow air infiltration into desired cell.
2. When cell atmosphere is compatible with area atmosphere, open cell door and replace cell purging port. Proceed with required maintenance.
3. Upon completion of maintenance, close cell door. Verify cell negative pressure and air tightness as indicated by (TBD). | HOLD 25000567

4.1.7.7 Annulus Cooling System Operation (Fans A174A, C, E; B, D, F)
(SOI 25A-37)

This procedure will place Annulus Cooling System in operation following a TMBDB event (as required by BDB 10-1).

4.1.7.7.1 Initial Conditions

Procedure of Section 4.1.2.11 has been completed.

4.1.7.7.2 Procedure

1. Place Annulus Cooling System "DISABLE/ENABLE" key operated switch (HS-183) located on Back Panel (B002), in the "ENABLE" position.

NOTE: This will activate the controls and allow starting of the annulus Cooling Fans. Place controls listed below in start position. Verify component status on Back Panel (B002) as given below:

KEY OPERATED CONTROL SWITCH (HS-183) on BP (B002) (Train 'A')			<u>Status</u>	<u>Indication</u>
a. Annulus Cooling Fans A 174A			START	XL-174AA
	A 174C		START	XL-174CA
	A 174E		START	XL-174EA
b. Fan Dampers MOD-001A			OPEN	XL-001AA
	001B		OPEN	XL-001BA
	001C		OPEN	XL-001CA
c. Exhaust Dampers MOD-090A			OPEN	XL-090AA
	090C		OPEN	XL-090CA

KEY OPERATED CONTROL SWITCH (HS-184) on BP (B002) (Train 'B')			<u>Status</u>	<u>Indication</u>
a. Annulus Cooling Fans A174B			START	XL-174BA
	A174D		START	XL-174DA
	A174F		START	XL-174FA
b. Fan Dampers MOD-001B			OPEN	XL-001BA
	001D		OPEN	XL-001DA
	001F		OPEN	XL-001FA
c. Exhaust Dampers MOD-090B			OPEN	XL-090BA
	090D		OPEN	XL-090DA

4.1.7.8 Containment Cleanup System Operation (SOI 25A-33)

This procedure places the Containment Cleanup System components in position to properly function following a TMBDB event; describes the operation of the TMBDB equipment and returns the system to its normal status (standby), following the operation.

4.1.7.8.1 Containment Cleanup System Alignment

1. Verify Containment Isolation Valve controls located on Back Panel (B002), are in the following position: Verify their status lights on BP (B002).

D

<u>Valve</u>	<u>HS</u>	<u>Position</u>
MOV-019A	019A	CLOSED
MOV-019C	019C	CLOSED
MOV-106A	106A	CLOSED
MOV-106C	106C	CLOSED
MOV-019A, 019C, 106A, 106C	181	DISABLE
MOV-019B	019B	CLOSED
MOV-019D	019D	CLOSED
MOV-106B	106B	CLOSED
MOV-106D	106D	CLOSED
MOV-019B, 019D, 106B, 106D	182	DISABLE

2. Verify Containment Cleanup Scrubber Exhaust Fan and Damper controls, located on Back Panel (B002), are in the following positions: Verify their status lights on BP (B002).

D

<u>Component</u>	<u>HS</u>	<u>Position</u>
Scrubber System Inlet	107A,B	CLOSED
Valves FMV-107A,B		
Exhaust Fan (A175A)	175A	STOP
Exhaust Damper (MOV-109A)	109A	AUTO
Bypass Damper (MOV-108A)	108A	CLOSED
Exhaust Fan (A175B)	175B	STOP
Exhaust Damper (MOV-109B)	109B	AUTO
Bypass Damper (MOV-108B)	108B	CLOSED

3. Align System 75CC as described by (SOI 75A-12).
4. Verify the criteria for starting the cleanup system as given in Appendix A, Sections A.2 and A.3 of BDB 10-1 are satisfied.

4.1.7.8.2 Containment Cleanup System Operation

Containment Cleanup System operation shall be initiated by the following:

Initial Conditions

1. The following systems are operating per:
 - a. Building Electrical Power, SDD-12, Section 4.1.1 (SOI 12-10)

The following supply breakers are closed.

<u>Component</u>	<u>Bus No.</u>	<u>Breaker No.</u>
Containment Cleanup Scrubber Exhaust Fan A 175A	12NIE032A	PD32A
Containment Cleanup Scrubber Exhaust Fan A 175B	12NIE032B	PD32B

 - b. Compressed Gas System, SDD-22, Section 4.5.1 (SOI 22-04).
 - c. Containment Cleanup Water System, SDD-75A, Section 4.3.4 (SOI 75A-12).
2. Containment Cleanup Scrubber Exhaust Fans (A 175A-B) control switches (HS 175A-B) located on BP (B002) are in the "STOP" position.

3. Control circuits for TI 155A-BA, TI 81AA-BB, TI 82AA-BB, TI 83AA-BB, PDT 84A-B, YSH 68A-B, FSL 26A-B, FI 27A-B, FSL 77A-B, FMV 107A-B, and FMD 27A-B are energized.

Procedure

Train 'A'

1. Place Scrubber Exhaust Fan (A 175A) bypass Damper (MOV-108A) control switch (HS-108A), located on Back Panel (B002), in the "OPEN" position.
2. Verify the following status/position lights on Back Panel (B002).

a. Circulating Water Pump	75CCP001A	START
b. Fan Bypass Damper	MOV-108A	OPEN
c. Containment Cleanup Flow Control Valve	FMV-107A	CLOSED

3. Place key operated switch (HS-181) located on BP (B002) in the "ENABLE" position. Place Containment Vent Valves (MOV-106A & 106C) control switches (HS-106A & 106C), located on Back Panel (B002), in the "OPEN" position. Verify their open status lights on BP (B002).
4. When flow as indicated by FIC-027A and containment pressure as indicated by 27ICPI001A on BP (B002) decrease to zero, open containment flow control valve FMV-107A by placing its control switch (HS-107A) located on BP (B002) in "OPEN" position. Verify valve open status light on BP (B002).
5. When flow as indicated by FIC-027A and containment pressure as indicated by 27ICPI001A on Back Panel (B002) again decreases to zero, place Fan Bypass Damper (MOV-108A) control switches (HS-108A) located on BP (B002), in the "CLOSE" position. Verify damper closed status light on BP (B002).

6. Place Scrubber Exhaust Fan (A 175A) control switch (HS-175A), located on Back Panel (B002), in the "START" position. Verify fan start and discharge damper (MOV109A) open light indications on BP (B002).
7. If train "A" start is established refer to step 14 of this procedure. If not continue as follows for starting Train "B".

Train 'B'

8. Place Scrubber Exhaust Fan (A 175B) Bypass Damper (MOV-108B) control switch (HS-108B) located on Back Panel (B002), in the "OPEN" position.

9. Verify the following status/position indicating lights on Back Panel (B002).

a. Circulating Water Pump	75CCP001B	START
b. Fan Bypass Damper	MOV108B	OPEN
c. Circulating Water Pump	75CCP001A	STOP
d. Fan Bypass Damper	MOV108A	CLOSED

10. Place key operated switch (HS-185) located on BP (B002) in "ENABLE" position. Place Containment Vent Valves (MOV-106B & 106D) control switches (HS-106B & 106D), located on Back Panel (B002), in the "OPEN" position. Verify their OPEN status lights on BP (B002).

11. As flow and containment pressure decrease as indicated by FIC-027B and 27ICP001B on Back Panel (B002), open flow control valve FMV-107B by placing its control switch (HS-107B) in the "OPEN" position. Verify FMV107B open light indication on BP (B002).
12. When flow and containment pressure as indicated by FIC-027B and 27ICP001B on Back Panel (B002) again decrease to 0 place Fan Bypass Damper (MOV-108B) control (HS-108B) located on BP (B002) in the "CLOSE" position. Verify damper CLOSED light indication on BP (B002).
13. Place Scrubber Exhaust Fan (A 175B) control (HS-175B), located on Back Panel (B002), in the "START" position. Verify Fan start and discharge damper (MOV109B) open light indications on BP (B002).
14. When RCB pressure as indicated by 27ICPI001A-B located on BP (27ICB002) reaches less than atmospheric pressure, place Containment Purge Valves MOV-019A & C (train A) or MOV-019B & D (train B) control (HS-019A, 019C) or (HS-019B, 019D), located on Back Panel (B002), in the "OPEN" position. Verify purge valves, "OPEN" status indications on Back Panel (B002).

NOTE: Containment Purge Valves cannot be opened until the RCB is at negative pressure with respect to outside atmosphere.

4.1.7.8.3 Containment Cleanup System Shutdown(TBD)

4.1.7.9 HVAC Duct Cleanup Following Contamination (SOI 25A-45) (TBD)

HOLD
25000144

4.2 Reactor Service Building HVAC

NOTE: All equipment numbers are prefixed by 25ASA. All instrument numbers are prefixed by 25AS. Panel numbers are prefixed by 25NI (local) and 25AA (Back Panel).

4.2.1 Initial Fill - Cooling and Heating Coils (SOI 25A-3)

1. Fill the following components as described in the indicated SDD:

<u>SDD</u>	<u>SOI</u>
23	23-1/23-8
75A	75A-3

- a. Air handling unit (100, 101) Heating and Cooling Coils.
- b. Unit coolers 103, 104A, 104B, 131, 132, 133, 134, 137, 138, 139A, 139B, 142A, 142B, 143, 145 and 146.
- c. Unit Heater - 191, 135, 136, 193, 194.
- d. Reheat Coils - 180, 181

4.2.2 Startup (SOI 25A-4)

This procedure is written to place train "A" in service and, where redundant, train "B" in auto-standby condition.

4.2.2.1 RSB AHU (100)

4.2.2.1.1 Initial Conditions

1. Heating and cooling coils are filled and aligned for operation as specified in Section 4.2.1 of this SDD.

2. The following systems are operating or controlled by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-2/23-10
d. Service Water	75A	75A-7
e. Radiation Monitoring	96	96-5

3. Damper (AOD-203A or 203B) is open and RSB Cleanup Filter Train is operating as described by Section 4.2.2.10 of this SDD.

4.2.2.1.2 Procedure

1. Place Supply Fan (140A and 140B) controls (HS-140A & 140B), located on Local Panel (B005D), in the "AUTO" position.
2. Place outside air damper AOD-10 control as indicated below:

<u>Switch</u>	<u>Panel</u>	<u>Position</u>
HS-010	B005D	REMOTE
HS-010A	B005D	AUTO
HS-010B	B002	AUTO

3. Place HW Recirculating Pump (75HWP017) Control (HS-017), located on Local Panel (B005D), in the AUTO position.
4. Place Exhaust Fan (160A) controls (HS-160A), located on Local Panel (B005D), in the "START" position. This will energize the control system and perform the following, which may be verified on Local Panel (B005D).

<u>Component</u>	<u>Status</u>	<u>Energized Indicator</u>
a. Exhaust Fan (160A)	START	XL-160AA
b. Damper (AOD-025A)	OPEN	XL-025AA
c. Damper (PAD-108A)	OPEN	XL-108AA
d. Damper (AOD-010)	OPEN	XL-010A
e. Supply Fan (140A)	START	XL-140AA
f. Damper (AOD-009A)	OPEN	XL-009AA

5. Place Exhaust Fan (160B) controls (HS-160B), located on Local Panel (B005D), in the "START" position. This will energize the control system and perform the following, which may be verified on Local Panel (B005D).

<u>Component</u>	<u>Status</u>	<u>Energized Indicator</u>
a. Exhaust Fan (160B)	START	XL-160BA
b. Damper (AOD-025B)	OPEN	XL-025BA
c. Damper (PAD-108B)	OPEN	XL-108BA
d. Supply Fan (140B)	START	XL-140BA
e. Damper (AOD-009B)	OPEN	XL-009BA

6. Verify Roll Filter Pressure Drop and Bag Filter Pressure Drop, is within limits specified by section 3 (Table 3-2) of this SDD and indicated by (PDISH-3 and PDISH-5) locally.
7. Verify normal operation of water control valves (TV-507 & TV-372) as indicated by the air temperature indicating controller (TIC-8) on Local Panel (B005D) is within range specified in Section 3 (Table 3-2) of this SDD.

NOTE: The outside air damper (AOD-010) will close if a temperature of 40°F or less is sensed downstream of heating coil by low temperature safety thermostat (TSL-007A through 007G).

8. Verify Supply (A140A & 140B) and Exhaust Fan (A160A & 160B) operation, as indicated on Local Panel (B005D) by supply/return air flow indicators (FI-182 & FI-181) is within range as specified by section 3 (Table 3-2) of this SDD.
9. Verify Exhaust Fan Damper (PAD-108A & 108B) operation as indicated by a negative pressure of 1/4" WG in the building, (Cells 305A, 306A, 307A & 308A), using PDIC-108 located on Local Panel (B005D) and (PDI-108) on Back Panel (B002).
10. Verify a negative pressure in cell 336 with respect to cell 306A as indicated by (PDIC-32) on Local Panel (B005D).
11. After system operation stabilizes, verify operation of the following temperatures, as specified in Section 3 (Table 3-2) of this SDD, and indicated on Local Panel (B005D).

a. Outside Air Temp	TIS-1
b. Mixed Air Temp	TI-2
c. Heating Coil Air Leaving Temp	TI-6
d. Supply Air Temp	TIC-8
e. Return Air Temp	TI-23

4.2.2.2 RAPS and CAPS Cell Exhaust Fans (162A and 162B) and Inerted Cells Booster Fan (144)

4.2.2.2.1 Initial Conditions

1. Building Electric Power (SDD-12) is available and the Service and Instrument Air System (SDD-22) is in operation as described in (SOI 12-10 and 22-4) of their respective SDD's.

2. Conditions described by Inert Gas Receiving and Processing System SDD-82 (S01-82-13) related to inerted cell booster fan are met.

4.2.2.2.2. Procedure

1. Place RAPS & CAPS Exhaust Air Damper (AOD-026) Control (HS-026), located on Local Panel (B0050), in the OPEN position.
2. Place Exhaust Fan (162A or 162B) control (HS-162A or 162B), located on Local Panel (B0050), in the START position. Verify operation as indicated on Local Panel by energized fan status light (XL-162AA or 162BA).

NOTE: Starting of the Exhaust Fans (162A or 162B) will energize the control system and open the operating fans discharge damper (AOD-090A or 090B). Verify energized status indication (XL-090AA or 09BA).

3. Place standby Exhaust Fan (162A or 162B) control, located on Local Panel (B0050), in the AUTO position.

This configuration represents normal operating conditions.

NOTE: The activation of Low Air Flow on Local Panel (B0050) will stop the operating Exhaust Fan (162A or 162B) and close the associated discharge damper (AOD-090A or 090B). The redundant Fan will automatically start and its discharge damper will open.

4. Place inerted cell booster fan (144) control (HS-144), located on Local Panel (B0050) in the "START" position. Verify operation as indicated by energized fan status lights (XL-144A).

NOTE: A signal from Radiation Monitor (96PMBRE066) will close Damper (AOD-026) and shutdown Exhaust Fans (162A & 162B). Damper must be manually reopened.

4.2.2.3 RAPS and CAPS Unit Cooler System (131)

4.2.2.3.1 Initial Conditions

1. Unit Cooler Cooling Coil is filled and aligned for operation as specified in Section 4.2.1 of this SDD.
2. Unit Cooler Throwaway Filter is installed.
3. The following systems are operating as described by the indicated section and SOI:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10
d. Radiation Monitoring	96	96-5

4. RAPS and CAPS cell exhaust fan is in operation as described in Section 4.2.2.2 of this SDD.

4.2.2.3.2 Procedure

1. Place Unit Cooler (131) control (HS-131), located on the local control Panel(B0050), in the START position. This will energize the control system.
2. Verify Unit Cooler (131) Cooling Coil Entering Air and Leaving Air Temperature as indicated on Local Panel (B0050), by (TI-154 & 155), within range specified by section 3 (Table 3-2) of this SDD.
3. Verify Unit Cooler (131) throwaway filter d/p indicator (PDI-153) operation locally, is within the range specified in section 3.0 (Table 3-2) of this SDD.

4.2.2.4 Refueling Communication Center A/C System (103)

4.2.2.4.1 Initial Conditions

1. A/C Unit Cooling Coil (103) is filled and aligned for operation as specified in Section 4.2.1 of this SDD.
2. The following systems are operating as described by the indicated SDD.

<u>System</u>	<u>SDD</u>	<u>SOI</u>
Electrical Power	12	12-10
Compressed Gas	22	22-4
Chilled Water	23	23-3/23-10

4.2.2.4.2 Procedure

1. Place A/C unit (103) control (HS-103) located on Local Panel (B005A) in the START position. This will energize the control system, and open outside air Damper (AOD-171). Verify Fan and damper operating status indication energized.

		<u>Status</u>	<u>Indication</u>
a. Supply Fan	131	Start	XL-131A
b. Outside Air Damper	AOD-171	Open	XL-171A

3. Verify Roll Filter Pressure Drop as indicated by (PDISH-037) locally is within the range specified by Section 3 (Table 3-2) of this SDD.
4. Verify cooling coil leaving air and mixed air temperature as indicated by (TI-036 and 267) on Local Panel (B005A) is within range specified in section 3 (Table 3-2) of this SDD.

4.2.2.5 ABHX Cell Unit Cooler (104A, 104B)

4.2.2.5.1 Initial Conditions

1. Unit Cooler Cooling Coil is filled and aligned for operation as specified in Section 4.2.1 of this SDD.
2. Throwaway Filter of Unit Cooler is installed.
3. The following systems are operating as described by the indicated SDD and SOI:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Chilled Water	23	23-2

4.2.2.5.2 Procedure

1. Place SSPLS Control (HS-SS3A) and U.C. (104A) SSPLS Control (HS-104A), located on SSPLS Panel (12SSB350A), in the REMOTE position.
2. Place SSPLS Control (HS-SS3B) and U.C. (104B) SSPLS Control (HS-104B), located on SSPLS Panel (12SSB350B) in the REMOTE position.
3. Place Unit Coolers (104A) control (HS-104AB), located on the Back Panel (B002), in the "START" position and verify energized, operating status indication light (XL-104AC). Start of Unit Cooler (104A) Supply Fan will energize control system.
4. Verify throwaway Filter d/p as indicated by (PDISH-14A) locally, is within limits specified in section 3 (Table 3-2) of this SDD.

5. Verify indication locally for the following, is within limits specified in section 3 (Table 3-2) of this SDD.

- a. Filter d/p (PDISH-014A)
- b. Cooling Coil inlet (TI-015A)
- c. Cooling Coil Outlet (TI-016A)
- d. Cell 352A (PDH&DS) (TI-058A)

6. Place Unit Cooler (104B) control (HS-104BB), located on Back Panel (B002), in the "START" position and verify operating status lights (XL-104BC).

7. Verify the following local indications are within range specified in section 3 (Table 3-2) of this SDD:

- | | |
|-------------------------------------|-----------|
| a. Filter d/p | PDISH-14B |
| b. Cooling Coil inlet | TI-015B |
| c. Cooling Coil outlet | TI-016B |
| d. Cell (353A) Temperature (PDH&DS) | T060A |

8. Place Unit Coolers (104A & 104B) controls (HS-104AA & 104BA), located on Local Panels (B001G & B001H) in the "NEUTRAL" position.

4.2.2.6 ABHX Unit Heater (191)

4.2.2.6.1 Initial Condition

- 1. Unit Heater (191) Coil is filled and aligned for operation as described in Section 4.2.1 of this SDD.
- 2. Electrical Power is available as described by SDD-12 (SOI 12-10).

4.2.2.6.2 Procedure

1. Place Hot Water System in service as described in SDD-75A, (SOI 75A-3).
2. Place Unit Heater (A191) control (HS-191), located on Local Panel (B005Q) in the AUTO position, and verify status indicator light (XL-191A).

NOTE: Unit Heater (191) sequences with cell temperature as sensed by (TIS-22) locally.

3. Verify Cell Temperature Indication (TIS-022) locally, is within range specified in section 3 (Table 3-2) of this SDD.

4.2.2.7 Deleted

4.2.2.8 Stairwell Pressurization Fans (166, 167, 168 and 169)

4.2.2.8.1 Initial Conditions

Electric Power is available and operating as described in SDD-12, (SOI 12-10).

4.2.2.8.2 Procedure

1. Place Fan (166) control (HS-166), located on the Plant Fire Protection System Control Panel (26B0B018), in the "AUTO" position.

NOTE: Starting of Fan (166) will open damper (MOD-159)

2. Repeat for the following fans, controls and dampers:

<u>Fan</u>	<u>Control</u>	<u>Damper</u>
167	HS-167	MOD-157
168	HS-168	MOD-158
169	HS-169	MOD-160

NOTE: Stairwell pressurization Fans are started (when in AUTO as described above) by:

- (a) Fire detection control module
- (b) Manual Fire alarm station
- (c) HVAC Fire detections control module.

4.2.2.9 RSB Smoke Vent Fan (165)

Refer to SDD-26B, (SOI 26B-13).

4.2.2.10 RSB Clean-Up Filter Train (A&B)

This procedure places RSB Cleanup Filter Train A consisting of RSB Cleanup Filter Unit (184A), Filter Fan (185A) and Unit Cooler (133) in service. RSB Cleanup Filter Train B consisting Filter Unit (184B), Filter Fan (185A) and Unit Cooler (134) in standby.

4.2.2.10.1 Initial Conditions

1. Unit Cooler Cooling Coils are filled and aligned for operation as described in SDD-23 (SOI 23-2) & Section 4.2.1 of this SDD.
2. The following systems are operating as described by the indicated SDD and SOI:

	<u>System</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10
b.	Chilled Water	23	23-2
c.	Radiation Monitoring	96	96-2

4.2.2.10.2 Procedure

1. Place SSPLS Panel Control (HS-SS3A) and U.C. (133) Control (HS-133), located on SSPLS Panel (12SSB350A), in the REMOTE position.

2. Place RSB Cleanup Filter Unit (184A) and Filter Fan (185A) Controls (12SSBHS-184A & 185A), located on SSPLS Panel (12SSB350A), in the REMOTE position.
3. Place SSPLS Panel Control (HS-SS3B) and U.C. (134) Control (HS-134), located on SSPLS Panel (12SSB350B), in the REMOTE position.
4. Place RSB Cleanup Filter Unit (184B) and Filter Fan (185B) Controls (12SSBHS-184B & 185B), located on SSPLS Panel (12SSB350B), in the REMOTE position.
5. Place Unit Cooler (133 and 134) controls (HS-133B & 134B) located on Back Panel (B002), in the "AUTO" position.
6. Place Clean-Up Filter Fan (185A) control (HS-185AB), located on the Back Panel (B002), in the "START" position. This will start the Unit Cooler (133) and energize the control system. Verify status indication light energized (XL-133C) on Back Panel (B002).
7. Verify U.C. (133) throwaway filter d/p indicator (PDISH-134A) locally is within range specified by Section 3 (Table 3-2) of this SDD.
8. Verify U.C. (133) Cooling Coil air inlet and outlet temperature indication (TI-266A, 254A) locally is within range as specified in Section 3 (Table 3-2) of this SDD.
9. Place Clean-Up Filter Fan (185B) Control (HS-185BB), located on Back Panel (B002), in the "AUTO" position.

NOTE: Upon activation of low flow alarm Unit Cooler (133 or 134) and its related RSB Cleanup Filter Fan (185A or B) will stop, and the redundant RSB Cleanup Filter Fan and Unit Cooler (185A, 133 or 185B, 134) will start automatically.

10. Verify the following indications are within range specified in Section 3 (Table 3-2) of this SDD.

	<u>Inst.</u>	<u>Location</u>
a. Bag Filter Differential Pressure	PDISH-193A	Local
b. HEPA Filter Differential Pressure	PDISH-192A	Local
c. Charcoal Filter Differential Pressure	PDISH-191A	Local
d. HEPA Filter Differential Pressure	PDISH-190A	Local
e. Filter Unit A Differential Pressure	PDISH-197A	Local
f. Charcoal Filter Inlet Air Temp	TI-245A	B005E
g. Charcoal Filter Outlet Air Temp	TI-246A	B005E
h. Unit 184A Outlet Air Temp TE-189AB	TBD	TBD

HOLD
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11. Place RSB AHU (100), Supply Fans (140A & 140B) and Exhaust Fans (160A & 160B) in service as described by Section 4.2.2.1 of this SDD.

4.2.2.11 RSB Portable Filter Fan (172)

CAUTION: Potential radiation/contamination hazard is present. All work shall be inspected by Health Physics.

4.2.2.11.1 Initial Condition

Electrical power receptacle is available (480 VAC).

4.2.2.11.2 Procedure

1. Connect Portable Filter Fan Unit (172) to the desired HVAC connection.
2. Plug Filter Fan Unit (172) into the nearest receptacle and place the Fan control switch (HS-172), in the "START" position.

3. Verify filter operation as indicated by d/p indicators (PDI-152 and PDI-161) locally is within limits specified in Section 3 (Table 3-2) of this SDD.
4. Verify operation of the portable Fan discharge radiation monitor (96PMRQI005C) as described in SDD-96 (SOI 96-5).

4.2.2.12 Radiation Waste Area

NOTE: Equipment numbers are prefixed by 25ASA. Instrument numbers are prefixed by 25AS. Instrument Panels are prefixed by 25NI (local) and 25AA (Back) Panel

4.2.2.12.1 RWA A/C System (101)

4.2.2.12.1.1 Initial Conditions

1. Air Handling Unit (101) heating and cooling coils, Unit Heaters (135, 136, 193 & 194) and Reheat coils (180 & 181) are filled and aligned for service.
2. The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10
d. Service Water	75A	75A-11
e. Radiation Monitoring	96	96-5

4.2.2.12.1.2 Procedure

1. Place Supply Fans (141A and 141B) controls (HS-141A & 141B), located on Local Panel (B006), in the "AUTO" position.

2. Place Exhaust Fans (161A and 161B) controls (HS-161A & 161B), located on Local Panel (B006), in the "START" position.

NOTE: Starting of Exhaust Fan (161A or 161B) will energize control system, start related Supply Fan (141A or 141B) and open dampers as indicated by step (3).

3. Verify the following as indicated by energized operating status lights on Local Panel (B006).

			<u>Status</u>	<u>Indication</u>
a.	Outside Air Damper	AOD-050	Open	XL-050A
b.	Exhaust Damper	AOD-065A	Open	XL-065AA

TRAIN "A"

a.	Supply Fan	141A	Start	XL-141AA
b.	Supply Fan Damper	AOD-058A	Open	XL-058AA
c.	Exhaust Fan	161A	Start	XL-161AA
d.	Exhaust Fan Damper	AOD-069A	Open	XL-069AA

TRAIN "B"

a.	Supply Fan	141B	Start	XL-141BA
b.	Supply Fan Damper	AOD-058B	Open	XL-058BA
c.	Exhaust Fan	161B	Start	XL-161BA
d.	Exhaust Fan Damper	AOD-069B	Open	XL-069BA

4. Place HW Recirc Pump (75HWP018) Control (HS-018), located on Local Panel (B006) in AUTO position.

NOTE: Pump will start when outside air temperature as sensed by TT-054 is $<50^{\circ}\text{F}$.

5. Place Reheat Coils (180 & 181) in service as described in SDD-75A (S01 75A-3).
6. Verify Roll Filter Pressure Drop and Bag Filter Pressure Drop indications (PDISH-51 & 53) within limits as specified by Section 3 (Table 3-2) of this SDD, and indicated on Local Panel (B006).
7. Verify A/C System (101) Supply & Exhaust Air Flow as indicated by (FI-059 & 070) is within range specified in Section 3 (Table 3-2) of this SDD, located on Local Panel (B006).
8. Verify Building Pressure Differential indication (PDIC-064) is within range specified in Section 3 (Table 3-2) of this SDD, and indicated on Local Panel (B006).
9. Verify Reheat Coil (180 & 181) operation as indicated by Cell 646 Temperature (TIC-270), located in cell 646 and Supply/Return Air Temperature (TI-63A & 63B) is within range specified in Section 3 (Table 3-2) of this SDD, located on Local Panel (B006).

NOTE: Position switches (ZSL-271 & 164), located on the railroad and truck doors, will deenergize the associated alarm circuits when either door is opened.

4.2.2.12.2 RWA Unit Heaters (135, 136, 193, 194)

NOTE: Unit Heater (135, 136, 193, 194) is used for winter operation only.

1. Place RWA Unit Heater (135) control (HS-135), located on Local Panel (B006), in the "AUTO" position.

2. Place controls for the following Unit Heaters in the indicated position.

	<u>Unit Heater</u>	<u>Control</u>	<u>Panel</u>	<u>Position</u>	<u>TS</u>
a.	135	HS-135	B006	AUTO	272
b.	136	HS-136	B006	AUTO	273
c.	193	HS-193	B006	AUTO	274
d.	194	HS-194	B006	AUTO	170

NOTE: Unit Heaters are automatically sequenced by the indicated temperature controls.

4.2.2.12.3 RWA Exhaust Filter Unit (171) and Exhaust Fan (163)

4.2.2.12.3.1 Initial Condition

The following systems are operating as described by the SDD listed:

	<u>Title</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10
b.	Compressed Gas	22	22-4
c.	Radiation Monitoring	96	96-5

4.2.2.12.3.2 Procedure

This procedure outline places RWA Exhaust Filter Unit (171) and Exhaust Fan (163) in the normal (standby) operating condition.

1. Place RSB-RWA Exhaust Filter Fan (163) control (HS-163), located on Local Panel (B006), in the "AUTO" position.

2. Following unit (171 & 163) start caused by radiation monitor (96PMBRX068) the following will occur and may be verified on Local Panel (B006) by energized operating status light.

		<u>Status</u>	<u>Indicator</u>
a.	Exhaust Filter Fan 163	Start	XL-163A
b.	Damper AOD-065A	Close	XL-065AB
c.	Damper AOD-065B	Open	XL-065BA
d.	Exhaust Fan 161A	Stop	XL-161AB
e.	Exhaust Fan 161B	Stop	XL-161BB
f.	Energize Vortex Damper PAD-064C	Close	XL-064CB

3. Following unit start as caused by smoke detector (26BDAE026) the following will occur and may be verified on Local Panel (B006) by energized operating status light.

		<u>Status</u>	<u>Indicator</u>
a.	Exhaust Filter Fan 163	Start	XL-163A
b.	Damper AOD-065A	Close	XL-065AB
c.	Damper AOD-065B	Open	XL-065BA
d.	Supply Fan 141A	Stop	XL-141AB
e.	Supply Fan 141B	Stop	XL-141BB
f.	Exhaust Fan 161A	Stop	XL-161AB
g.	Exhaust Fan 161B	Stop	XL-161BB

4. Verify Filter (Bag and HEPA) d/p indications (PDISH-66 and 67) are less than maximum (as specified by Section 3 (Table 3-2) of this SDD locally.
5. Verify air flow indication (FI-122) is greater than minimum as specified by Section 3 (Table 3-2) of this SDD, and indicated on Local Panel (B006).

4.2.3 Normal Operation (SOI 25A-5)

4.2.3.1 Fuel Handling Area Air Handling Unit (100)

AHU 100 along with supply and return fans (140A, 140B, 160A & 160B) maintain a negative pressure in RSB to prevent any release of radioactivity to the atmosphere.

The temperature transmitter, located in the main supply duct, will modulate in sequence the cooling coil control valves (SDD-23) and the heating coil control valves (SDD-75A) to maintain a constant discharge temperature.

The heating coil control valves (SDD-75A) will not be energized until the cooling coil control valves (SDD-23) are in the fully closed position.

A temperature transmitter will energize a hot water circulating pump (75HWP018) and the heating coil control valve (SDD-75A) when the outside air temperature is below 50°F.

4.2.3.2 RAPS and CAPS Unit Cooler (131)

Chilled water is continuously circulated through the cooling coil, and the Unit Cooler Fan maintains the cell temperature below the design temperature.

4.2.3.3 RAPS and CAPS Cell Exhaust Fans (162A and 162B)

One Exhaust Fan (162A or 162B) is normally operating with the redundant fan in the "AUTO" position.

4.2.3.4 Refueling Communication Center A/C System (103)

Cell 311 Temperature controller (TIC-180) modulates the cooling coil control valve (SDD-23) to maintain a constant cell temperature, as indicated by Section 3 (Table 3-2) of this SDD.

4.2.3.5 ABHX Cell Unit Cooler (104A and 104B)

ABHX Cell Unit Coolers (104A & 104B) operate continuously and chilled water is circulated through the cooling coils, to maintain cell temperature below the design temperature.

4.2.3.6 ABHX Unit Heater (191)

The temperature Indicating Switch (TIS-22) will cycle the Unit Heater (191) on and off to maintain a constant cell temperature as indicated by Section 3 (Table 3-2) of this SDD. The Hot Water Heating System (SDD-75A) water control valve is interlocked with the unit heater to open and close as the fan is cycled on and off.

4.2.3.7 Annulus Filter Cell Unit Cooler (132 and 146)

Unit Coolers (132 & 146) operate when related Annulus Pressure Maintenance Fan starts. Chilled water is continuously circulated through the cooling coil, to maintain cell temperature below the design temperature.

4.2.3.8 Stairwell Pressurization Fan (166, 167, 168 and 169)

Upon a fire signal from RSB, located on the Fire Protection Panel (SDD-26B), the Stairwell Pressurization Fans (166, 167, 168 and 169) will automatically start and dampers (MOD-159, 157, 158 and 160) will open.

4.2.3.9 Smoke Vent Fan (165)

Refer to SDD-26B (SOI 26B-13).

4.2.3.10 Inerted Cell Booster Fan (A144)

The Inerted Cell Booster Fan (144) will operate continuously by a manual control switch (HS-144) located on the Local Panel (8005Q).

4.2.3.11 RSB Clean-Up Filter Cell Unit Cooler (133, 134)

Unit Coolers (133, 134) operate when related RSB Filter Fan Unit (185A, 185B) starts. Chilled water is continuously circulated through the cooling coil to maintain cell temperature below the design temperature.

CAUTION: "Each atmosphere cleanup train should be operated at least 10 hours per month in order to reduce the buildup of moisture on the absorber and HEPA filters."

NOTE: Heaters will only operate if Relative Humidity is >75% as sensed by ME-194A or 194B.

4.2.3.12 RSB Portable Filter/Fan Unit (172)

The RSB Portable Filter/Fan Unit (172) is mounted on a movable cart and is used for de-inerting of the RAPS and CAPS cells. A Radiation Monitor (96PMRQI005) is located on the unit discharge and shall be used to indicate the need to manually stop the Filter/Fan when a high radiation level is sensed.

4.2.3.13 Radiation Waste Area

4.2.3.13.1 RWA A/C System (101)

Temperature Controller (TC-124) and temperature indicating controller (TIC-124) will modulate in sequence the heating and cooling coil control valves to maintain a constant discharge air temperature, as described by Section 3 (Table 3-2) of this SDD.

RWA control room (cell 646) thermostat (TIC-270) will modulate the reheat coil (25ASA180), control valves (SDD-75A) and HW Recirc Pump to maintain the indoor design temperature, as described by Section 3 (Table 3-2) of this SDD.

A master sub master temperature controller (TC-63) will modulate the control valve (SDD-75A) of Reheat Coil (25ASA181) to maintain the indoor design temperature for the operating floor (cell 640), as indicated in Section 3 (Table 3-2) of this SDD.

The buildings negative pressure is maintained by automatic modulating of the Exhaust Fans (161A, 161B) Vortex Dampers (PAD-64A, 64B) and indicated by (PDI-64) on Local Panel (B006).

4.2.3.13.2 RWA Unit Heater (135, 136, 193, 194)

The unit heater control is in the "AUTO" position on the Local Panel and is started from the Temperature Switch (TS-272, 273, 274 or 170). The TS will cycle the Unit Heater Fan on and off to maintain a constant cells temperature. HW control valves are interlocked with the Unit Heater fan to open and close as the Unit Heaters are cycled on and off.

4.2.3.14 RSB Cleanup Filter (184A, 184B) and Fans (185A & 185B)

One of the two (100% capacity) RSB Cleanup Filter Units (184A or 184B) operate continuously to filter air being exhausted from the RSB. During refueling AHU (100) outside air damper (AOD-10) will be closed and one Cleanup Filter Unit will continue to operate. Fans (185A, 185B) operate in conjunction with the related Cleanup Filter Unit (184A or 184B).

4.2.3.15 RSB HVAC Equipment Shift (Weekly) (SOI 25A-43)

4.2.3.15.1 RAPS & CAPS Cell Exhaust Fans (162A, 162B)

4.2.3.15.1.1 Initial Conditions

Redundant Exhaust Fan (162A or 162B) is operable.

4.2.3.15.1.2 Procedure

1. Maintain standby Exhaust Fan (162A or 162B) control (HS-162A or 162), located on Local Panel (B005Q), in the "START" position and verify operating status light (XL-162AA or 162BA) energized.
2. Verify Exhaust Fan (162A or 162B) Discharge Damper (A0D-090A or 090B) open status indication (XL-090AA or 090BA) energized on Local Panel (B005Q).
3. Place Exhaust Fan (162A or 162B) to be shutdown, control (HS-162A or 162B), located on Local Panel (B005Q), in the "STOP" position and verify operating status light (XL-162AB or 162BB) energized.
4. Verify shutdown Exhaust Fan (162A or 162B) Discharge Damper (A0D-90A or 90B) closed status indication (XL-090AB or 090BB) energized, on Local Panel (B005Q).
5. Allow operating Exhaust Fan (162A or 162B) control (HS-162A or A162B) return to the "AUTO" position.
6. Place shutdown Exhaust Fan (162A or 162B) control (HS-162A or 162B), located on Local Panel (B005Q), in the "AUTO" position.

4.2.3.15.2 RSB Cleanup Filter Train A to Train B

This procedure outline places RSB Cleanup Filter Train B in operation and will shutdown Train A.

4.2.3.15.2.1 Initial Conditions

1. RSB Cleanup Filter Unit (184B) is operable.
2. RSB Cleanup Filter Fan (185B) is operable.

3. Unit Cooler (134) cooling coil is filled and aligned for service as described in SDD-23 (SOI 23-2).
4. The following systems are operating as described by the indicated SDD & SOI:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Chilled Water	23	23-3/23-10
c. Radiation Monitoring	96	96-2

5. AHU (100) is operating following startup as described by Section 4.2.2.1 of this SDD.

4.2.3.15.2.2. Procedure

1. Verify the following controls in the listed position.

<u>Unit</u>	<u>HS</u>	<u>Position</u>	<u>Panel</u>
a. SSPLS Panel Control	SS3B	Remote	12SSR350B
b. Unit Cooler (134)	134	Remote	12SSR350B
c. Filter Fan (185B)	185B	Remote	12SSR350B
	185B	Auto	B005F
d. Damper (MOD-203B)	203	Open	B005F

2. Maintain RSB Cleanup Filter Fan (185B) Control (HS-185BB), located on Back Panel (B002), in the START position.

NOTE: Start of Fan (185B) will energize control system and open Damper (AOD-269B) verify energized, the following operating status indication:

<u>Component</u>			<u>Indicator</u>	<u>Panel</u>
a.	Fan	185B	XL-185BC	B002
b.	Damper	AOD-269B	XL-269BC	B002
c.	Air Flow Recorder	FR-196B	FR-196B	B002

3. Allow RSB Cleanup Filter Fan (185B) Control (HS-185BB), located on Back Panel (B002), return to the AUTO position.
4. Verify the following alarms have cleared on Back Panel (B002).

	<u>Inst #</u>	<u>PAR</u>
a. Fan 185B Vibration High	YSH-187B	25A-331
b. Air High Temperature	TSH-005	25A-332
c. Bag Filter Differential Pressure High	PDISH-193B	25A-333
d. HEPA Filter Differential Pressure High	PDISH-192B	25A-334
e. Adsorbent Filter Differential Pressure High	PDISH-191B	25A-335
f. HEPA Filter Differential Pressure High	PDISH-190B	25A-336
g. Filter 184B Differential Pressure High	PDISH-197B	25A-337
h. Air Flow Low	FSL-268B	25A-338
i. Adsorbent Filter Inlet Temp. High	TE-245BA	25A-339
j. Adsorbent Filter Outlet Temp. High	TE-246BA	25A-340

5. Place RSB Cleanup Filter Fan (185A) Control (HS-185AB), located on Back Panel (B002), in the STOP position.

6. Verify RSB Cleanup Filter Fan (185A) operating status indication (XL-085AD), located on Back Panel (B002).
7. Verify no RSB Cleanup Filter Unit (184A) air flow as indicated by FR-196A, located on Back Panel (B002).
8. Place RSB Cleanup Filter Fan (185A) Control (HS-185AB), located on Back Panel (B002), in the AUTO position.

4.2.3.15.3 RSB Cleanup Filter Train B to Train A

This procedure outline places RSB Cleanup Filter Train A in operation and will shut down Train B.

4.2.3.15.3.1 Initial Conditions

1. RSB Cleanup Filter Unit (184A) is operable.
2. RSB Cleanup Filter Fan (185A) is operable.
3. Unit Cooler (133) cooling coil is filled and aligned for service as described in SDD-23 (SOI 23-2).
4. The following systems are operating as described by the indicated SDD and SOI:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Chilled Water	23	23-3/23-10
c. Radiation Monitoring	96	96-2

5. AHU (100) is operating following startup as described by Section 4.2.2.1 of this SDD.

4.2.3.15.3.2 Procedure

1. Verify the following controls in the listed position.

	<u>Unit</u>	<u>EIN</u>	<u>HS</u>	<u>Position</u>	<u>Panel</u>
a.	SSPLS Panel Control		SS3A	Remote	12SSB350A
b.	Unit Cooler	133	133	Remote	12SSB350A
c.	Filter Fan	185A	185A	Remote	12SSB350A
		185A	185A	Auto	B005E
d.	Damper	MOD-203A	203A	Open	B005E

2. Maintain RSB Cleanup Filter Fan (185A) Control (HS-185AB), located on Back Panel (B002), in the START position.

NOTE: Start of Fan (185A) will energize control system and open damper (AOD-269A) verify energized, the following operating status indication:

	<u>Component</u>		<u>Indicator</u>	<u>Panel</u>
a.	Fan	185A	XL-185AC	B002
b.	Damper	AOD-269A	XL-269AC	B002
c.	Air Flow Recorder	FR-196A	FR-196A	B002

3. Allow RSB Cleanup Filter Fan (185A) Control (HS-185AB), located on Back Panel (B002), return to the AUTO position.
4. Verify the following alarms are clear on Back Panel (B002).

	<u>Inst #</u>	<u>PAR</u>
a. Fan 185A Vibration High	YSH-187A	25A-341
b. Air High Temperature High	TSH-005H	25A-342
c. Bag Filter Differential Pressure High	PDISH-193A	25A-343
d. HEPA Filter Differential Pressure High	PDISH-192A	25A-344
e. Adsorbent Filter Differential Pressure High	PDISH-191A	25A-345
f. HEPA Filter Differential Pressure High	PDISH-190A	25A-346
g. Filter 184A Differential Pressure High	PDISH-197A	25A-347
h. Air Flow Low	FSL-268A	25A-348
i. Adsorbent Filter Inlet Temp. High	TE-245AA	25A-349
j. Adsorbent Filter Outlet Temp. High	TE-246AA	25A-350

5. Place RSB Cleanup Filter Fan (185B) Control (HS-185BB), located on Back Panel (B002), in the STOP position.

6. Verify RSB Cleanup Filter Fan (185B) operating status indication (XL-185BD), located on Back Panel (B002), is lit.

7. Verify no RSB Cleanup Filter Unit (184B) air flow as indicated by FR-196B, located on Back Panel (B002).

8. Place RSB Cleanup Filter Fan (185B) Control (HS-185BB), located on Back Panel (B002), in the AUTO position.

4.2.4 Shutdown (SOI 25A-6)

All equipment numbers are prefixed by 25ASA.

Panel numbers are prefixed by 25NI (local) and 25AA (Back Panel)

CAUTION: Before component shutdown verify (where applicable) redundant component is in operation

4.2.4.1 Fuel Handling Area HVAC System (100)

4.2.4.1.1 Initial Conditions

1. HVAC System (100) is not required by System 41 (FHI 41-1, 41-2, 41-3, 41-4, 41-5, 41-6, 41-7).
2. Heating, Cooling or Ventilation is not required in any area served by this system, as indicated on P&ID's NV-510 & 513.

4.2.4.1.2 Procedure

1. Place supply fans (140A & 140B) controls (HS-140A & 140B), located on Local Panel (B005D), in the "STOP" position. Verify operating status lights (XL-140AB & 140BB) energized.
2. Place Exhaust Fan (160A and 160B) controls (HS-160A & 160B), located on the Local Panel (B005D), in the "STOP" position.

NOTE: Shutting down of the Exhaust Fan will stop Supply Fans (140A and 140B) if operating, and move the following automatic dampers to the fully closed position which may be verified on Local Panel (B005D) by energized status indication:

	<u>Indication</u>
a. Discharge Dampers (A0D-009A and 009B)	XL-009AB & 009BB
b. Exhaust Fan discharge Dampers (A0D-025A and 025B)	XL-025AB & 025BB
c. Outside Air Damper (A0D-010)	XL-010B

3. Place Outside Air Damper (A0D-010) control (HS-010B), located on Back Panel (B002), in the "CLOSE" position.

4. Place Cleanup Filter Fan (185A & 185B) control (HS-185A & HS-185B) in the "STOP" position on Back Panel (B002).

4.2.4.2 RAPS and CAPS Unit Cooler System (131)

4.2.4.2.1 Initial Condition

RAPS and CAPS Units are not operating.

4.2.4.2.2 Procedure

1. Place Unit Cooler (131) control (HS-131), located on Local Panel, (R005P), in the "STOP" position and verify energized, operating status light (XL-131B).

4.2.4.3 RAPS and CAPS Cell Exhaust Fans (162A or 162B)

4.2.4.3.1 Initial Conditions

1. RAPS and CAPS units are not operating.
2. Unit Cooler (131) is shutdown as described in section 4.2.4.2 of this SDD.
3. Mobil Radiation Monitor is available as described by SDD-96 (SOI 96-8).

4.2.4.3.2 Procedure

This procedure will shutdown RAPS & CAPS Exhaust Fans (162A & 162B). For single fan shutdown or if fan to be taken out of service is operating, refer to section 4.2.3.14.1 of this SDD, to shift operating fan.

1. Place Exhaust Fans (162A or 162B) to be shutdown control (HS-162A or 162B), located on Local Panel (B005Q), in the "STOP" position.

2. Verify energized, operating status indication on Local Panel (B005Q) of one Exhaust Fan and Discharge Damper (162A & A0D090A or 162B & A0D090B).

			Indication
			<u>Start/Stop</u>
a.	Exhaust Fan	162A or 162B	XL-162AA/162AB XL-162BB/162BA
b.	Discharge Damper	A0D-090A or 90B	XL-090AA/XL-090AB XL-090BB/XL-090BA

4.2.4.4 Refueling Communication Center A/C System (103)

4.2.4.4.1 Initial Conditions

Refueling Comm. Center A/C System (103) is operating.

4.2.4.4.2 Procedure

Place A/C Unit (103) control (HS-103), located on Local Panel (B005A), in the "STOP" position and verify energized, operating status light (XL-103B).

NOTE: Verify Outside Air Damper (A0D-171) closed status indication (XL-171B) energized on Local Panel (B005A).

4.2.4.5 ABHX Cell Unit Coolers (104A, 104B)

1. Verify ABHX Units are not operating.
2. Place ABHX Cell Unit Cooler (104A or 104B) control (HS-104AB or 104BB), located on Back Panel (B002), in the "STOP" position.
3. Verify Unit Cooler (104A or 104B) Supply Fan operating status indication (XL-104AD or 104BD) on Back Panel (B002) is energized.

4.2.4.6 ABHX Unit Heater (191)

1. Place Unit Heater (191) control (HS-191), located on Local Panel (B005Q), in the "STOP" position.

2. Verify Unit Heater Operating Status Light (XL-191B) energized, on Local Panel (B005Q).

4.2.4.7 Deleted

4.2.4.8 Stairwell Pressurization Fan (166, 167, 168 and 169)

1. Place the following components controls, located on 26B Panel (26BDB018), in the "STOP" position; verify fan and damper status light energized.

	<u>Fan</u>	<u>Control</u>	<u>MOD</u>	<u>Indicator</u>
a.	166	HS-166	159	XL-166B
b.	167	HS-167	157	XL-167B
c.	168	HS-168	158	XL-168B
d.	167	HS-169	160	XL-169B

4.2.4.9 RSB Smoke Vent Fan (165)

Refer to SDD-26B (SOI 26B-13).

4.2.4.10 Inerted Cell Booster Fan (144)

4.2.4.10.1 Initial Conditions

Refer to SDD-82, (SOI 82-13).

4.2.4.10.2 Procedure

Place Fan (144) control (HS-144), located on Local Panel (B005Q), in the "STOP" position, and verify operating status light (XL-144B) energized.

4.2.4.11 RSB Clean-Up Filter Cell Unit Cooler (133, 134) and Fans (185A & 185B)

Unit Coolers (133 & 134) operate automatically with their respective RSB cleanup Filter Fans (185A or 185B).

4.2.4.11.1 Initial Condition

1. RSB Cleanup Filter Unit is shutdown (this will automatically shutdown related U.C. (133 or 134)).

4.2.4.11.2 Procedure

1. Verify redundant RSB Cleanup Filter Unit, Filter Fans and Unit Cooler is operating as described by Sections 4.2.2.10 and 4.2.3.11 of this SDD.
2. Place Unit Coolers (133, 134) controls (HS-133B or 134B), located on Back Panel (B002), in the "STOP" position and verify status light (XL-133D & 134D) are energized.

4.2.4.12 RSB Portable Filter/Fan Unit (172)

CAUTION: Potential radiation/contamination hazard exists. All work shall be inspected by Health Physics.

4.2.4.12.1 Initial Condition

1. Cell maintenance has been completed.
2. Cell has been reinerted as described in SDD-82, (SOI 82-33).

4.2.4.12.2 Procedure

1. Place Filter/Fan (172) control switch (HS-172) in the "STOP" position.
2. Disconnect Filter/Fan Unit from HVAC duct.
3. Unplug Filter Fan from wall receptical.

4.2.4.13 Radiation Waste Area

4.2.4.13.1 RWA A/C System (101)

4.2.4.13.1.1 Initial Conditions

1. No radwaste handling operation is being performed in the RWA.

4.2.4.13.1.2 Procedure

1. Place Supply Fan (141A & 141B) control (HS-141A & 141B), located on Local Panel (B006), in the "STOP" position, and verify operating status indication (XL-144AB & 144BB) is energized.
2. Place Exhaust Fan (161A and 161B) control (HS-161A & 161B), located on Local Panel (B006), in the "STOP" position, and verify operating status indication (XL-161AB & 161BB) is energized.

NOTE: This will deenergize the control system.

3. Verify the following dampers status indication is energized.

		<u>Status</u>	<u>Indication</u>
a. Exhaust Fan Damper	AOD-065A	Closed	XL-065AB
b. Exhaust Fan Damper	AOD-069A	Closed	XL-069AB
c. Exhaust Fan Damper	AOD-069B	Closed	XL-069BB
d. Supply Fan Damper	AOD-050	Closed	XL-050B
e. Supply Fan Damper	AOD-058A	Closed	XL-058AB
f. Supply Fan Damper	AOD-058B	Closed	XL-058BB

4.2.4.13.2 RWA Exhaust Filter Unit (171) and Exhaust Fan (163)

NOTE: Use of this procedure places the RSB-RWA Exhaust Filter Unit (171) and Fan (163) in an inoperable condition. Systems 26B

(26RDAE026) and 96 (96PMRX068) must be closely observed. Upon activation of alarm the RSB-RWA HVAC system will shutdown to prevent release of smoke or radiation to the atmosphere. Refer to section 4.2.2.12.3 of this SDD for actions taken upon detection of smoke or radiation.

1. Place RSB-RWA Exhaust Filter Fan (163) control (HS-163), located on Local Panel (B006), in the "STOP" position.
2. Verify Fan operating status indication light (XL-163B) is energized and alarm (inoperable status) on Local Panel (B006) and Back Panel (B002).

4.2.4.13.3 RWA Unit Heaters (135, 136, 193, 194)

4.2.4.13.3.1 Procedure

1. Place Unit Heater (135, 136, 193 or 194) controls, (HS-135, 136, 193 or 194) located on Local Panel (B006), in the "STOP" position.
2. Verify Unit Heater (135, 136, 193 or 194) status light (XL-135B, 136B, 193B or 194B) located on Local Panel (B006).

4.2.5 Draining/Refilling (SOI 25A-7)

1. Drain the following HVAC components as described in SDD-23, (SOI 23-5) or SDD-75A, (SOI 75A-5).
 - a. Air Handling Unit 100
 - b. Unit Coolers 103, 104A, 104B, 131, 132, 133, 134, 137, 138, 139A, 139B, 142A, 142B, 143, 145, 146)
 - c. Unit Heater 191, 193, 194, 135, 136
 - d. Reheat Coil 180, 181

4.2.6 Infrequent Operation

4.2.6.1 RSB HVAC Alignment for Refueling Operation (SOI-25A-8)

RSB Exhaust Fans (160A & 160B) are provided with automatic Vane Dampers (PAD-108A & 108B) to maintain 1/4" W.G. negative pressure in the RSB.

4.2.6.1.1 Initial Conditions

RSB AHU (100), Supply Fans (140A & 140B), Exhaust Fans (160A & 160B) and Cleanup Filter Unit (184A or 184B) is operating as described by Sections 4.2.2.1 and 4.2.2.10 of this SDD.

4.2.6.1.2 Procedure

1. Following opening of Equipment Hatch (27CAM003) RCB/RSB negative pressure will be lost. Place AHU (100) Outside Air Damper (AOD-010) Control (HS-010B), located on Back Panel (B002), in the CLOSE position.
2. Verify Outside Air Damper (AOD-10) CLOSE indication (XL-010B), located on Back Panel (B002) is energized.
3. Following restoration of 1/4" W.G. negative pressure in the RCB/RSB as indicated by (PDI-108) located Back Panel (B002) place AHU (100) Outside Air Damper (AOD-010) Control (HS-010B), located on Back Panel (B002), in the OPEN position.

CAUTION: The RSB Railroad Door (21RSM001) shall remain closed during refueling.

4.2.6.2 RSB HVAC Return to Normal Alignment from Refueling Alignment
(SOI 25A-9)

No operator action (with respect to System 25A) is required to return RSB HVAC to normal alignment following refueling operation.

4.2.6.3 Cell De-Inerting/Inerting (SOI 25A-10)

This procedure provides instruction for the operation of the portable Filter Fan Unit (172) for cell atmosphere de-inerting, ventilation during maintenance.

CAUTION: AIRBORNE RADIOACTIVITY MAY BE PRESENT IN THE CELL.

The cell Atmosphere cannot be sampled for airborne radioactivity prior to personnel entry, following deinerting.

CAUTION: OXYGEN DEFICIENT ATMOSPHERE MAY BE PRESENT IN THE CELL.

The cell atmosphere cannot be sampled for oxygen prior to personnel entry, following deinerting.

4.2.6.3.1 Initial Conditions

1. Cell atmosphere radiation level less than (TBD) prior to deinerting the cell.
2. Heat loads in the cell that is cooled by the cooling system serving the cell to be de-inerted (or ventilated) are reduced, to preclude overheating during the period that the cooling system is shutdown or isolated from the cell.
3. Reactor Service Building H&V System is operating as described in Section 4.2.3 of this SDD.

HOLD 25000568

B

PRECAUTIONS: During the execution of this procedure, personnel will be exposed to potentially radioactive and oxygen depleted areas. Closely monitor oxygen level, radiation level and cell temperature with portable indicators to detect possible cell overheating conditions (cell temperatures <120°F) or hazardous conditions.

4.2.6.3.2 Deinerting

1. Close SDD-28 cell isolation valves and connect Portable Filter Fan (172) to HVAC duct, indicated on P&ID (NV-512).
2. If the cell is isolated with isolation valves, determine if cooling is required for other cells cooled by the cooler, that supplies the cell to be de-inerted, or ventilated.
 - a. If cooling is required, monitor cell temperatures and blower power demand. If cell temperature cannot be maintained below 140°F, reduce heat loads as much as possible.
 - b. If cooling is not required, shutdown the cell cooler as described in SDD-28, (SOI 28-4), (SOI 28-8) or (SOI 28-12). Also shutdown the cell gas feed and bleed system as described in SDD-82 (SOI 82-33).
3. Cell atmosphere de-inerting and ventilation during maintenance.
 - a. Connect Filter Fan Unit (172).
 - b. Connect filter module outlet to fan module inlet with flexible hose.
 - c. Connect fire ionization and oxygen level detectors.

- d. Connect manometer to filter fan unit d/p points.
 - e. Remove blind flange from port downstream of cell on SDD-28 piping and connect to filter inlet with flexible hose.
4. Connect Portable Filter Fan outlet flexible duct to the nearest System 25A Exhaust duct (Refer to P&ID NV512).
 5. Connect and align for operation System 96 radiation monitor, as described by SDD-96, (SOI 96-8).
 6. Place Filter/Fan (172) Control (HS-172), located on portable skid, in the "START" position.
 7. Verify start of Filter Fan (172) as indicated by (FI-009A), located on portable radiation monitor skid (Refer to SDD-96, (SOI 96-8)).
 8. Remove blind flange located on System 28 supply line to cell to allow air flow into cell being deinerted.

4.2.6.3.3 Inerting

1. Replace blind flange located on System 28 supply line to cell.
2. Introduce gas into cell as described by SDD-28, (SOI 28-1, 28-5 or 28-9) and (SOI 82-33).
3. After the cell atmosphere has been completely replaced by gas, as indicated by (SDD-82) AISHL-53A (located on Local Panel 82AABN011), place Portable Filter Fan (172) Control (HS-172), located on portable skid, in the "STOP" position.
4. Shutdown System 96 monitor as described by SDD-96, (SOI 96-8).

5. Disconnect flexible fan inlet duct from System 28 return line and immediately replace blind flange.
6. Disconnect flexible fan outlet duct from System 25A exhaust duct and replace blind flange.

4.2.6.4 RSB RAPS & CAPS Exhaust System Operation During Maintenance (SOI 25A-32)

4.2.6.4.1 Initial Conditions

Cell atmosphere is acceptable for maintenance as indicated by RSB RAPS & CAPS Exhaust Air Radiation High Alarm not present. (PAR 25A-285) located on (B005Q).

4.2.6.4.2 Alignment for Maintenance

1. Open Cell (317, 320, 366, 369, 370, 371, 375, 376, 378, 379, 380, 381 or 397) purging port (Refer to P&ID NV-512), to allow air infiltration into desired cell.
2. When cell atmosphere is compatible with area atmosphere, open cell door. Proceed with maintenance following cell atmosphere check by Health Physicist.
3. Following completion of maintenance, close cell door and replace cell purge port. Verify proper cell pressure and tightness as indicated by (TBD).

Hold
25000567

4.2.6.5 HVAC Duct Cleanup Following Contamination

(TBD)

HOLD
25000144

4.3 STEAM GENERATOR BUILDING

Instrument numbers are prefixed by 25AG. Equipment numbers are prefixed by 25AGA.

Panel numbers are prefixed by 25NI (Local) and 25AA (Back Panel).

4.3.1 Initial Fill (SOI 25A-11)

1. The following cooling coils are to be filled as described by SDD-23, (SOI 23-1/23-8).
 - a. Air Handling Units (201, 202, 203)
 - b. Air Handling Units (204, 206)
 - c. Aux. Feed Pump Unit Coolers (221A, B and 222A, B)
 - d. Maintenance Bay A/C Unit (210)
 - e. Primary Na tank Unit Cooler (220)
 - f. Emergency Chiller Equipment Room Unit Coolers (223A and 223B)
 - g. System 56 panel Unit Coolers (273A, B and 273C)
2. The following heating coils are to be filled as described by SDD-75A (SOI 75A-3).

B

- a. Air Handling Unit (204 and 206)
- b. Maintenance Bay A/C Unit (210)

4.3.2 Startup (SOI 25A-12)

This procedure is written to place "A" train in service, and where redundant, train "B" in auto-standby condition.

4.3.2.1 A/C System - Steam Generator Loops 1, 2, & 3 and Auxiliary Bay (201, 202, and 203)

4.3.2.1.1 Initial Condition

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Chilled Water	23	23-3/23-10

4.3.2.1.2 Procedure (A.H.U. 201)

1. Place SSPLS Panel Control (HS-SS2A) and Supply Fan (241A and 241B) control (HS-241A & 241B), located on SSPLS Panel (12SSB251A), in the "REMOTE" position.
2. Place SSPLS Panel Control (HS-SS2A) and Exhaust Fan (261A and 261B) Control (HS-261A, 261B) located on SSPLS Panel (12SSB251A), in the "REMOTE" position.

3. Place Exhaust Fans (261A and 261B) and Supply Fans (241A and 241B) controls (HS-261AA, 261BA, 241AA, 241BA), located on Local Panel (B002A) in the "AUTO" position.
4. Place Exhaust Fan (261A and 261B) controls (HS-261AB & 261BB), located on Back Panel (B002) in the "AUTO" position.
5. Place Supply Fan (241A or 241B) control (HS-241AB or 241BB), located on Back Panel (B002) in the "START" position.

NOTE: This will energize the control system, start the associated Exhaust Fan (261A or 261B) and open the following dampers fully; verify using status indication is energized on Back Panel (B002).

	<u>Indicator</u>
a. Minimum outside air Damper MOD-001A	XL-001AC
b. Return air damper TMD-001C	XL-001CC
c. Supply Fan Discharge Damper MOD-010A or Supply Fan Discharge Damper MOD-010B	XL-010AC XL-010BC
d. Exhaust Fan Discharge Damper MOD-012A or Exhaust Fan Discharge Damper MOD-012B	XL-012AC XL-012BC

The exhaust and bypass dampers (TMD-001D and 001E) will sequence with the outside and return air dampers (TMD-001B & 001C) respectively.

6. Verify Roll Filter & Bag Filter Pressure Drop as indicated by PDISH-003 & 005, located on Local Panel (B002A), is within range specified by Section 3 (Table 3-3) of this SDD.

7. Verify outside air, return air, mixed and supply air temperature indication (TIS-153A, TI-153B, TI154, TIC-008B & TIC-008A) on the Local Panel (B002A) is within range specified by Section 3 (Table 3-3) of this SDD.
8. Verify the following alarms have cleared on Local Panel (B002A) and Back Panel (B002).
 - a. Air Handling unit (201) cooling coil low temperature safety thermostat (TSL-006A through 6H) (PAR 25A-303).
 - b. Roll Filter d/p High switch (PDSHH-004) (PAR 25A-304).
 - c. Bag Filter d/p High indication (PDISH-005) (PAR 25A-305).
 - d. Supply or Return Air Flow Low (FSL-011 and FSL-014) (PAR 25A-306 & 307).
9. Place remaining Supply Fan (241A or 241B) control (HS-241AB or 241BB), located on Back Panel (B002), in the "AUTO" position.

4.3.2.1.3 Procedure (A.H.U. 202)

1. Place SSPLS Panel Control (HS-SS5B) and Supply Fans (242A and 242B) control (HS-242A, 242B), located on SSPLS Panel (12SSB550B), in the "REMOTE" position.
2. Place SSPLS Panel Control (HS-SS1B) and Exhaust Fan (262A and 262B) controls (HS-262A & 262B) located on SSPLS Panel (12SSB250B), in the "REMOTE" position.
3. Place Exhaust Fans (262A and 262B) and Supply Fans (242A and 242B) controls (HS-262AA, 262BA, 242AA, 242BA), located on Local Panel (B002B), in the "AUTO" position.

4. Place Exhaust Fans (262A and 262B) controls (HS-262AB, 262BB), located on Back Panel (B002), in the "AUTO" position.
5. Place Supply Fan (242A or 242B) Control (HS-242AB, 242BB), located on Back Panel (B002) in the "START" position.

NOTE: This will energize the control system, start the associated Exhaust Fan (262A) and open the following dampers fully:

	<u>Energized Indication</u>
a. Minimum outside air Damper MOD-025A	XL-025AC
b. Return air damper TMD-025C	XL-025CC
c. Supply Fan Discharge Damper MOD-033A	XL-033AC
- or -	
Supply Fan Discharge Damper MOD-033B	XL-033BD
d. Exhaust Fan Discharge Damper MOD-036A	XL-036AC
- or -	
e. Exhaust Fan Discharge Damper MOD-036B	XL-036BD

The exhaust and bypass dampers (TMD-025D and 025E) will sequence with the outside and return air dampers (TMD-025B and 025C) respectively.

6. Verify Roll Filter and Bag Filter Pressure Drop as indicated by PDISH 26 and 27, located on Local Panel (B002B), is within range specified in Section 3 (Table 3-3) of this SDD.
7. Verify outside air, return air, mixed and supply air temperature indication (TIS-163A, TI-163B, TI-015, TIC-031A & TIC-031B) on Local Panel (B002B) is within range specified by Section 3 (Table 3-3) of this SDD.
8. Verify the following alarms have cleared on Local Panel (B002B) and Back Panel (B002).

- a. Air Handling unit (202) cooling coil low temperature safety thermostat (TSL-029A through 029H) (PAR-25A-308).
 - b. Roll Filter d/p High switch (PDSHH-027) (PAR-25A-309).
 - c. Bag Filter d/p High indication (PDISH-028) (PAR 25A-310).
 - d. Main supply and exhaust duct air flow low limit switches (FSL-035 and FSL-038) (PAR 25A-311 & 312).
9. Place remaining Supply Fan (242A or 242B) control (HS-242BB), located on Back Panel (B002), in the "AUTO" position.

4.3.2.1.4 Procedure (A.H.U. 203)

1. Place SSPLS Panel Control (HS-SS5A) Supply Fan (243A and 243B) control (HS-243A & 243B), located on Local Panel (12SS8550A) in the "REMOTE" position.
2. Place SSPLS Panel Control (HS-SS2A) and Exhaust Fan (263A & 263B) Control (HS-263A & 263B) located on SSPLS Panel (12SS8251A) in the "REMOTE" position.
3. Place Exhaust Fans (263A and 263B) and Supply Fans (243A and 243B) controls (HS-263AA, 263BA, 243AA, 243BA), located on Local Panel (B002C), in the "AUTO" position.
4. Place Exhaust Fan (263A and 263B) controls (HS-263AB & 263BB), located on Back Panel (B002) in the "AUTO" position.
5. Place Supply Fan (243A or 243B) Control (HS-243AB, 243BB), located on Back Panel (B002) in the "START" position.

NOTE: This will energize the control system, start the associated Exhaust Fan (263A or 263B) and open the following dampers:

	<u>Energized Indication</u>
a. Minimum outside air Damper MOD-047A	XL-047AC
b. Return air damper TMD-047C	XL-047CC
c. Supply Fan Discharge Damper MOD-056A	XL-056AC
- or -	
Supply Fan Discharge Damper MOD-056B	XL-056BD
d. Exhaust Fan Discharge Damper MOD-058A	XL-058AC
- or -	
Exhaust Fan Discharge Damper MOD-058B	XL-058BD

Exhaust and bypass dampers (TMD-47D and 47E) will sequence with the outside and return air dampers (TMD-47B & 47C) respectively.

6. Verify Roll Filter and Bag Filter Pressure Drop as indicated by (PDISH 049 & 051), located on Local Panel (B002C), is within range specified in Section 3 (Table 3-3) of this SDD.
7. Verify outside air, return air, mixed and supply air temperature indication (TIS-172A, TI-172B, TI-018, TIC-054A & 054B) on Local Panel (B002C) is within range specified by Section 3 (Table 3-3) of this SDD.
8. Verify the following alarms have cleared on Local Panel (B002C) and Back Panel (B002).
 - a. Air Handling unit (203) cooling coil low temperature safety thermostat (TSL-53) PAR 25A-313.
 - b. Roll Filter d/p High switch (PDSHH-50) PAR 25A-314.
 - c. Bag Filter d/p High indication (PDISH-51) PAR 25A-315
 - d. Main supply and exhaust duct air flow low limit switches (FSL-057 and FSL-060) (PAR 25A-316 & 317).
9. Place remaining Supply Fan (243A or 243B) Control (HS-243AB or 243BB), located on Back Panel (B002) in the "AUTO" position.

4.3.2.2 A/C System - Intermediate Bay (204 and 206)

4.3.2.2.1 Initial Conditions

The following systems are operating as described by the indicated SDD and section:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Chilled Water	23	23-3/23-10
c. Service Water	75A	75A-4

4.3.2.2.2 Procedure (A/C System 204)

1. Place SSPLS Control (HS-SS2B) and Fans (244B, 264A & 264B) controls (HS-244B, 264A & 264B) located on SSPLS Panel (12SSB251B) in the REMOTE position.
2. Place SSPLS Panel Control (HS-SS2A) and Supply Fan (244A) Control (HS-244A), located on SSPLS Panel (12SSB251A), in the REMOTE position.
3. Place Exhaust Fan (264A) control (HS-264AB), located on Back Panel (B002), in the "AUTO" position.
4. Place Supply Fan (244A) control (HS-244AB), located on Back Panel, (B002), in the "START" position.

NOTE: This will start Supply and Exhaust Fans (244A and 264A), energize the control system and open the following dampers. Verify the following indication lights are energized:

	<u>Damper</u>	<u>Indication</u>
a. Outside air damper	MOD-072A	XL-072AC
b. Return air damper	TMD-072C	XL-072CC
c. Supply Fan discharge damper	MOD-082A	XL-082AC
d. Exhaust Fan discharge damper	MOD-095A	XL-095AC
e. Exhaust damper	TMD-196D	XL-196DC
f. Bypass damper	TMD-196E	XL-196EC

5. Verify outside air, return air, mixed air, heating coil air outlet and supply air temperature is within the operating range (as specified by Section 3 (Table 3-3) of this SDD, and indicated (TIS-183A, TI-183B, TI-072, TI-077, TIC-081A & 081B) on Local Panel (B002M).

6. Verify the following alarms have cleared on the local (B002M) and control room panels (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Supply or Exhaust low air flow	FSL-084 & 096	25A-247
b. Roll filter differential pressure High	PDSHH-075	25A-92
c. Bag filter differential pressure High	PDISH-076	25A-99
d. Cooling Coil low temperature	TSL-078A thru D	25A-103

- | | <u>Inst. #</u> | <u>PAR</u> |
|------------------------------|----------------|------------|
| e. Fan (244A) vibration High | YSH-126A & B | 25A-74 |
| f. Fan (244B) vibration High | YSH-128A & B | 25A-76 |
7. Verify A/C System 204 Supply/Exhaust Duct Smoke Present alarm is deenergized on Panel (26BDB012).
 8. Place Supply Fans (244A & 244B) and Exhaust Fans (264A & 264B) Controls (HS-244AA, 244BA and 264AA, 264BA), located on Local Panel (B002M) in the "AUTO" position.
 9. Place Standby Supply (244B) and Exhaust (264B) Fan controls (HS-244BB and 264BB), located on Back Panel (B002), in the "AUTO" position.

4.3.2.2.3 Procedure (A/C System 206)

1. Place SSPLS Control (HS-SS2A), Supply & Exhaust Fan (249A & 267A) SSPLS Control (HS-249A & 267A), located on SSPLS Panel (12SSB251A), in the REMOTE position.
2. Place SSPLS Panel Control (HS-SS2B), Supply & Return Fans (249B & 267B) SSPLS Control (HS-249B & 267B) located on SSPLS Panel (12SSB251B), in the REMOTE position.
3. Place Exhaust Fan (267A) control (HS-267AB), located on Back Panel (B002) in the "AUTO" position.
4. Place Supply Fan (249A) control (HS-249AB), located on Back Panel (B002), in the "START" position.

NOTE: This will start Supply and Exhaust Fans (249A & 267A), energize the control system and open the following dampers. Verify the following indication is energized:

- | | <u>Indication</u> |
|--|-------------------|
| a. Minimum outside air damper (MOD-196A or TMD-196B) | XL-196AC or 196BC |
| b. Return air damper (TMD-196C) | XL-196CC |
| c. Supply Fan discharge damper (MOD-198A) | XL-198AC |
| d. Exhaust Fan discharge damper (MOD-200A) | XL-200AC |
5. Verify outside air, return air, mixed air, heating coil air outlet and supply air temperature is within the operating range (as specified by Section 3 (Table 3-3) of this SDD, and Panel (B002L) indicated by (TIS-194A, TI-194B, TI-228, TI-089, TIC-093A & 093B) on Local Panel (B002L).
6. Verify the following alarms have cleared on Local Panel (B002L) and Back Panel (B002).
- | | <u>PAR</u> |
|--|--------------|
| a. Supply or Exhaust air flow low (FSL-94 and FSL-98). | 25A-240 |
| b. Roll and Bag Pressure drop (PDSHH-87, PDISH-88) | 25A-94 & 100 |
| c. Cooling Coil entering air temperature low (TSL-90). | 25A-235 |
| d. Supply Fan vibration high (YSH-129A, B). | 25A-82, 84, |
| e. Exhaust Fan vibration high (YSH-199A, B) | 25A-86 & 88 |
7. Verify A/C Unit 206 Supply/Exhaust Duct Smoke present alarm is deenergized on Panel (26BDB012).
8. Place Supply Fans (249A & 249B) and Exhaust Fans (267A & 267B) controls, (HS-249AA, 249BA and 267AA, 267BA), located on Local Panel (B002L), in the "AUTO" position.

9. Place Standby Supply (249B) and Exhaust (267B) Fan controls (HS-249BB and 267BB), located on Back Panel (B002), in the "AUTO" position.

4.3.2.3 Emergency Chilled Water Equipment Rooms Unit Coolers (223A and 223B)

4.3.2.3.1 Initial Condition

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Chilled Water	23	23-3/23-10

4.3.2.3.2 Procedure

1. Place SSPLS Panel Control (HS-SS2A) and U.C. (223A) SSPLS Control (HS-223A), located on SSPLS Panel (12SSB251A), in the REMOTE position.
2. Place SSPLS Panel Control (HS-SS2B) and U.C. (223B) SSPLS Control (HS-223B), located on SSPLS Panel (12SSB251B), in the REMOTE position.
3. Place Unit Cooler Supply Fan (223A) control (HS-223AB), located on Back Panel (B002), in the "AUTO" position.

NOTE: Starting the Emergency Chiller (23ECHO01A) will automatically start the unit cooler supply fan and energize the control system.

4. Place Unit Cooler Supply Fan control (HS-223AA) located on Local Panel (B002D) in the "AUTO" position.

5. Verify cooling coil air inlet and outlet temperature indication (TI-107A and 108A) locally is within range specified in Section 3 (Table 3-3) of this SDD.
6. Verify the following alarms have cleared on Local Panel (B002D) and Back panel (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Differential Pressure High	PDISH-106A	25A-323
b. Discharge Air flow low	FSL-109A	25A-118/119
c. Fan vibration high	YSH-127A	25A-122/123
d. Air High temperature thermostat (26BDTSH-071) located on Panel (26BDB012).		

7. Place Unit Cooler Supply Fan (2233) control (HS-223BA), located on Back Panel (B002), in the "AUTO" position.

NOTE: Starting the Emergency Chiller (23ECHO01B) will automatically start the unit cooler supply fan and energize the control system.

8. Place Unit Cooler Supply Fan control (HS-223BB), located on Local Panel (B002E) in the "AUTO" position.
9. Verify cooling coil air inlet and outlet temperature indication (TI-107B and 108B) locally.
10. Verify the following alarms have cleared on the local (B002E) and Back Panel (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Differential Pressure High	PDISH-106B	25A-231
b. Discharge Air flow low	FSL-109B	25A-120/121
c. Supply Fan vibration high	YSH-127B	25A-124/125
11. Verify U.C. Filter Leaving Air Temperature High alarm (TBD), is HOLD 25000573		
deenergized located on Local Panel (26BDB012).		

4.3.2.4 Primary Sodium Storage Tank Unit Cooler (220)

4.3.2.4.1 Initial Condition

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10

4.3.2.4.2 Procedure

1. Place Unit Cooler (220) Supply Fan control (HS-220), located on Local Panel (B002S), in the "START" position.

NOTE: Starting Supply Fan (220) will energize the control system.

2. Verify Air Temp Entering Cooling Coil & Leaving Cooling Coil Indication (TI-102 and 103) locally is within range specified in Section 3 (Table 3-3) of this SDD.

3. Verify the Discharge Air Flow low (FSL-104) alarm (PAR 25A-318) has cleared on Local Panel (B002S).
4. Verify Filter Leaving Air Temperature High alarm (PAR 25A-319) has cleared on Local Panel (26BDB012).
5. Verify Throwaway Filter Pressure Drop Indicator (PDI-101) locally is within range as specified in section 3 (Table 3-3) of this SDD.

4.3.2.5 Auxiliary Feed Pump Electric Driven Unit Coolers (221A and 221B)

4.3.2.5.1 Initial Condition

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Chilled Water	23	23-3/23-10

4.3.2.5.2 Procedure

Refer to section 4.3.2.6.2 of this SDD (Startup Turbine Driven Unit) with the following exceptions:

1. Place Unit Cooler (221A & 221B) SSPLS controls (HS-SS2A & 2B) and Unit Cooler SSPLS switches (HS-221A & 221B), located on SSPLS Panels (12SSB251A & 12SSB251B), in the REMOTE positions.
2. Verify Selector Switch in Local Position alarms (PAR 25A-413, 414, 415 and 278) have cleared on Local Panel (B002F & B002G) and Back Panel (B002).

NOTE: Unit Coolers (221A and 221B) are not redundant to each other and both operate continuously.

Failure of one unit (221A or 221B) has no effect on the other.

4.3.2.6 Auxiliary Feed Pump (Turbine) Unit Coolers (222A and 222B)

4.3.2.6.1 Initial Condition

The following systems are operating as described by the indicated SDI:

<u>System</u>	<u>SDI</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Chilled Water	23	23-2/23-10

4.3.2.6.2 Procedure

1. Place Unit Cooler (222A & 222B) SSPLS Controls (HS-SS2A & SS2B) and Unit Cooler SSPLS Control (HS-222A & 222B), located on SSPLS Panels (12SSB251A & 12SSB251B), in the REMOTE position.
2. Verify Selector Switch in local position alarm (PAR 25A-416, 417, 148 and 150) has cleared on Local Panels (B002D & B002E) and Back Panel (B002).
3. Place Unit Cooler (222A) control (HS-222AB), located on Back Panel (B002), in the "START" position.

NOTE: This will energize the control system.

4. Verify Cooling Coil air inlet (TI-111A) and outlet (TI-017A) temperature indication locally.

5. Verify the following alarms have cleared on Local (B002D) and Back Panel (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Differential Pressure High	PDISH-016A	25A-151
b. Discharge Air Flow Low	FSL-020A	25A-147
c. Supply Fan Vibration High	YSH-117A	25A-155/156
d. Supply Air Temperature High	26BDTSH-057	25A-153
e. Unit Trouble	-	25A 148

6. Place standby Unit Cooler (222B) control (HS-222BB) located on the Back Panel (B002), in the "AUTO" position.
7. Place Unit Coolers (222A & 222B) controls (HS-222AA & 222BA), located on Local Panel (B002D & B002E) in the "AUTO" position.

4.3.2.7 Auxiliary Feed Pump Ventilation System (255, 256)

4.3.2.7.1 Initial Condition

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10

4.3.2.7.2 Procedure (Fan 255)

1. Place outside air Supply Fan (255) control (HS-255), located on Local Panel (B002J), in the "START" position. This energizes the control system. Verify operating status light (XL-255A) is energized.
2. Verify throwaway Filter (208) indication (PDISH-240) locally is within limits as specified in section 3 (Table 3-3) of this SDD.
3. Verify (Electric) heating coil (238) temperature and air flow low limit, specified by Section 3 (Table 3-3) of this SDD, indication is above minimum (FSL-230, TI-227) locally.

4.3.2.7.3 Procedure (Fan 256)

1. Place outside air Supply Fan (256) control (HS-256), located on Local Panel (B002K), in the "START" position. Verify operating status light (XL-256A) is energized. This energizes the control system.
2. Verify throwaway Filter (207) indication (PDISH-250), locally, is within limits specified by Section 3 (Table 3-3) of this SDD.
3. Verify heating coil (electric) (239) high temperature and air flow low limit indication (FSL-229, TI-226) locally is within range specified by Section 3 (Table 3-3) of this SDD.

4.3.2.8 Maintenance Bay A/C System (210)

4.3.2.8.1 Initial Condition

The following systems are operating as described by the indicated SDD:

	<u>System</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10
b.	Compressed Gas	22	22-4
c.	Chilled Water	23	23-3/23-10
d.	Service Water	75A	75A-4

4.3.2.8.2 Procedure

1. Place A/C units Supply Fan (210) control (HS-210), located on Local Panel (B002H), in the "START" position. Verify operating status light (XL-210A) energized.

This will energize the control system and open the outside air damper (YAD-62A) to its minimum position.

2. Verify outside air, mixed air, heating coil air outlet and supply air, temperatures (TISH-061, TIC-062, TI-065, TI-066) on Local Panel (B002H) are within limits specified in Section 3 (Table 3-3) of this SDD.
3. Verify the following alarms have cleared on Local Panel (B002H).

	<u>Inst. #</u>	<u>PAR</u>
a. Discharge Air Flow Low	FSL-067	25A-127
b. CC Entering Air Temperature Low	TSL-064	25A-226
d. Supply Air Temperature High	TSH-065	25A-227
e. Roll Filter Differential Pressure High	PDSHH-145	25A-129

4.3.2.9 System 56 Panel Unit Coolers (237A, B and C)

4.3.2.9.1 Initial Condition

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Chilled Water	23	23-3/23-10

NOTE: Unit Coolers (237A, 237B and 237C) are used only during fire accident to maintain the indoor design temperature below 120°F. Unit Coolers are activated at 110°F as sensed by (TS-212, 218, 224).

4.3.2.9.2 Procedure (Unit Cooler 237A)

1. Place SSPLS Panel Control (HS-SS2A) and Supply Fan (237A) Control (HS-237A), located on SSPLS Panel (12SSB251A), in the REMOTE position.
2. Place Supply Fan (237A) control (HS-237AA), located on Local Panel (B002D), in the "AUTO" position.
3. Place Supply Fan (237A) control (HS-237AB), located on the Back Panel (B002) in the "AUTO" position.

NOTE: Starting of the Supply Fan will energize the control system.

4. Verify the following alarms are deenergized on Local (B002D) and Back (B002) Panel.

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Differential Pressure High	PDISH-207	25A-321
b. Discharge Air Flow Low	FSL-211	25A-106/107
c. Supply Fan Vibration High	YSH-210	25A-112/113

5. Verify Supply Air Temperature High alarm (PAR-TBD) deenergized on Local Panel (26BDB012).

4.3.2.9.3 Procedure (Unit Cooler 237B)

1. Place SSPLS Panel Control (HS-SS2B) and Supply Fan (237B) Control (HS-237B), located on SSPLS Panel (12SSB251B), in the REMOTE position.
2. Place Supply Fan (237B) control (HS-237BA), located on Local Panel (B002E), in the "AUTO" position.
3. Place Supply Fan (237B) control (HS-237BB), located on Back Panel (B002), in the "AUTO" position.

NOTE: Starting of Supply Fan will energize the control system.

4. Verify the following alarms have cleared on the local (B002E) and Back Panels (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Differential Pressure High	PDISH-213	25A-229
b. Discharge Air Flow Low	FSL-217	25A-108/109
c. Supply Fan Vibration High	YSH-216	25A-114/115

HOLD 25000573

4.3.2.9.4 Procedure (Unit Cooler 237C)

1. Place SSPLS Panel Control (HS-SS2A) and Supply Fan (237C) Control (HS-237C), located on SSPLS Panel (12SSB251A), in the REMOTE position.
2. Place Supply Fan (237C) control (HS-237CA), located on Local Panel (B002D), in the "AUTO" position.
3. Place Supply Fan (237C) control (HS-237CB), located on Back Panel (B002), in the "AUTO" position.

NOTE: Starting of Supply Fan will energize the control system.

4. Verify the following alarms are deenergized on the local (B002D) and Back Panels (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Differential Pressure High	PDISH-219	25A-327
b. Discharge Air Flow Low	FSL-223	25A-110/111
c. Supply Fan Vibration High	YSH-253	25A-116/117

4.3.2.10 Stairwell Pressurization Fans (246A, 246B, 247A, 247B, 248A, 248B)

4.3.2.10.1 Procedure

Place Fans (246A & B, 247A & B, 248A & B) Controls (HS-246A & B, 247A, 247B, 248A & B), located on Panel (26BDB012) in the "AUTO" position.

NOTE: Fan is automatically started, by a System 26 signal, upon the detection of a fire in the building. Fan Dampers (MOD-190 & 193, 203, 204, 205, 206) will open automatically when the fan starts.

NOTE: Stairwell Pressurization Fans are started (when in AUTO as described above) by:

- (a) Fire detection control module
- (b) Manual fire alarm station
- (c) HVAC Fire detection control module.

4.3.2.11 SGB-IB Smoke Vent Fan (266)

Refer to SDD-26B (SOI 26B-13)

4.3.3 Normal Operation (SOI 25A-13)

4.3.3.1 Steam Generator Loops 1,2 & 3 and Auxiliary Bay A/C System (201, 202 & 203)

4.3.3.1.1 A/C Systems 201 Summer (Outside air temperature over 50°F)

Outside Air Entering Temperature transmitter (TT-153A) will switch the system to the summer operating mode (energize the cooling coil).

The temperature and humidity transmitters (TT-153A, MT-153C) and (TT-153B, MT-153D) located in the outside air duct and cell 244, will position the outside and return air dampers as follows:

Move the outside and exhaust air dampers (TMD-001B and 001E) to fully open position and close the return and bypass air dampers (TMD-001D and 173) when the outside air enthalpy is lower than the indoor enthalpy.

Move the return and bypass air dampers (TMD-001D and 173) to fully open position and close the outside and exhaust air dampers (TMD-001B and 001E) when the indoor enthalpy is lower than the outside air enthalpy.

The temperature transmitter (TT-008A) located in the main supply duct, through a temperature controller will modulate the cooling coil control valve (SDD-23) to maintain constant discharge temperature.

Level Switch (LSH-158) will shut cooling coil control valve if condensate level exceeds setpoint as described in Section 3 (Table 3-3) of this SDD.

4.3.3.1.2 A/C Systems 201 Winter (Outside air temperature less than 50°F)

Outside air entering temperature transmitter (TT-153) through a temperature controller will switch the system to the winter operating mode (de-energize the cooling coil and energize the economizer cycle).

The temperature transmitter (TT-008) located in the main supply duct, will modulate the outside and return air dampers (TMD-001B and 001C) to maintain a constant discharge temperature.

The Exhaust and Bypass Dampers (TMD-001E and 001D) are modulated simultaneously in the same proportion as the outside air and return air dampers (TMD-001B and 001C).

4.3.3.1.3 A/C System 202 Summer (Outside air temperature over 50°F)

Temperature transmitter (TT-16A) will switch the system to the summer operating mode (energize the cooling coil).

The temperature and humidity transmitters (TT-163A, MT-163C) and (TT-163B, MT-163D) located in the outside air duct and cell 245, will position the outside and return air dampers as follows:

Move the outside and exhaust air dampers (TMD-025B and 025D) to fully open position and close the return and bypass air dampers (TMD-025C and 025D) when the outside air enthalpy is lower than the indoor enthalpy.

Move the return and bypass air dampers (TMD-025C and 025D) to fully open position and close the outside and exhaust air dampers (TMD-025B and 025E) when the indoor enthalpy is lower than the outside air enthalpy.

The temperature transmitter (TT-031A) located in the main supply duct, through a temperature controller will modulate the cooling coil control valve (SDD-23) to maintain constant discharge temperature.

Level Switch (LSH-159) will shut cooling coil control valve if condensate level exceeds setpoint as described in Section 3 (Table 3-3) of this SDD.

4.3.3.1.4 A/C System 202 Winter (Outside air temperature less than 50°F)

The temperature transmitter (TT-163) through a temperature controller will switch the system to the winter operating mode (de-energize the cooling coil and energize the economizer cycle).

The temperature transmitter (TT-008) located in the main supply duct, will modulate the outside and return air dampers (TMD-025B and 025C) to maintain a constant discharge temperature.

The Exhaust and Bypass Dampers (TMD 025E & 025D) are modulated simultaneously in the same proportion as the outside air and return air dampers (TMD-001B and 001C).

4.3.3.1.5 A/C System 203 Summer (Outside air temperature over 50°F)

Temperature transmitter (TT-172A) will switch the system to the summer operating mode (energize the cooling coil).

The temperature and humidity transmitters (TT-172A, MT-172C) and (TT-172B, MT-172D) located in the outside air duct and cell 246, will position the outside and return air dampers as follows:

Move the outside and exhaust air dampers (TMD-047B and 047E) to fully open position and close the return and bypass air dampers (TMD-001C and 001E) when the outside air enthalpy is lower than the indoor enthalpy.

Move the return and bypass air dampers (TMD-047C and 047D) to fully open position and close the outside and exhaust air dampers (TMD-047B and 047E) when the indoor enthalpy is lower than the outside air enthalpy.

The temperature transmitter (TT-054A) located in the main supply duct, through a temperature controller will modulate the cooling coil control valve (SDD-23) to maintain constant discharge temperature.

Level Switch (LSH-160) will shut cooling coil control valve if condensate level exceeds setpoint as described in Section 3 (Table 3-3) of this SDD.

4.3.3.1.6 A/C System 203 Winter (Outside air temperature less than 50°F)

The temperature transmitter (TT-172) through a temperature controller will switch the system to the winter operating mode (de-energize the cooling coil and energize the economizer cycle).

The temperature transmitter (TT-008) located in the main supply duct, will modulate the outside and return air dampers (TMD-047B and 047C) to maintain a constant discharge temperature.

The Exhaust and Bypass Dampers (TMD-047E and 047D) are modulated simultaneously in the same proportion as the outside air and return air dampers (TMD-047B and 047C).

4.3.3.2 Intermediate Bay A/C System (204 and 206)

4.3.3.2.1 A/C System 204 Summer (Outside air temperature above 50°F)

Temperature transmitter (TT-183) will switch the system to the summer operating mode (energize the cooling coil and de-energize system 75A hot water heating coil and circulating pump).

Temperature and humidity transmitters (TT-183A, MT-183D) and (TT-183B, MT-183C) located in the outside air duct and in cell 262, through enthalpy controllers will position the outside and return air dampers as follows:

- a. Move the outside and exhaust air dampers (TMD-072B and 072E) to fully open position and close the return and bypass air dampers (MOD-072C and 72D) when the outside air enthalpy is lower than the indoor enthalpy.
- b. Move the return and bypass air dampers (TMD-072C and 072D) to fully open position and close the outside and exhaust air dampers (TMD-072B and 72E) when the indoor enthalpy is lower than the outside air enthalpy.

Temperature transmitter (TT-081A), located in the main supply duct, will modulate the cooling coil control valve (SDD-23) to maintain constant discharge temperature.

Low Temperature Safety Thermostat (TSL-078A, 078B, 078C, 078D, 006E, 006F, 006G or 006H) will open Cooling Coil Control Valve fully upon sensing a temperature below 40°F.

4.3.3.2.2 A/C System 204 Winter (Outside air temperature below 50°F)

Temperature transmitter (TT-183A) will switch the system to the Winter Operation Mode (de-energize the cooling coil and energize the economizer cycle, heating coil, and heating coil recirculating pump (SDD-75A).

Supply Air Temperature transmitter (TT-081A) located in the main supply duct, will modulate the outside and return air dampers (TMD-072B& 072C) and the heating coil control valve (SDD-75A) to maintain a constant discharge temperature.

Exhaust and Bypass dampers (TMD-072E and 072D) are modulated simultaneously in the same proportion as the outside air and return air dampers (TMD-072B and 072C).

4.3.3.2.3 A/C System 206 Summer (Outside air temperature above 50°F)

Outside air temperature transmitter (TT-194A) will switch the system to the summer operating mode (energize the cooling coil and de-energize system 75A hot water heating coil and circulating pump).

Temperature and humidity transmitters (TT-194A, MT-194D) and (TT-194B, MT-194C), located in the outside air duct and in cell 271, through enthalpy controllers, will position the outside and return air dampers as follows:

- a. Move the outside and exhaust air dampers (TMD-196B and 196E) to fully open position and close the return and bypass air dampers (TMD-196C and 196D) when the outside air enthalpy is lower than the indoor enthalpy.
- b. Move the return and bypass air dampers (TMD-196C and 196D) to fully open position and close the outside and exhaust air dampers (TMD-196B and 196E) when the indoor enthalpy is lower than the outside air enthalpy.

Temperature transmitter (TT-093A), located in the main supply duct, will modulate the cooling coil control valve (SDD-23) to maintain constant discharge temperature.

4.3.3.2.4 A/C System 206 Winter (Outside air temperature below 50°F)

Temperature transmitter (TT-194A) will switch the system to the Winter Operation Mode (de-energize the cooling coil and energize the economizer cycle, heating coil, and heating coil recirculating pump (SDD-75A).

Supply air temperature indicating controller (TIC-093), located in the main supply duct, will modulate the outside and return air dampers (TMD-196B and 196C) and the heating coil control valve (SDD-75A) to maintain a constant discharge temperature.

Exhaust and Bypass dampers (TMD-196E and 196D) are modulated simultaneously, in the same proportion as the outside air and return air dampers (TMD-196B and 196C).

4.3.3.3 Emergency Chilled Water Equipment Rooms Unit Coolers (223A & 223B)

Unit Coolers (223A & 223B) are redundant and operate only when their related Emergency Chilled Water Chiller (23ECH001A, 1B) start. Coolers are supplied by the 1E power system and the Emergency Chilled Water System (23EC).

4.3.3.4 Primary Sodium Storage Tank Unit Cooler System (220)

Unit Cooler (220) operates continuously to cool the primary Sodium Storage Tank Cell (211). Unit Cooler Fan cycles to provide heat removal capacity.

4.3.3.5 Auxiliary Feed Pump (Electric Driven) Unit Coolers (221A & 221B)

Unit Coolers (221A & 221B) provide air to the Feedwater pump cells (204A & 204B) operate continuously.

4.3.3.6 Auxiliary Feed Pump (Turbine Driven) Unit Coolers (222A & 222B)

Unit Coolers (222A & 222B) are redundant, one in service and one in auto/standby when the turbine driven Feedwater Pump (52AFP001) is in operation.

4.3.3.7 Auxiliary Feed Pumps Ventilation System (255, 256)

The outside air Supply Fan (255) is manually started which energizes the control system.

Temperature transmitter (TT-227) will modulate the output of the Electric Heating Coil (238) to maintain a minimum discharge air temperature.

4.3.3.8 Maintenance Bay A/C System (210)

4.3.3.8.1 Summer (Outside air temperature above 50°F)

The temperature transmitter (TT-061), will switch the system to the summer operating mode (Energize the cooling coil, de-energize the heating coil and system 75A hot water coil circulating pump).

The room thermostat (TS-239) will modulate the cooling coil control valve (SDD-23) to maintain room temperature.

4.3.3.8.2 Intermediate Temperature (outside air temp >50°F & <75°F)

The economizer cycle will be allowed to operate as it does during the winter operating mode (Refer to section 4.3.3.8.4 of this SDD).

4.3.3.8.3 High Temperature (outside air temp. >75°F)

The economizer cycle will be de-energized and the outside air damper (TAD-62A) will move to its minimum position.

4.3.3.8.4 Winter (Outside air temperature below 50°F)

The temperature transmitter (TT-061), will switch the system to the winter operating mode (de-energize the cooling coil and energize the economizer cycle, heating coil, and heating coil recirculating pump (SDD-75A).

The mixed air temperature is maintained by the temperature transmitter (TT-062) modulating the Outside and Return air dampers (TAD-062A and 062B).

When the outside air damper reaches its minimum position the heating coil control valve can open. The room thermostat (TS-269) will modulate the heating coil control valve (SDD-75A) to maintain a normal room temperature.

4.3.3.9 System 56 Panel Unit Coolers (237A, B & C)

Unit Coolers (237A, 237B & 237C) do not operate during normal plant operation. Coolers are used only during fire accident to maintain the indoor design temperature below 120°F. Unit Coolers are activated at 110°F.

4.3.3.10 Stairwell Pressurization Fans (246A, 246B, 247A, 247B, 248A, 248B)

Upon detection of a fire in the building by SDD-26B, the stairwell pressurization Fans (246A, 246B, 247A, 247B, 248A, 248B) will be started automatically and associated dampers will open.

4.3.3.11 SGB-IB Smoke Vent Fan (266)

Refer to SDD-26B (SOI 26B-13).

4.3.3.12 SGB HVAC Equipment Shift (Weekly) (SOI 25A-44)

4.3.3.12.1 A/C System (204) Supply/Exhaust Fan Shift

1. Maintain standby Supply Fan (244A or 244B) control (HS-244AB or 244BB), located on Back Panel (B002), in the "START" position. Verify operating status indication (XL-244AC or 244BC), located on Back Panel (B002) is energized.

NOTE: This will start related Exhaust Fan (264A or 264B).

2. Place Supply Fan, to be shutdown, (244A or 244B) control (HS-244AB or 244BB), located on Back Panel (B002), in the "STOP" position.

NOTE: This will stop related Exhaust Fan (264A or 264B).

3. Verify fans operating status lights (XL-244AD & 264AD or 244BD & 264BD), located on Back Panel (B002) are energized.
4. Allow Supply Fan (244A or 244B) Control (HS-244AB or 244BB) to return to "AUTO" position.
5. Place standby Supply Fan (244A or 244B) control (HS-244AB or 244BB), located on Back Panel (B002), in the "AUTO" position.
6. Verify Supply or Exhaust Low Air Flow Low (FSL-84 & 96) alarm (PAR 25A-247) is deenergized on Back Panel (B002).

4.3.3.12.2 A/C System (206) Supply/Exhaust Fans Shift

1. Maintain standby Supply Fan (249A or 249B) control (HS-249AB or 249BB), located on Back Panel (B002), in the "START" position. Verify operating status light (XL-249AC or 249BC), located on Back Panel (B002) is energized.

NOTE: This will start related Exhaust Fan (267A or 267B).

2. Place Supply Fan to be shutdown (249A or 249B) control (HS-249AB or 249BB), located on Back Panel (B002), in the "STOP" position.

NOTE: This will stop related Exhaust Fan (267A or 267B).

3. Verify fans operating status lights (XL-249AD & 267AD or 249BD & 267BD), located on Back Panel (B002) are energized.
4. Allow Supply Fan (249A or 249B) control (HS-249AB or 249BB) to return to the "AUTO" position.
5. Place standby Supply Fan (249A or 249B) control (HS-249AB or 249BB), located on Back Panel (B002), in the "AUTO" position.
6. Verify Supply or Exhaust air flow low (FSL-94 & 98) alarm (PAR 25A-240) deenergized on Back Panel (B002).

4.3.3.12.3 Aux. Feed Pump Turbine Unit Coolers (222A, 222B)

1. Place standby Unit Cooler (222A or 222B) control (HS-222AB or 222BB), located on Back Panel (B002), in the "START" position. Verify operating status light (XL-222AC or 222BC), located on Back Panel (B002) is energized.
2. Verify Discharge Air Flow Low (FSL-20A or 20B) and Unit Trouble alarm (PAR 25A-174, 148, 149 or 150) deenergized on Back Panel (B002D).
3. Place operating Unit Cooler (222A or 222B) control (HS-222AB or 222BB), located on Back Panel (B002), in the "STOP" position. Verify operating status lights (XL-222AD or 222BD), located on Back Panel (B002) is deenergized.

4. Place standby Unit Cooler (222A or 222B) control (HS-222AB or 222BB), located on Back Panel (B002), in the "AUTO" position.

4.3.3.12.4 A/C System (201) Supply/Exhaust Fan (241A, 241B/261A, 261B)

1. Maintain standby Supply Fan (241A or 241B) control (HS-241AB or 241BB), located on Back Panel (B002), in the "START" position. Verify operating status light (XL-241AC or 241BC), located on Back Panel (B002) is energized.

NOTE: This will start related Exhaust Fan (261A or 261B). Verify energized, operating status light (XL-261AC or 261BC), located on Back Panel (B002).

2. Place Supply Fan, to be shutdown, (241A or 241B) control (HS-241AB or 241BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-241AD or 241BD) located on Back Panel (B002) is energized.

NOTE: This will stop related Exhaust Fan (261A or 261B)

3. Verify Supply and Return Air Flow Low (FSL-11 or 014) alarm (PAR 25A-306 and 25A-307) deenergized on Back Panel (B002).
4. Allow Supply Fan (241A or 241B) Control (HS-241AB or 241BB), located on Back Panel (B002) to return to "AUTO" position.
5. Place standby Supply Fan (241A or 241B) control (HS-241AB or 241BB), located on Back Panel, in the "AUTO" position.

B

4.3.3.12.5 A/C System (202) Supply/Exhaust Fan (242A, 242B/262A, 262B)

1. Maintain standby Supply Fan (242A or 242B) control (HS-242AB or 242BB), located on Back Panel (B002), in the "START" position. Verify operating status light (XL-242AC or 242BC), located on Back Panel (B002) is energized.

NOTE: This will start related Exhaust Fan (262A or 262B). Verify operating status light (XL-262AC or 262BC), located on Back Panel (B002) is energized.

2. Place Supply Fan, to be shutdown (242A or 242B) control (HS-242AB or 242BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-242AD or 242BD), located on Back Panel (B002) is deenergized.

NOTE: This will stop related Exhaust Fan (262A or 262B).

3. Verify supply or exhaust air flow low alarm (PAR 25A-311 & 312) deenergized on Back Panel (B002).
4. Allow operating supply fan (242A or 242B) control (HS-242AB or 242BB), located on Back Panel (B002), to return to the "AUTO" position.
5. Place standby supply fan (242A or 242B) control (HS-242AB or 242BB), located on Back Panel (B002), in the "AUTO" position.

4.3.3.12.6 A/C System (203) Supply/Exhaust Fan (243A, 243B, 263A, 263B)

1. Maintain standby Supply Fan (243A or 243B) Control (HS-243AB or 243BB), located on Back Panel (B002), in the "START" position. Verify operating status light (XL-243AC or 243BC), located on Back Panel (B002) is energized.

NOTE: This will start related Exhaust Fan (263A or 263B). Verify operating status light (XL-263AC or 263BC), located on Back Panel (B002) is energized.

2. Place Supply Fan, to be shutdown (243A or 243B) Control (HS-243AB or 243BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-243AD or 243BD), located on Back Panel (B002) is energized.

NOTE: This will stop related Exhaust Fan (263A or 263B).

3. Verify supply and exhaust air flow low alarm (PAR 25A-316 7 317) deenergized on Back Panel (B002).
4. Allow operating Supply Fan (243A or 243B) Control (HS-243AB or 243BB), located on Back Panel (B002), to return to the "AUTO" position.
5. Place standby Supply Fan (243A or 243B) Control (HS-243AB or 243BB), located on Back Panel (B002), in the "AUTO" position.

4.3.4 Shutdown (SOI 25A-19)

4.3.4.1 Steam Generator Loops 1, 2 & 3, Auxiliary Bay A/C System (201, 202 & 203)

4.3.4.1.1 Initial Conditions

System 56 lube oil panels are not operating. Refer to SOI 56-TBD.

4.3.4.1.2 Procedure (201)

Shutdown of A/C System (201) will interrupt ventilation to Cells 207, 221, 224, 227, 231, 241, 244, 251 & 281.

1. Place Supply Fan (241A & 241B) control (HS-241AB & 241BB), located on the Back Panel (B002), in the "STOP" position. Verify operating status light (XL-241AD or 241BD), located on Back Panel (B002) is energized.
2. Place related Exhaust Fan (261A & 261B) control (HS-261AB or 261BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-261AD or 261BD) located on Back Panel (B002) is energized.
3. Shutting down of the system will move the automatic Dampers (MOD-001A, 010A, 010B, 012A, 012B, 001B, 001E) to the close position and Dampers (MOD-0016C & 001D) to the open position.
4. Verify Damper (MOD-001A, 010A, 010B, 012A, 012B, TMD-001B, 001C, 001D & 001E), position status indication (XL-001AD, 001BD, 001CD, 001DD, 001ED, 010AD, 010BD, 012AD & 012BD), located on Back Panel (B002) are energized.

4.3.4.1.3 Procedure (202)

Shutdown of A/C System (202) will interrupt ventilation to Cells 208, 222, 225, 228, 242, 245 & 248.

1. Place Supply Fan (242A & 242B) Controls (HS-242AB & 242BB), located on Back Panel (B002), in the "STOP" position. Verify operating status indicators (XL-242AD & 242BD), located on Back Panel (B002) are energized.
2. Place related Exhaust Fan (262A & 262B) Controls (HS-262AB & 262BB), located on Back Panel (B002), in the "STOP" position. Verify operating status indication (XL-262AD & 262BD), located on Back Panel (B002) are energized.

NOTE: Shutting down of the system will move Dampers (MOD-025A, 33A, 33B, 36A, 36B, TMD-25A & 25B) to the closed position and open Dampers 025C & 025D. Verify status indications (XL-025AD, 033AD, 033BD, 025AD, 025BD, 025CC, 025DC), located on Back Panel (B002) is energized.

4.3.4.1.4 Procedure (203)

Shutdown of A/C System (203) will interrupt ventilation to Cells 206, 209, 223, 226, 230, 232, 243, 246 & 252.

1. Place Supply Fans (243A & 243B) Controls (HS-243AB & 243BB), located on Back Panel (B002), in the "STOP" position. Verify operating status indications (XL-243AD & 243BD), located on Back Panel (B002) is energized.
2. Place related Exhaust Fans (263A & 263B) Controls (HS-263AB & 263BB), located on Back Panel (B002), in the "STOP" position. Verify operating status indications (XL-263AD & 263BD), located on Back Panel (B002) are energized.

NOTE: Shutting down of the system will move Dampers (MOD-047A, 056A, 056B, 058A, 058B, TMD-047B, & 047E) to the closed position and open Dampers (047C & 047D).

3. Verify Damper (MOD-047A, 056A, 056B, 058A, 058B, TMD-047B, & 047E) position status indications (XL-047AD, 047BD, 047CD, 047DD, 047ED, 056AD, 056BD, 058AD & 058BD), located on Back Panel (B002) are energized.

4.3.4.2 Intermediate Bay A/C System (204 and 206)

Redundant A/C system is in operation.

4.3.4.2.1 Procedure (204)

1. Place Supply Fan (244A & 244B) Control (HS-244AB & 244BB), located on Back Panel (B002), in the "STOP" position. Verify operating status indication (XL-244AD & 244BD), located on Back Panel (B002).
2. Place related Exhaust Fan (264A & 264B) Control (264AB & 264BB), located on Back Panel (B002), in the "STOP" position. Verify operating status lights (XL-264AD & 264BD), located on Back Panel (B002) are energized.

NOTE: Shutting down of the System (204) will move Dampers (MOD-072A, 082A, 082B, 095A & 095B) (TMD-072B, 072E) to close position and open Dampers (TMD-072C & 072D).

3. Verify Damper status indications (XL-072AD, 082AD, 082BD, 095AD & 095BD), located on Back Panel (B002) are energized.

4.3.4.2.2 Procedure (206)

1. Place Supply Fan (249A & 249B) control (HS-249AB & 249BB), located on Back Panel (B002), in the "STOP" position. Verify operating status lights (XL-249AD & 249BD), located on Back Panel (B002) are energized.
2. Place related Exhaust Fan (267A & 267B) control (HS-267AB & 267BB), located on Back Panel (B002), in the "STOP" position. Verify operating status indications (XL-267AD & 267BD), located on Back Panel (B002) are energized.

NOTE: Shutting down of the System (206) will move automatic dampers (MOD-196A, 198A, 198B, MOD-200A, 200B, TMD-196B, 196E) to close position and open Dampers (TMD-196C, 196D).

4.3.4.3 Emergency Chilled Water Equipment Rooms Unit Coolers
(223A and 223B)

Unit Cooler does not normally operate. U.C. (223A or 223B) is started automatically upon Start of related ECW Chiller. ECW Chiller operation (related Unit) must be discontinued upon shutdown of U.C.

4.3.4.3.1 Initial Conditions

1. Related Emergency Chilled Water equipment (23ECH001 or 23ECH002) is not operating.
2. Redundant Unit Cooler (223A or 223B) is operable.

4.3.4.3.2 Procedure

Place Unit Cooler (223A or 223B) control (HS-223AB or 223BB), located on the Back Panel (B002), in the "STOP" position. Verify operating status indication (XL-223AD or 223BD), located on Back Panel (B002) is energized.

4.3.4.4 Primary Sodium Storage Tank Unit Cooler System (220)

1. Place Unit Cooler (220) control (HS-220), located on Local Panel (B002S) in the "STOP" position.
2. Verify operating status indication (XL-220B), located on Local Panel (B002S) is energized.

4.3.4.5 Auxiliary Feed Pump Unit Cooler (222A, 222B, 221A, 221B)

4.3.4.5.1 Initial Conditions

Related Auxiliary Feed Pump is not operating.

<u>Unit Cooler</u>	<u>Cell</u>	<u>Auxiliary Feed Pump</u>
221A	204A	52AFP002A
221B	204B	52AFP002B
222A/222B	202A	52AFP001

4.3.4.5.2 Procedure

1. Place Unit Cooler (222A, 222B, 221A, 221B) control (HS-222AB, 222BB, 221AB or 221BB), located on Back Panel (B002), in the "STOP" position.
2. Verify operating status indication (XL-222AD, 222BD, 221AD or 221BD), located on Back Panel (B002) is energized.

4.3.4.6 Auxiliary Feed Pump Ventilation System (255 and 256)

1. Place Fan (255 or 256) control (HS-255 or 256), located on Local Panel (B002J) in the "STOP" position.
2. Verify operating status indication (XL-255B or 256B), located on Local Panel (B002J) is energized.

4.3.4.7 Maintenance Bay A/C System (210)

1. Place Supply Fan (210) control (HS-210), located on Local Panel (B002H) in the "STOP" position.

NOTE: This will move the outside air Damper (TAD-062A) to its fully closed position.

2. Verify status indications (XL-210B & 062AB), located on Local Panel (B002H) are energized.

4.3.4.8 System 56 Panel Unit Coolers (237A, 237B & 237C)

4.3.4.8.1 Initial Conditions

System 56 panels are not operating. Refer to SDD-56 (SOI 56-1-13)

4.3.4.8.2 Procedure

1. Place Unit Cooler (237A, 237B or 237C) Supply Fan control (HS-237AB, 237BB or 237CB, located on Back Panel (B002), in the "STOP" position.

NOTE: This will de-energize the control system.

2. Verify operating status indication (XL-237AD, 237BD or 237CD), located on Back Panel (B002) is energized.

4.3.4.9 Stairwell Pressurization Fan (247A, 247B, 246A, 246B, 248A, 248B)

CAUTION: This procedure places Stairwell Pressurization Fan in an inoperable condition. This could prevent use of a stairwell during a fire.

1. Place Stairwell Pressurization Fan (246A, 246B, 247A, 247B, 248A or 248B) controls, (HS-246B, 247A, 247B or 248B), located on Panel (26BDB023) in the "STOP" position.
2. Verify status indication (XL-246AB, 246BB, 247AB, 247BB or 248AB, 248BB) located on panel (26BDB012) is energized.

4.3.4.10 SGB-IB Smoke Vent Fan

Refer to SDD-26B (SOI 26B-13)

4.3.5 Draining/Refilling (SOI 25A-34)

4.3.5.1 Cooling Coils

The following cooling coils draining is described in SDD-23 (SOI-23-5).

1. Air Handling Units (201, 202, 203, 204 and 206)
2. Auxiliary Feed Pump Unit Coolers (221A, 221B, 222A, 222B)

NOTE: Draining of the Auxiliary Feed Pump Unit Cooler (221A or 221B) will prevent operation of Auxiliary Feed Pump (52AFP002A or 002B). Therefore, three Auxiliary Feed Pumps (52AFP001, 002A & 002B) may not be operated for an extended period of time during decay heat removal. Unit Cooler (221A or 221B) should not be taken out of service and drained during plant operation.

3. Maintenance Bay A/C Unit (210)
4. Primary Na tank Unit Coolers (220)
5. Emergency Chiller Equipment Room Cooler (223A and 223B)
6. System 56 Panel Unit Coolers (273A, 273B and 273C)

4.3.5.2 Heating Coils

Draining of heating coils is described in SDD-75A, (SOI 75-19).

1. Air Handling Units (204 and 206)
2. Maintenance Bay A/C Unit (210)

4.3.6 Infrequent Operation

4.3.6.1 Steam Generator Loops 1, 2 & 3, Auxiliary Bay A/C System (201, 202 & 203) Operating During Plant Shutdown (SOI 25A-35)

The sequence of operation of the system will be the same as described in section 4.3.3.1 (Normal operation).

Electric Unit Heaters (231A,B, 232A,B & 233A,B) located in cells 244, 245 and 246 are controlled by their respective room thermostats (TS-022A, 022B, 045A, 045B, 069A and 069B) to maintain the indoor design temperature in these cells.

4.3.6.2 SGB-IB Air Handling Units (204 & 206) Operation during TMBDB (SOI 25A-45)

Air Handling Units (204 & 206) operate continuously to provide conditioned air to the SGB-IB. However during TMBDB scenario, prior to venting of containment, AHU (204 & 206) should be shutdown as described by Section 4.3.4.2 of this SDD.

4.4 Control Building HVAC System

All equipment and instrument numbers are prefixed by 25ACA.

Panel numbers are prefixed by 25NI (Local) or 25AA (Back Panel).

4.4.1 Initial Filling/Draining/Refilling (SOI 25A-16)

The following cooling coils are filled as described by the indicated SDD:

<u>Component</u>	<u>SOI</u>
1. MG Set Unit Coolers (421, 422, 423, 424)	75A-1
2. Switchgear A/C Unit "A" (411)	23-8
3. Switchgear A/C Unit "B" (412)	23-8
4. Control Room A/C Units (410A)	23-8
5. Control Room A/C Unit (410B)	23-8
6. MG Set & SWGR A/H Unit (400)	23-1

4.4.2 Startup (SOI 25A-17)

This procedure is written to place train "A" in service and, where redundant, train "B" in auto-standby condition.

4.4.2.1 Control Room A/C System (410A, 410B)

4.4.2.1.1 Initial Conditions

1. The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10
d. Radiation Monitoring	96	96-5

2. Related Electric Reheat Coils (480-486) are shutdown.
3. Control Room isolation signal not present and isolation valves are open.

4.4.2.1.2 Procedure

1. Place SSPLS Panel Control (HS-SS6A), Supply Fan (410A) and Return Fan (451A) SSPLS Controls (HS-410A & 451A), located on SSPLS Panel (12SSB551A), in the REMOTE position.
2. Place SSPLS Panel Control (HS-SS6B), Supply Fan (410B) and Return Fan (451B) SSPLS Controls (HS-410B & 451B), located on SSPLS Panel (12SSB551B), in the REMOTE position.
3. Place the following damper (pushbutton) controls in the OPEN position and verify open indication is energized, then place control in the AUTO position.

		<u>HS</u>	<u>Panel</u>	<u>Indication</u>
Main Air Intake	MOV-047A	047AB	90CSB016	XL-047AC
	MOV-047A	047AA	B003F	XL-047AA
	MOV-047B	047BB	90CSB016	XL-047BC
	MOV-047B	047BA	B003G	XL-047BA
Remote Air Intake	MOV-104A	104AB	90CSB016	XL-104AC
	MOV-104A	104AA	B003G	XL-104AA
	MOV-104B	104BB	90CSB016	XL-104BC
	MOV-104B	104BA	B003F	XL-104BA
Intake Isolation	AOV-122A	122AB	B002	XL-122AC
	AOV-122A	122AA	B003F	XL-122AA
	AOV-122B	122BB	B002	XL-122BC
	AOV-122B	122BA	B003G	XL-122BA

		<u>HS</u>	<u>Panel</u>	<u>Indication</u>
Exhaust Isolation	AOV-064A	064AC	90CSB016	XL-064AE
	AOV-064A	064AB	B002	XL-064AC
	AOV-064A	064AA	B003F	XL-064AA
	AOV-064B	064AC	90CSB016	XL-064BE
	AOV-064B	064BB	B002	XL-064BC
	AOV-064B	064BA	B003G	XL-064BA

4. Verify Filter Inlet Isolation Valve CLOSED indication (listed below) is energized, then place control (listed below) in the AUTO position.

		<u>HS</u>	<u>Panel</u>	<u>Indication</u>
Filter Inlet Isolation	AOV-123A	123AB	B002	XL-123AD
	AOV-123A	123AA	B003F	XL-123AB
	AOV-123B	123BB	B002	XL-123BD
	AOV-123B	123BA	B003G	XL-123BB

5. Place Return Fan (451A) Control (HS-451AB), located on Back Panel (B002) in the "AUTO" position.
6. Place the Supply Fan (410A) control (HS-410AB), located on Main Panel (90CSB016) in the "START" position. Verify status indication light (XL-410A) is energized.

NOTE: This will start Return Fan (451A), energize controls and open automatic dampers (MOD-057A, 075AA, and 077A).

7. Verify outside air, return air, mixed air, and supply air temperature indication (TI-049, 063, TI-098A, and TIC-055A) on Local Panel (B003F) is within range specified by Section 3 (Table 3-4) of this SDD.

8. Verify the following indication on Back Panel (B002).

	<u>Component</u>		<u>Status</u>	<u>Indicator</u>
a.	Return Fan	451A	Start	XL-451AC
b.	Discharge Air Damper	MOD-057A	Open	XL-057AC
c.	Air Intake Damper	MOD-075AA	Open	XL-075AAC
d.	Filter Discharge Damper	MOD-075AB	Closed	XL-075ABD
e.	Return Air Damper	MOD-077A	Open	XL-077AC

9. Verify air flow indication (FI-060A) on the local (B003F) and (FR-060A) Back Panel (B002) is within range specified by Section 3 (Table 3-4) of this SDD.

10. Verify the following alarms have cleared on Local Panel (B003F) and Back Panel (B002).

	<u>Inst. #</u>	<u>PAR</u>
a. Unit 410A Trouble	-	25A-160
b. Air Flow Low	FSL-059A	25A-159
c. CC Leaving Air Temperature Low	TSL-054A	25A-328
d. Roll Filter Pressure Drop High	PDSHH-050A	25A-329
e. Bag Filter Pressure Drop High	PDISH-052A	25A-330
f. Supply Fan Vibration High	YSH-089A	25A-163/164
g. Return Fan Vibration High	YSH-091A	25A-165/166

11. Place the following controls in the indicated position:

<u>Component</u>	<u>HS#</u>	<u>Panel</u>	<u>Position</u>
Return Fan 451A	451AA	B003F	AUTO
Supply Fan 480A	410AA	B003F	AUTO
Supply Fan 410B	410BB	90CSB016	AUTO
Supply Fan 410B	410AB	B003G	AUTO
Return Fan 451B	451BB	B002	AUTO
Return Fan 451B	451BA	B003G	AUTO

NOTE: Upon start of Supply Fan (410B), Return Fan will start, energize controls, open automatic Dampers (MOD-057B, 075BA, and 077B), and stop Supply Fan (410A) and Return Fan (451A) should be verified on Back Panel (B002).

	<u>EIN</u>	<u>Energized Indicator</u>
a. Return Fan	451B	XL-451B
b. Damper	057B	XL-057BC
c. Damper	075BA	XL-075BAC
d. Damper	077B	XL-077BC

4.4.2.2 Electric Reheat Coils (480 thru 486)

4.4.2.2.1 Initial Conditions

1. Electric Reheat Coil, related A/C System (410A & 410B) is aligned for operation, as described by section 4.4.2.1 of this SDD.
2. Electric Power is available and operating as described by SDD-12, (S01 12-10).

4.4.2.2.2 Procedure

1. The electric Reheat coil (480) with its related controls will be energized when the control room air conditioning System (410A or 410B) is energized.
2. Verify air flow low (FSL-157) alarm (PAR 25A-171) is cleared, and temperature indication (TIC-161) on Local Panel (B003F) is within range specified in Section 3 (Table 3-4) of this SDD.
3. The following Reheat Coils and Air Flow alarms operate as described in steps 1 and 2 above.

<u>Reheat coil</u>	<u>FSL</u>	<u>TIC</u>	<u>Panel</u>	<u>PAR</u>
481	155	162	B003F	25A-172
482	156	162	B003F	25A-173
483	159	147	B003F	25A-174
484	158	148	B003F	25A-175
485	154	145	B003F	25A-176
486	153	146	B003F	25A-177

4.4.2.3 Control Room Filter Unit Supply Fans (441A, 441B) and Filter Unit (471A, 471B)

4.4.2.3.1 Initial Conditions

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Radiation Monitoring	96	96-5

4.4.2.3.2 Procedure

1. Place SSPLS Panel Control (HS-SS6A) and Supply Fan (441A) SSPLS Control (HS-441A), located on SSPLS Panel (12SSB551A), in the REMOTE position.
2. Place SSPLS Panel Control (HS-SS6B) and Supply Fan (441B) SSPLS Control (HS-441B), located on SSPLS Panel (12SSB551B), in the REMOTE position.
3. Place Control Room Filter Unit Supply Fan (441A) control (HS-441AB), located in the Back Panel (B002), in the "AUTO" position.

NOTE: Fans start only after an emergency signal. Fan start will energize the control system and vane damper (FMD-072A); and open automatic dampers (MOD-076A, 167A) and may be verified on Back Panel (B002) as indicated by (XL-441AC, 076AC & 167AC) energized.

Automatic damper (MOD-167A) will either move to its minimum position if isolation valves (MOV-047A, 047B) are open, or to its full open position if isolation valves (MOV-104A, 104B) are open.

4. Verify discharge air, outside air, mixed air, filter train d/p, air flow and relative humidity temperature indication (TT-079, PDI-068A, FIC-072A and MT-071A) on Local Panel (B003F) is within range specified by Section 3 (Table 3-4) of this SDD.
5. Verify the following alarms have cleared on the Back Panel (B002) and Local Panel (B003F).

	<u>Inst. #</u>	<u>PAR</u>
a. Filter Unit 471A Air flow low	FSL-073A	25A-351
b. Filter Unit 471A Air flow high	FSH-074A	25A-352
c. Fan 441A vibration High	YSH-090A	25A-357
d. Filter d/p High Bag	PDISH-066A	25A-353
e. Filter d/p High HEPA	PDISH-067A	25A-354
f. Filter d/p High Adsorbent	PDISH-069A	25A-355
g. Filter d/p High HEPA	PDISH-070A	25A-356

6. Place remaining Control Room Filter Unit Supply Fan (441B) control (HS-441BB), located on Back Panel (B002), in the "AUTO" position.
7. Place Supply Fan (441A & 441B) control (HS-441AA & 441BA), located on Local Panels (B003F & B003G) in the "AUTO" position.

4.4.2.4 Battery Room Exhaust Fans (461 through 464)

4.4.2.4.1 Initial Conditions

Building Electric Power is available as described by SDN-12, (SOI 12-10 & 12-49).

4.4.2.4.2 Procedure

1. Place SSPLS Panel Control (HS-SS6A) and Exhaust Fans (462 & 463) SSPLS Control (HS-462 & 463), located on SSPLS panel (12SSB551A), in the REMOTE position.
2. Place SSPLS Panel Control (HS-SS6B) and Exhaust Fan (461 & 464) SSPLS Control (HS-461 & 464), located on SSPLS Panel (12SSB551B), in the REMOTE position.
3. Place Battery Room Exhaust Fans (461-464) controls (HS-461B, 462B, 463B, & 464B), located on Back Panel (B002), in the "START" position. Verify status lights (XL-461C, 462C, 463C & 464C) energized.
4. Verify the following on Local Panels (B003D or B003E) and Back Panel (B002) alarms are deenergized.

	<u>Inst. #</u>	<u>PAR</u>
a. Fan 461 Exhaust Air Flow Low	FSL-118	25A-179/180
b. Fan 461 Vibration High	YSH-088	25A-358
c. Fan 462 Exhaust Air Flow Low	FSL-121	25A-181/182
d. Fan 462 Vibration High	YSH-018	25A-359
e. Fan 463 Exhaust Air Flow Low	FSL-119	25A-183/184
f. Fan 463 Vibration High	YSH-019	25A-360
g. Fan 464 Exhaust Air Flow Low	FSL-120	25A-185/186
h. Fan 464 Vibration High	YSH-087	25A-361

5. Place Exhaust Fans (461, 462, 463 & 464) controls (HS-461A, 462A, 463A & 464A), located on Local Panels (B003D & B003E), in the "AUTO" position.

4.4.2.5 MG Set/Switchgear A/C System (400)

4.4.2.5.1 Initial Conditions

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Chilled Water	23	23-3/23-10

4.4.2.5.2 Procedure

1. Place Return Fans (450A and 450B) controls (HS-450A & 450B) located on Local Panel (B003A), in the "AUTO" position.
2. Place Supply Fans (440A and 440B) controls (HS-440A & 440B), located on Local Panel (B003A), in the "START" position. Verify status lights (XL-440AC & 440BC) energized.

NOTE: Verify the following status lights on Local Panel (B003A).

			<u>Status</u>	<u>Indication</u>
a.	Return Fan	450A	Start	XL-450AA
b.	Return Fan	450B	Start	XL-450BA
c.	Discharge Damper	AOD-022A	Open	XL-022AA
d.	Discharge Damper	AOD-022B	Open	XL-022BA
e.	Outside Air Damper	TAD-023C	Open	XL-023CA
f.	Exhaust Air Damper	TAD-023A	Mixed	XL-023AA
g.	Return Air Damper	TAD-023B	Open	XL-023BA
h.	Discharge Damper	AOD-030A	Open	XL-030AA
i.	Discharge Damper	AOD-030B	Open	XL-030BA

3. Verify outside air, return air, mixed air and Supply Air temperature indication (TI-108A, 108B, 065 & TIC-031) on Local Panel (B003A) is within range specified in Section 3 (Table 3-4) of this SDD.
4. Verify the following alarms are deenergized on Local Panel (B003A).

		<u>Inst. #</u>	<u>PAR</u>
a.	AHU400 Roll Filter Pressure Differential	PDISH-025	25A-362
b.	AHU400 Bag Filter Pressure Differential	PDISH-026	25A-363
c.	AHU400 Air Supply Flow Low	FSL-112	25A-364
d.	AHU400 Air Return Flow Low	FSL-020	25A-365
e.	CC Entering Air Temp Low	TSL-028 thru 029G	25A-366

4.4.2.6 MG Set Unit Coolers (421 through 424)

4.4.2.6.1 The following systems are operating as described by the indicated SDD:

	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Service Water	75A	75A-7

4.4.2.6.2 Procedure

1. Place Unit Cooler (421, 422, 423, 424) Supply Fan controls (HS-421, 422, 423 & 424), located on Local Panel (B003B), in the "AUTO" position.

NOTE: Starting of related MG set will start the unit cooler, energize the control system, and allow automatic Damper to move to a minimum position.

<u>MG</u>	<u>U.C.</u>	<u>Cell</u>	<u>AOD</u>
56PRH202A	421	470	035
56INH202A	422	470	039
56PRH202B	423	471	042
56INH202B	424	471	046

2. Verify cooling coil inlet and outlet air temperature indication (TI-033, 037, 040 or 044) locally is within range specified by Section 3 (Table 3-4) of this SDD.
3. Verify throwaway filter d/p indicator (PDI-149, 150, 151 or 152) locally is within range specified by Section 3 (Table 3-4) of this SDD.
4. Verify the following alarms are deenergized on Local Panel.

	<u>Inst. #</u>	<u>PAR</u>
a. UC421 Discharge Air Flow Low	FSL-082	25A-367
b. UC422 Discharge Air Flow Low	FSL-083	25A-368
c. UC423 Discharge Air Flow Low	FSL-084	25A-369
d. UC424 Discharge Air Flow Low	FSL-085	25A-370

4.4.2.7 Switchgear "A and B" A/C System (411, 412)

4.4.2.7.1 Initial Conditions

The following systems are operating as described by the indicated SDD:

<u>System</u>	<u>SDD</u>	<u>SOI</u>
a. Electrical Power	12	12-10/12-49
b. Chilled Water	23	23-5

4.4.2.7.2 A/C Unit "A" (411)

1. Place SSPLS Panel Control (HS-SS6A), Supply Fan and Return Fan (411 & 452) SSPLS Controls (HS-411 & 452), located on SSPLS Panel (12SSB551A), in the REMOTE position.
2. Place Return Fan (452) Control (HS-452B), located on Back Panel (B002), in the AUTO position.
3. Place Supply Fan (411) Control (HS-411B), located on Back Panel (B002) in the START position.

NOTE: This will start the supply and return fans (411 & 452) in addition to energizing the control system.

4. Verify operating status lights (XL-411C & 452C), located on Back Panel (B002) are energized.
5. Verify the following alarms, located on the indicated panel are deenergized.

	<u>Inst.</u>	<u>Panel</u>	<u>PAR</u>
a. Supply Air Flow Low	FSL-014	B003D	25A-187
		B002	25A-188
b. Return Air Flow Low	FSL-016	B003D	25A-189
		B002	25A-190
c. Roll Filter Differential Pressure High	PDSHH-006	B003D	25A-371
d. Bag Filter Differential Pressure High	PDISH-007	B003D	25A-372
e. CC Entering Air Temperature Low	TSL-010A	B003D	25A-373
f. Fan 411 Vibration High	YSH-092	B003D	25A-374
g. Fan 452 Vibration High	YSH-093	B003D	25A-375

6. Place Supply and Return Fans (411 & 452) Controls (HS-411A & 452A), located on Local Panel (B003D), in the AUTO position.
7. Verify the following indications are within range as specified in Section 3 (Table 3-4) of this SDD.

	<u>Indicator</u>	<u>Location</u>
a. Outside Air Temperature	TI-002	B003D
b. Mixed Air Temperature	TI-005	B003D
c. Supply Air Temperature	TI-012	B003D
d. Supply Air	TE-015	PDH&DS

4.4.2.7.3 A/C Unit "A" (412)

1. Place SSPLS Panel Control (HS-SS6B), Supply Fan and Return Fan (412 & 453) SSPLS Controls (HS-412 & 453), located on SSPLS Panel (12SSB551B), in the REMOTE position.
2. Place Return Fan (453) Control (HS-453B), located on Back Panel (B002), in the AUTO position.
3. Place Supply Fan (412) Control (HS-412B), located on Back Panel (B002) in the START position.

NOTE: This will start the supply and return fans (412 & 453) in addition to energizing the control system.

4. Verify operating status indication (XL-412C & 453C), located on Back Panel (B002) are energized.
5. Verify the following alarms, located on the indicated panel are deenergized.

	<u>Inst.</u>	<u>Panel</u>	<u>PAR</u>
a. Supply Air Flow Low	FSL-133	B003E B002	25A-192 25A-191
b. Return Air Flow Low	FSL-136	B003E B002	25A-193 25A-194
c. Roll Filter Differential Pressure High	PDSHH-126	B003E	25A-376
d. Bag Filter Differential Pressure High	PDISH-127	B003E	25A-377
e. CC Entering Air Temperature Low	TSL-030A	B003E	25A-378
f. Fan 412 Vibration High	YSH-094	B003E	25A-379
g. Fan 453 Vibration High	YSH-095	B003E	25A-380

6. Place Supply and Return Fans (412 & 453) Controls (HS-412A & 453A), located on Local Panel (B003E), in the AUTO position.
7. Verify the following indications are within range as specified in Section 3 (Table 3-4) of this SDD.

	<u>Indicator</u>	<u>Location</u>
a. Mixed Air Temperature	TI-124	B003E
b. Supply Air Temperature	TI-131	B003E
c. Supply Air Temperature	TE-134A	PDH&DS

4.4.2.8 Smoke Vent Fan (466)

Refer to SDD-26B (SOI 26B-13).

4.4.2.9 Stairwell Pressurization Fan (442)

4.4.2.9.1 Initial Conditions

1. Electrical power is available as described by SDD-12 (SOI 12-10).

4.4.2.9.2 Procedure

Place Fan (442) control (HS-442), located on Panel (26BDB023), in the "AUTO" position.

NOTE: Fan is automatically started, by a system 26B signal, upon the detection of a fire in the building. Starting of the Fan will open damper MOD-143. Verify fan start and damper position (MOD-143) as indicated by energized, status lights (XL-442A & 143A) on Local Panel (26BDB023).

4.4.2.10 Toilet Exhaust Fan (465)

4.4.2.10.1 Initial Conditions

1. Control Room isolation signal not present and isolation valves (AOV-168 & 169) are open.
2. Electric power is available as described by SDD-12 (SOI 12-10).

4.4.2.10.2 Procedure

Place Fan (465) control (HS-465), located on the wall, in the "ON" position.

4.4.2.11 Kitchen Exhaust Fan (467)

4.4.2.11.1 Initial Conditions

1. Control Room isolation signal not present and isolation valves (AOV-168 & 169) are open.
2. Electrical power is available as described by SDD-12 (SOI 12-10).

4.4.2.11.2 Procedure

Place Kitchen Exhaust Fan (467) control (HS-467), located on the Kitchen wall, in the "ON" position.

4.4.3 Normal Operation (SOI 25A-18)

4.4.3.1 Control Room A/C System (410A, 410B)

One A/C System (410A or 410B) operates continuously during normal operation supplying (outside) air flow. Filters, cooling coils, and reheat coils are provided to supply clean conditioned air to the control room and back panel area as well as other areas of the control building.

Related Return Fan (451A or 451B) operates continuously during normal operation returning and exhausting air supplied to the control room.

All cells and corridors served by the CR System are maintained at a 1/4" W.G. positive pressure relative to the outdoor atmosphere.

4.4.3.2 Electric Reheat Coil (480 - 486)

Temperature Controllers (TIC-161, 162, 163, 147, 148, 145 & 146) will modulate the output of related Electric Reheat Coils (480 through 486) to maintain the indoor design conditions (specified in Appendix K of SDD 21).

4.4.3.3 Control Room Filter Unit Supply Fans (441A, 441B) and Filter Unit (471A, 471B)

Filter Units (471A & 471B) and Supply Fans (141A & 141B) are 100% redundant units that do not operate under normal conditions. However, units are maintained in a standby condition. Units operate following isolation of Control Building ventilation when CB HVAC is in the recirculating mode.

4.4.3.4 Battery Room Exhaust Fans (461, 462, 463, 464)

Battery Room Exhaust Fans (one for each battery room) operate continually to exhaust the air supplied by the main system and prevent fume buildup in Battery Rooms. Fans are connected to the on-site emergency Class 1E AC power supply.

4.4.3.5 MG Set Switchgear A/C System (400)

Summer: Temperature transmitter (TT-108A), will switch the system to the summer operating mode (energize the cooling coil) when the outside air temperature is over 50°F.

Temperature and humidity transmitters (TT-108A, MT-108C) and (TT-108B, MT-108D) located in the outside air duct and return duct, through enthalpy controllers, will position the outside air and return air dampers as follows:

1. Open outside air and exhaust air dampers (TAD-023C and 023A) fully and close the return air damper (TAD-023B) when the outside air enthalpy is lower than the return air enthalpy.
2. Open Return air damper (TAD-023B) fully, move the exhaust air damper (TAD-023A) and outside air damper (TAD-023C) to their minimum positions when the return air enthalpy is lower than the outside air enthalpy.

The temperature transmitter (TT-031), located in the main supply duct, will modulate the cooling coil control valve (SDD-23) to maintain a constant discharge temperature.

Winter: The temperature transmitter (TT-108A) through a temperature controller, will switch the system to the winter operating mode (de-energize the cooling coil and energize the economizer cycle) when the outside air temperature is 50°F or below.

The temperature transmitter (TT-031), located in the main supply duct, will modulate outside air and return air dampers (TAD-023C and 23B) to maintain a constant discharge temperature.

Exhaust air damper (TAD-023A) is modulated simultaneously with the outside air damper (TAD-023C).

4.4.3.6 MG Set Unit Coolers (421, 422, 423, 424)

Unit Coolers operate to remove heat generated internally by the MG sets. Each Unit cooler draws air through the related MG set, cools the air and discharges back to the room. U.C. operate along with their related MG Set (refer to Section 4.4.2.6 of this SDD).

4.4.3.7 Switchgear "A and B" A/C System (411, 412)

A/C System (411 & 412) operate continuously with temperature transmitters (TT-012 & 131), located in the main supply duct, through a temperature controller will modulate the cooling coil control valve (SDD-23) to maintain a constant discharge temperature.

4.4.3.8 Smoke Vent Fan (466)

Smoke vent fans do not operate under normal conditions. Refer to SDD-26B (SOI 26B-13).

4.4.3.9 Stairwell Pressurization Fan (442)

Upon a fire signal from CB, located on the Fire Protection Panel (SDD-26B), the Stairwell Pressurization Fan (442) will automatically start and damper (MOD-143) will open.

4.4.3.10 Toilet Exhaust Fan (465)

Toilet Exhaust Fan is manually started and operates continuously.

4.4.3.11 Kitchen Exhaust Fan (467)

Kitchen Exhaust fan is manually started and operates continuously.

4.4.3.12 Control Building HVAC Equipment Shift (Weekly) (SOI 25A-42)

4.4.3.12.1 Control Room Filter Train Shift

Control Room Filter Unit (471A) and Fan (441A) will automatically start upon receipt of a containment isolation signal, if A/C Unit (410A) is operating. Filter Unit (471B) and Fan (441B) shall operate along with A/C Unit (410B). Refer to section 4.4.3.12.2 of this SDD for shift of A/C Units (410A and 410B).

4.4.3.12.2 A/C Units (410A & 410B) Shift

1. Maintain standby A/C Unit (410A or 410B) Supply Fan control (HS-410AB or 410BB), located on Main Panel (90CSB016), in the "START" position.

NOTE: This will start the related Return Fan (A51A or 451B), energize the control system and open Dampers (MOD-057A, 075AA, 077A or 057B, 075BA, 077B).

2. Verify the following operating status indication is energized.

<u>Train A</u>		<u>Status</u>	<u>Indication</u>
a. Supply Fan	410A	Start	XL-410AC
b. Return Fan	451A	Start	XL-451AC
c. Damper	MOD-057A	Open	XL-057AC
d. Damper	MOD-075AA	Open	XL-075AAC
e. Damper	MOD-077A	Open	XL-077AC
<u>Train B</u>			
a. Supply Fan	410B	Start	XL-410BC
b. Return Fan	451B	Start	XL-451BC
c. Damper	MOD-057B	Open	XL-057BC
d. Damper	MOD-075BA	Open	XL-075AAC
e. Damper	MOD-077B	Open	XL-077AC

3. Verify A/C Unit (410A & 410B) discharge air flow as indicated by (FR-060AB), located on Back Panel (B002) is within range specified by Section 3 (Table 3-4) of this SDD.
4. Place A/C Unit, to be shutdown, (410A or 410B) control (HS-410AB or 410BB), located on Main Panel (90CSB016), in the "STOP" position.

NOTE: If Filter Train (A or B) is operating it will be shutdown at this time depending upon A/C Unit that is operating.

5. Allow operating A/C Unit (410A or 410B) control (HS-410AB or 410BB) to return to "AUTO" position.
6. Place shutdown A/C Unit (410A or 410B) control (HS-410AB or 410BB), located on Main Panel (90CSB016), in the "AUTO" position.

4.4.4 Shutdown (SOI 25A-38)

4.4.4.1 Control Room A/C System (410A and 410B)

4.4.4.1.1 Initial Conditions

Redundant A/C System and Filter train (410A & 471A or 410B & 471B) is operational.

4.4.4.1.2 Procedure

If A/C System to be shutdown (410A or 410B) is operating, shift A/C Unit operation as described by section 4.4.3.12.1 of this SDD.

1. Place A/C Unit (410A or 410B) Supply Fan control (HS-410AB or 410BB), located on Main Panel (90CSB016), in the "STOP" position.

2. Place related Return Fan (451A or 451B) control (HS-451AB or 451BB), located on Back Panel (B002), in the "STOP" position.
3. Verify operating status lights (XL-410AD & 451AD or 410BD & 451BD), located on Back Panel (B002) are energized.

4.4.4.2 Electric Reheat Coils (480 through 486)

Electric Reheat Coils (480-486) are deenergized (due to low air flow), when both A/C Systems (410A & 410B) is shutdown.

4.4.4.3 Control Room Filter Unit Supply Fans (441A and 441B) and Filter Units (471A and 471B)

Filter Units operate only during emergency conditions (high radiation, smoke or toxic gases present) and should not be shutdown during these conditions.

4.4.4.3.1 Initial Conditions

1. Redundant Supply Fan/Filter Unit (441A & 471A or 441B & 471B) is available.

4.4.4.3.2 Procedure

CAUTION: This Unit operates only under emergency conditions

Shutting down of the system will move the automatic dampers (MOD-076A, 167A) to the fully closed position.

1. If Filter Train (A or B) to be shutdown is operating, shift to standby train service as described by section 4.4.3.12.1 of this SDD.

2. Place Standby Filter train (A or B) Control (HS-441A or 441B), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-441AD or 441BD), located on Back Panel (B002) is energized.

4.4.4.4 Battery Room Exhaust Fan (461 thru 464)

4.4.4.4.1 Initial Conditions

1. Batteries have not recently been or are being recharged.
2. Switchgear A/C System (411, 412) is operating.
3. Portable atmosphere monitoring equipment and Portable Vent Fan (45AAM484) is available.

4.4.4.4.2 Procedure

1. Place portable Ventilation Fan (45AAM484) in service.
2. Place Battery Room Exhaust Fan to be shutdown (461, 462, 463 or 464) control (HS-461B, 462B, 463B or 464B), located on Back Panel (B002), in the "STOP" position.
3. Verify Fan operating status light, located on Back Panel (B002).

NOTE: Upon shutdown of Battery Room Exhaust Fan (461, 462, 463 or 464) portable Hydrogen Detector (45AAM801) shall be used to ensure hydrogen concentration does not exceed limits specified by Section 1 of this SDD.

NOTE: Precautions (TBD) described in Section 3.3 of this SDD must be observed.

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4.4.4.5 MG Set Switchgear A/C System (400)

Shutdown of A/C Unit (400) will cause loss of ventilation and cooling to CB cells 284, 446, 455, 456, 457, 472, 473A, 473B, and DGB cells 513, 530, 531, 532, 533, 534, 540 & 541. Only a loss of ventilation will occur in MG set cells 470, 471, 542 & 543.

1. Place Supply Fan (440A) control (HS-440A), located on Local Panel (B003A), in the "STOP" position. Verify operating status indication (XL-440AB).

NOTE: This will deenergize the related control system, shutdown Return Fan (450A) and close Dampers (A0D-030A & 022A). Verify status indications (XL-450AB, 030AB & 022AB), located on Local Panel (B003A) are energized.

2. Place Supply Fan (440B) control (HS-440B), located on Local Panel (B003A), in the "STOP" position. Verify operating status indication (XL-440BB) is energized.

NOTE: This will deenergize the related control system, shutdown Return Fan (450B) and close the following dampers:

3. Verify Damper position, as indicated by energized status lights listed below:

<u>Damper</u>		<u>Indication</u>
a. Supply Fan Damper	A0D-030B	XL-030BB
b. Return Fan Damper	A0D-022B	XL-022BB
c. Outside Air Damper	TAD-023C	XL-023CB
d. Exhaust Air Damper	TAD-023A	XL-023AB
e. Return Air Damper	TAD-023B	XL-023BB

4. Place Return Fans (450A & 450B) controls (HS-450A & 450B), located on Local Panel (B003A), in the "STOP" position. Verify operating status indication: (XL-450AB & 450BB) are energized.

4.4.4.6 MG Set Unit Cooler (421 thru 424)

4.4.4.6.1 Initial Condition

Unit Coolers (421-424) are provided as redundant trains (421, 422, 423 & 424) to serve redundant System 56 components (as listed below). One U.C. (421 or 422) or (423 or 424) located in a cell (470 or 471) may be shutdown with minimal effect on MG sets. However, if both U.C. (421 & 422) or (423 & 424) of a single cell (470 or 471) are to be shutdown, the System 56 MG sets should be shifted to operate in the remaining cell (470 or 471).

<u>MG</u>	<u>U.C.</u>	<u>Cell</u>
56PRH205A	421	470
56INH205A	422	470
56PRH205B	423	471
56IRH205B	424	471

4.4.4.6.2 Procedure

1. Place U.C. to be shutdown (421, 422, 423 or 424) control (HS-421, 422, 423 or 424), located on Local Panel (B003B), in the "STOP" position.
2. Verify operating status light (XL-421B, 422B, 423B or 424B), located on Local Panel (B003B) is energized.

4.4.4.7 Switchgear "A&B" A/C System (411, 412)

4.4.4.7.1 Initial Conditions

1. Related A/C System (411 or 412) is operating.

2. Related battery is not being charged.

4.4.4.7.2 Procedure (System 411)

1. Place Supply Fan (411) Control (HS-411B), located on Back Panel (B002), in the "STOP" position.

NOTE: This will shutdown Return Fan (452) and deenergize the control system.

2. Verify Supply and Return Fans (411 & 452) operating status lights (XL-411D & 452D) located on Back Panel (B002).
3. Place Return Fan (452) Control (HS-452B), located on Back Panel (B002), in the "STOP" position.

4.4.4.7.3 Procedure (System 412)

1. Place Supply Fan (412) Control (HS-412B), located on Back Panel (B002), in the "STOP" position.

NOTE: This will shutdown Return Fan (453) and deenergize the control system.

2. Verify Supply and Return Fans (412 & 453) operating status light (XL-412D & 453D), located on Back Panel (B002) is energized.
3. Place Return Fan (453) control (HS-453B), located on Back Panel (B002), in the "STOP" position.

4.4.4.8 Smoke Vent Fan (466)

Smoke Vent Fan shall be shutdown as described in SDD-25B (S01 26B-13).

4.4.4.9 Stairwell Pressurization Fan (442)

Stairwell Pressurization fan (442) operates only following a start signal from Fire Protection System (SDD-26B). Shutdown of Fan (442) may prevent use of stairwell (Cell 414) during a fire.

1. Place Fan (442) control (HS-442), located on Panel (26BDB023), in the "STOP" position. This will close damper (MOD-143).
2. Verify Fan (442) and Damper (MOD-143) status indicating lights (XL-442B & 143D), located on Panel (26BDB023) are energized.

4.4.4.10 Toilet Exhaust Fan (465)

Place Fan (465) Control (HS-465), located on the wall panel, in the "OFF" position.

NOTE: Stopping both Kitchen and Toilet Exhaust Fans (465 & 467) will close Dampers (AOD-168 & 169).

4.4.4.11 Kitchen Exhaust Fan (467)

Place Fan (467) Control (HS-467), located on the kitchen wall in the "OFF" position.

NOTE: Stopping both Kitchen and Toilet Exhaust Fans (465 & 467) will close Dampers (AOD-168 & 169)

4.4.5 Infrequent Operation

4.4.5.1 Toilet Exhaust Fan (Isolation signal) (SOI 25A-39)

Upon an isolation signal, the Exhaust Fan (465) shall stop, and the redundant Isolation Dampers (AOD-168 & 169) will close and Exhaust Fan (465) shall be manually stopped.

4.4.5.2 Control Room Filter (471A & 471B) Operation

Control Room Filter Train (A or B) will automatically start following detection of radiation, smoke or toxic gas at the air intakes.

1. Verify filter train start and operation as indicated on Main Panel (90CSB016), Back Panel (B002) or Local Panel (B003F&B003G).

Indication: Indication is related to the air intake system which has isolated.

A. Train A or B fan operating status lights

<u>FAN</u>	<u>PANEL</u>	<u>STATUS</u>	<u>ENERGIZED INDICATOR</u>
a. 410A	90CSB016/B003F	Start	XL-410AC/410AA
b. 451A	B002/B003F	Start	XL-451AE/451AA
c. 441A	B002/B003F	Start	XL-441AC/441AA
-or-			
a. 410B	90CSB016/B003G	Start	XL-410BC/410BA
b. 451B	B002/B003G	Start	XL-451BE/451BA
c. 441B	B002/B003G	Start	XL-441BC/441BA

B. Valve position status indicator light

<u>VALVE</u>	<u>PANEL</u>	<u>STATUS</u>	<u>ENERGIZED INDICATOR</u>
a. MOV-064A	B002/90CSB016	Close	XL-064AB/064AD
b. MOV-064B	B002/90CSB016	Close	XL-064BB/064BD
c. AOV-122A	B002/90CSB016	Close	XL-122AB/122BD
d. AOV-122B	B002/90CSB016	Close	XL-122BB/122BD
e. AOV-123A	B002/90CSB016	Open	XL-123AA/123AC
f. AOV-123B	B002/90CSB016	Open	XL-123BA/123BC

C. Main Outside Air Intake

<u>INDICATION</u>	<u>INST. #</u>	<u>PANEL</u>
a. Radiation Monitor	RE-040A&40B	96
b. Smoke Detector	AE-207A,207B	26
c. Toxic Gas Detector	AE-102A,102B, 202A,202B, 203A,203B	
d. Isolation Valve Status (MOV-47A,47B)	- -	- 90CSB016

D. Remote Air Intake

<u>INDICATION</u>	<u>INST. #</u>	<u>PANEL</u>
a. Radiation Monitor	96PMRE-41A&41B	-
b. Smoke Detector	AE-208A&208B	-
c. Toxic Gas Detector	AE-204A,204B, 205A,205B, 206A,206B	-
	<u>POSITION</u>	<u>PANEL</u>
d. Isolation Valve Status MOV-104A,104B	Close	- 90CSB016

CAUTION: If Radiation is detected by monitor (96PMRE-41A,41B) located on Panel (96PMB41A & 96PMB41B), isolation valve MOV-104A,104B must be closed manually by placing control (HS-104AB&104BB), located on Main Panel (90CSB016), in the CLOSE position. (Valves MOV-104A & 104B are closed only if Main air intake is clear).

2. Shutdown one HVAC Train (A or B) by placing the following controls, located on Main Panel (90CSB016), in the "STOP" position.

CAUTION: Only one train is to be shutdown.

<u>A/C Unit/Filter Trains</u>	<u>A</u>	<u>HS#</u>	<u>B</u>	<u>HS#</u>
a. Filter Fan	441A	441AB	441B	441BB
b. Supply Fan	410A	410AB	410B	410BB

NOTE: Return fans (451A or 451B) shall stop following shutdown of related supply fan.

3. Verify operation/shutdown of filter trains A&B using indication (listed above).
4. Place shutdown filter train (A or B) controls, located on Main Panel (90CSB016), in the "AUTO" position.

<u>A/C Unit/Filter Trains</u>	<u>A</u>	<u>HS#</u>	<u>B</u>	<u>HS#</u>
a. Supply Fan	410A	410AB	410B	410BB
b. Filter Fan	441A	441AB	411B	411BB

NOTE: Verify related Return Fan (451A or 451B) control, located on Main Panel (90CSB016), in the "AUTO" position.

5. Following verification of outside air being within acceptable limits, as determined by Health Physics, return Control Room HVAC to normal operation as described by Section 4.4.5.3 of this SDD.

4.4.5.3 Control Room HVAC (410A, 410B, 471A, 471B) Return to Normal Operation

Following verification of outside air being within acceptable limits, as determined by health Physics, return Control Room HVAC to normal alignment as described by the following procedure.

1. Place the following controls, located on Main Panel (90CSB016), in the "STOP" position. Verify energized, operating status indication.

<u>A/C Unit/Filter</u>		<u>HS</u>	<u>Indication</u>
a. Filter Fan	441A	441AB	XL-441AD
-or-			
b. Filter Fan	441B	441BB	XL-441BD

2. Place Control Room Filter Unit Supply Fan (441A & 441B) in "AUTO" position as described by Section 4.4.2.3 of this SDD.
3. Refer to Section 6.3.8.3, 6.3.8.4, 6.3.8.5 and 6.2.6 for replacement of Unit Filters and cleanup (if necessary) of HVAC ducts.

4.5 DIESEL GENERATOR BUILDING

All equipment and instrument numbers are prefixed by 25ADA.

Panel numbers are prefixed by 25NI (Local) and 25AA (Control Room).

4.5.1 Initial Fill (SOI 25A-20)

1. MG Set Unit coolers (321 and 332) Cooling Coils are filled as described by SDD-75A (SOI 75A-1).

2. H & V Units (331 & 322) Heating Coils are filled as described by SDD-75A (SOI 75A-3).

4.5.2 Startup (SOI 25A-21)

4.5.2.1 Diesel Generator Rooms (A and B) Emergency Supply Fans (341A, 341B, and 342A, 342B)

4.5.2.1.1 Initial Conditions

The following systems are operating as described by the indicated SDD and SOI.

<u>System</u>	<u>SDD</u>	<u>SOI</u>
Electrical Power	12	12-10/12-49

4.5.2.1.2 Procedure Emergency Supply Fan (341A, 341B)

1. Place SSPLS Panel Control (HS-SS6A) and Fans (341A & 341B) SSPLS Controls (HS-341A & 341B), located on SSPLS Panel (12SSB551A) in the REMOTE position.
2. Place Fans (341A, 341B) controls (HS-341AB & 341BB), located on Back Panel (B002), in the "AUTO" position.

NOTE: Starting of Diesel generator (12NIE022A) will start the Fans (341A and 341B), energize the control system and open dampers (MOD002A and 002B) as indicated by the energized status indicating lights, located on Local Panel (B004C).

		<u>STATUS</u>	<u>INDICATION</u>
a. Supply Fan	341A	Start	XL-341AA
b. Supply Fan	341B	Start	XL-341BA
c. Outside Air Damper	MOD-002A	Open	XL-002AA
d. Outside Air Damper	MOD-002B	Open	XL-002BA

3. Following start, verify Supply fan outlet and cell temperature indication (TI-003A, 003B) on local Panel (B004C) is within limits specified by section 3 (Table 3-5) of this SDD.
4. Verify room temperature indication (TIC-001) on Local Panel (B004C) is within limits specified by Section 3 (Table 3-5) of this SDD.

NOTE: TIC-001 will modulate return air and outside air dampers (TMD-001A, 001B, 001C and 001D).

5. Verify the following alarms are deenergized on Local Panel (B004C) and Back Panel (B002).

	<u>Inst.</u>	<u>PAR</u>
a. Supply Fan (341A) air flow low	FSL-004A	25A-196/195
b. Supply Fan (341B) air flow low	FSL-004B	25A-198/197
c. Fan 341A Vibration High	YSH-028A	25A-204/203
d. Fan 341B Vibration High	YSH-028B	25A-206/205

6. Place Fan (341A), 341B) control (HS-341AA, 341BA), located on Local Panel (B004C), in the "AUTO" position.

4.5.2.1.3 Procedure Emergency Supply Fans (342A, 342B)

1. Place SSPLS Panel Control (HS-SS6B) and Supply Fans (342A & 342B) SSPLS Controls (HS-342A & 342B), located on SSPLS Panel (12SSB551B), in the REMOTE position.
2. Place Fan (342A, 342B) controls (HS-342AB & 342BB), located on Back Panel (B002), in the "AUTO" position.

NOTE: Starting Diesel Generator (B) will start Fans (342A & 342B), energize the control system and open Dampers (MOD-010A and 010B) as indicated by the deenergized status indicating lights, located on Local Panel (B004D).

		<u>STATUS</u>	<u>INDICATION</u>
a. Supply Fan	342A	Start	XL-342AA
b. Supply Fan	342B	Start	XL-342BA
c. Outside Air Damper	MOD-010A	Open	XL-010AA
d. Outside Air Damper	MOD-010B	Open	XL-010BA

3. Following start verify Supply Fan outlet and cell temperature indication (TI-009A, 009B) on Local Panel (B004D) is within limits specified by Section 3 (Table 3-5) of this SDD.

4. Verify room temperature indication (TIC-008) is within range specified by Section 3 (Table 3-5), and indicated locally.

NOTE: TIC-008 will modulate return air and outside air dampers (TMD-008A, 008B, 008C & 008D).

5. Verify the following alarms are deenergized on Local Panel (B004D) and Back Panel (B002).

	<u>Inst.</u>	<u>PAR</u>
a. Supply Fan (342A) Air Flow Low	FSL-011A	25A-200/199
b. Supply Fan (342B) Air Flow Low	FSL-011B	25A-202/201
c. Fan (342A) Vibration High	YSH-029A	25A-208/207
d. Fan (342B) Vibration High	YSH-029B	25A-210/209

6. Place Fan (342A, 342B) control (HS-342AA & BA), located on Local Panel (B004D), in the "AUTO" position.

4.5.2.2 Diesel Generator Rooms "A & B" H and V Units (331 and 332)

4.5.2.2.1 Initial Conditions

The following systems are operating as described by the indicated SDD and SOI:

	<u>System</u>	<u>SDD</u>	<u>SOI</u>
a.	Electrical Power	12	12-10/12-49
b.	Compressed Gas	22	22-4
c.	Plant Service Water	75A	75A-7

4.5.2.2.2 Procedure (H&V Unit 331)

1. Place H&V Unit (331) control (HS-331), located on Local Panel (B004A) in the "START" position.

NOTE: This will energize the control system and allow the outside air damper (TAD - 005B) to open (minimum position).

2. Verify status indications (XL-331A & 0058A), located on Local Panel (B004A) are energized.
3. Verify outside air intake (TIS-005A), heating coil outlet (TI-006) and cell temperature indication (TIC-005) on Local Panel (B004A) is within limits specified by Section 3 (Table 3-5) of this SDD.
4. Verify throwaway Filter d/p indicator (PDI-007) locally is within limits specified by Section 3 (Table 3-5) of this SDD.
5. Verify the following alarms are deenergized on Local Panel (B004A) and Back Panel (B002).

	<u>Inst.</u>	<u>PAR</u>
a. H&V Unit 331 Heating Coil Leaving Air Temperature Low	TSL-025	25A-381
b. Air Flow Low	FSL-034	25A-220/219
c. H&V Unit 331 Filter Leaving Air Temperature High	TSH-051B	25A-382

4.5.2.2.3 Procedure (H&V Unit 332)

1. Place H&V Unit (332) Control (HS-332), located on Local Panel (B004B), in the "START" position.

NOTE: This will energize the control system and allow Outside Air Damper (TAD-012B) to open (minimum) position.

2. Verify status indication (XL-322A & 012BA) located on Local Panel (B004E) are energized.
3. Verify outside air intake, (TIS-012) heating coil outlet (TI-013) and cell temperature indication (TIC-012) on Local Panel (B004E) is within range specified by Section 3 (Table 3-5) of this SDD.
4. Verify throwaway Filter d/p indicator (PDI-014) locally is within range specified by Section 3 (Table 3-5) of this SDD.
5. Verify the following alarms are deenergized on Local Panel (B004B) and Back Panel (B002).

	<u>Inst.</u>	<u>PAR</u>
a. H&V Unit 332 Air Temperature Low	TSL-027	25A-383
b. H&V Unit 332 Air Flow Low	FSL-035	25A-222/221
c. H&V Unit 332 Air Temperature High	TSH-052	25A-384

4.5.2.3 MG Set Unit Coolers (321 and 322)

4.5.2.3.1 Initial Condition

The following systems are operating as described by the indicated SDD and SOI:

<u>System</u>	<u>SDD</u>	<u>S01</u>
a. Electrical Power	12	12-10
b. Compressed Gas	22	22-4
c. Plant Service Water	75A	75A-5

4.5.2.3.2 Procedure (Unit Cooler 321)

1. Place Unit cooler (321) control (HS-321), located on Local Panel (B004E), in the "AUTO" position.

NOTE: Starting of the related MG Set (56PRK202C) will start Unit Cooler (321), energize the control system and allow automatic damper (A0D-019) to move to its minimum position.

2. Verify operating status indication (XL-321A & 019A), located on Local Panel (B004E) are energized.
3. Verify throwaway filter d/p indication (PDI-032) locally is within range specified in Section 3 (Table 3-5) of this SDD.
4. Verify cooling coil air inlet, air outlet and cell temperature indication (TT-018, 017) locally and cell temperature indicator (TI-020) on Local Panel (B004E) is within range specified by Section 3 (Table 3-5) of this SDD.
5. Verify the following alarms are deenergized on Local Panel (B004E) and Back Panel (B002).

	<u>Inst.</u>	<u>Location</u>	<u>PAR</u>
a. Supply Air Flow Low	FSL-036	B004	25A-223
b. Unit 321 & 322 Trouble	FSL-036	B002	25A-225

4.5.2.3.3 Procedure (Unit Cooler 322)

1. Place Unit Cooler (322) control (HS-322), located on Local Panel (B004E), in the 'AUTO' position.

NOTE: Starting of the related MG Set (56INK202C) will start Unit Cooler 322), energize the control system and allow automatic damper (AOD-023) to move to its minimum position.

2. Verify operating status indication (XL-322A & 023A), located on Local Panel (B004E) are energized.
3. Following Unit start, locally verify throwaway Filter d/p indication (PDI-033), within the range specified by Section 3 (Table 3-5) of this SDD.
4. Verify cooling coil air inlet, air outlet and cell temperature indication (TI-022 & 021) locally, and cell temperature indicator (TI-038) on Local Panel (B004E) is within limits specified by Section 3 (Table 3-5) of this SDD.
5. Verify the following alarms are deenergized on Local Panel (B004E) and Back Panel (B002).

	<u>Inst.</u>	<u>Panel</u>	<u>PAR</u>
a. Supply Air Flow Low	FSL-037	B004E	25A-224
b. Unit 321 & 322 Trouble	FSL-037	B002	25A-225

4.5.2.4 Smoke Vent Fan (360)

Refer to SDD-26B (SOI 26B-13) for fan startup.

4.5.2.5 Day Tank Cell Exhaust Fans (343 and 344)

4.5.2.5.1 Initial Conditions

1. Building Electric Power (SDD-12) is available as described by SOI 12-10.

2. SSPLS Controls (TBD) are aligned for service.

HOLD
25000569

4.5.2.5.2 Procedure

1. Place Fan (343 and 344) controls (HS-343B & 344B), located on Back Panel (B002), in the "START" position.
2. Place Fan (343 & 344) control (HS-343A & 344A), located in Local Panels (B004C & B004D) in the "NEUTRAL" position.
3. Verify Fan (343 & 344) operating status lights (XL-343C & 344C), located on Back Panel (B002) are energized.
4. Verify the following alarms are deenergized on Local Panel (B004C) and Back Panel (B002).

	<u>Inst.</u>	<u>Panel</u>	<u>PAR</u>
a. Fan 343 Air Flow Low	FSL-064	B004A	25A-215
		B002	25A-216
b. Fan 344 Air Flow Low	FSL-065	B004B	25A-217
		B002	25A-218

4.5.3 Normal Operation (SOI 25A-23)

4.5.3.1 Diesel Generator Rooms (A&B) Emergency Supply Fans (341A and 341B 342A & 342B)

Starting of Diesel Generator "A" or "B" will start the related fans (341A, 341B or 342A, 342B), energize the control system, and open related dampers (MOD-002A, 002B) or (O10A, O10B), as indicated by the associated status indicating lights on Local Panel (B004C or B004D).

The indoor space temperature will be maintained by (TIC-001) or (TIC-008) through the modulation of dampers (TMD-001A, 001B, 001C, 001D) or (TMD-008A, 008B, 008C, 008D).

4.5.3.2 Diesel Generator Rooms (A&B) "H & V" Units (331 and 332)

4.5.3.2.1 Summer (Outside air temperature above 50°F)

The temperature transmitter (TT-005A) will switch the system to the summer operating mode (de-energize the heating coil and system 75A heating coil recirculating pump).

The temperature transmitter (TT-005B) automatically set to 70°F for the summer mode, will modulate the return and outside air dampers (TAD-005A and 005B) to maintain a minimum cell temperature.

NOTE: Outside air damper (TAD-005B) will not be allowed to close beyond its minimum position.

4.5.3.2.2 Winter (outside air temperature below 50°F)

The temperature transmitter (TT-005A) will switch the system to the winter operating mode.

Switching to the winter operating mode will move the outside air damper (TAD-005B) to its minimum position, open the return damper (TAD-005A), and energize the heating coil and system 75A heating coil recirculating pump.

The temperature transmitter (TT-005B) automatically set to 55°F for the winter mode will modulate the heating coil control valve (SDD-75A) to maintain a constant cell temperature.

4.5.3.3 MG Set Unit Coolers (321, 322)

Starting of the MG Set (56PRK202C or 56INK202C) will start the related Unit cooler (321 or 322), energize the control system, and allow damper (AOD-019 or 23) to move to its minimum position.

4.5.3.4 Smoke Vent Fan (360)

Refer to SDD-26B (SOI 26B-13).

4.5.3.5 Day Tank Cell Exhaust Fans (343 and 344)

Day Tank Cell Exhaust Fans (343 and 344) normally operate continuously after manual start. Operating status indication is provided on Local Panel (B004A & B004B).

4.5.4 Shutdown (SOI 25A-22)

4.5.4.1 Diesel Generator Rooms (A&B) Emergency Supply Fans (341A, 341B, 342A, 342B)

Emergency Supply Fans operate only during Diesel Generator operation and are not redundant. One Emergency Supply Fan (341A or 341B) (342A or 342B) may be shutdown. Without cell (511 or 512) temperature increase will not exceed limit specified in Appendix K of SDD-21.

1. Place Fans (341A, 341B or 342A, 342B) controls (HS-341AB, 341BB, 342AB or 342BB), located on Back Panel (B002), in the "STOP" position.

NOTE: This will de-energize the control system and close dampers (002A, 002B) or (010A, 010B).

2. Verify operating status indication (XL-341AD, 341BD) or (342AD, 342BD), located on Back Panel (B002) are energized.

4.5.4.2 Diesel Generator Room H and V Unit (331 and 332)

Place H and V Unit (331 or 332) control (HS-331 or 332), located on Local Panel (B004A or B004B) in the "STOP" position.

NOTE: Shutting down of the system will open the return damper (TAD-005A or 012A) and move the outside air damper (TAD-005B or 012B) to the fully closed position.

1. Verify energized operating status indication.

<u>Train A</u>	<u>EIN</u>	<u>Status</u>	<u>Indication</u>
a. Supply Fan	331	Stop	XL-331B
b. Return Air Damper	TAD-005A	Open	XL-005AA
c. Outside Air Damper	TAD-005B	Closed	XL-005BB
<u>Train B</u>			
a. Supply Fan	332	Stop	XL-332B
b. Return Air Damper	TAD-012A	Open	XL-012AA
c. Outside Air Damper	TAD-012B	Closed	XL-012BB

4.5.4.3 MG Set Unit Coolers (321 or 322)

4.5.4.3.1 Initial Condition

Motor Generator Set (56PRK202C, 56INK202C) is shutdown.

4.5.4.3.2 Procedure

1. Place MG Set Unit Cooler (321 or 322) control (HS-321A or 322A), located on Local Panel (B004E), in the "STOP" position, and verify the following:
2. Verify Supply Fan status and Dampers (A00-019 or 023) are closed as indicated by energized status lights (XL-321B & 019B or 322B & 023B), located on Local Panel (B004E).

4.5.4.4 Smoke Vent Fan (360)

Refer to SDD-26B (SOI 26B-13).

4.5.4.5 Day Tank Cell Exhaust Fan (343 and 344)

4.5.4.5.1 Initial Conditions

Portable ventilation is provided to prevent buildup of fumes.

4.5.4.5.2 Procedure

1. Place Fan (343 or 344) control (HS-343B or 344B), located on Back Panel (B002), in the "STOP" position.
2. Verify Fan (343 or 344) operating status as indicated by energized (XL-343D or 344D), located on Back Panel (B002).

4.5.5 Drain (SOI 25A-40)

1. Drain MG Sets Unit Coolers (321 and 322) cooling coils as described in SDD-75A (SOI 75A-17).
2. Drain H&V Unit (331 and 332) heating coils as described in SDD-75A (SOI 75A-19).

4.5.6 Refill (SOI 25A-41)

1. Fill MG Set Unit Coolers (321 & 322) Cooling Coils as described by SDD-75A (SOI 75A-1).
2. Fill H&V Units (331 & 332) Heating Coils as described by SDD-75A (SOI 75A-3).

4.6 OPERATIONAL VALVE POSITION TABLES

The following are the guidelines used in production of these tables.

1. NORMAL POSITION column contains position of system valves at 40%-100% power operation.
2. SOI column lists those deviations from the normal position column that exists at the end of the indicated SOI. Valves with no deviation are indicated by a dash (-)

B

SDO-25A
REV. B
UNRAE LINED

NV-501, NV-502, NV-512

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV. CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01	S01
ADV-046A	RCR Supply Isolation	RSR 836 398	0									
ADV-046B	RCR Supply Isolation	RSR 842 161A	0									
ADV-046C	RCR Supply Isolation	RCR 836 398	0									
ADV-047A	RCR Exhaust Isolation	RSR 861'8" 395A	0									
ADV-047B	RCR Exhaust Isolation	RSR 861'8" 395A	0									
ADV-047C	RCR Exhaust Isolation	RCR 856 161A	0									
MOV-019A	Containment Cooling	RCR 816 391A	C									
MOV-019B	Containment Cooling	RCR 840 398	C									
MOV-019C	Containment Cooling	RCR 816 391A	C									
MOV-019D	Containment Cooling	RSR 840 398	C									
MOV-106A	Quench Tank Inlet	RSR 816 391A	C									
MOV-106B	Quench Tank Inlet	RSR 840 349	C									
MOV-106C	Quench Tank Inlet	RSR 816 391A	C									
MOV-106D	Quench Tank Inlet	RSR 840 349	C									
MOV-107A	Scrubber Exh. Fan 175A Bypass	RSR 758 359	C									
MOV-108A	Scrubber Exh. Fan 175A Bypass	RSR 794'6" 347	C									
MOV-109A	Scrubber Exh. Fan 175A Discharge	RSR 758 359	C									
MOV-109B	Scrubber Exh. Fan 175B Discharge	RSR 794'6" 347	C									
FHV-107A	Quench Tank Inlet	RSR 816 391A	C									
FHV-107B	Quench Tank Inlet	RSR 840 349	C									
V-050	Scrubber Outlet Isolation	RSR 758 359	0									
V-051	Scrubber Outlet Isolation	RSR 758 359	0									
V-025	Cell 153 Outlet Isolation	RCR 800'9" 152	0									
V-026	Cell 154 Outlet Isolation	RCR 800'9" 152	0									
V-027	Cell 155 Outlet Isolation	RCR 800'9" 152	0									
V-028	Cell 156 Outlet Isolation	RCR 800'9" 152	0									

All missing information on this table is TRD=

MDLN*
25000144

All Valve Numbers are preceded by 25AR

C = closed

0 = open

300-25A
REV. B
UNBASELINED

Operational Valve Position Table

WV-503, WV-512

VALVE NUMBER	VALVE NOMENCLATURE	BLDG /ELEV.	LOCATION	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01
V-029	Cell 105RC Outlet Isolation	RCR	733	105G	N							
V-030	Cell 105RG Outlet Isolation	RCR	733	105G	N							
V-031	Cell 105RF Outlet Isolation	RCR	733	105G	N							
V-032	Cell 105RE Outlet Isolation	RCR	733	105G	N							
V-033	Cell 105RD Outlet Isolation	RCR	733	105G	N							
A00-079	RAPS Cell Exhaust Isolation	RCR	R16	161A	N							
THE FOLLOWING VALVE NUMBERS ARE TND												
	Unit Cooler N20A Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20A Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20A Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20A Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20A Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20A Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20B Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20B Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20B Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20B Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20B Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20B Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Drain	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Coll Vent	RCR	R42	161A	C							
	Unit Cooler N20C Cooling Drain	RCR	R42	161A	C							

MTLN
25000566

Valve Numbers are preceded by 25AR
C = closed
O = open

SDO-25A
REV. 8
UNRASELTED

NV-501, NV-503

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	BLDG	LOCATION /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	AHU 200 Cooling Coil Vent	SGR	R36	271	C								
	AHU 200 Cooling Coil Drain	SGR	R36	271	C								
	AC Unit 010 Cooling Coil Vent	RCR	752'A"	105I	C								
	AC Unit 010 Cooling Coil Drain	RCR	752'A"	105I	C								
	AC Unit 010 Cooling Coil Vent	RCR	752'A"	105I	C								
	AC Unit 010 Cooling Coil Drain	RCR	752'A"	105I	C								
	Unit Cooler 053 Cooling Coil Vent	RCR	733	125	C								
	Unit Cooler 053 Cooling Coil Drain	RCR	733	125	C								
	AC Unit 011 Cooling Coil Vent	RCR	752'A"	105K	C								
	AC Unit 011 Cooling Coil Drain	RCR	752'A"	105K	C								
	AC Unit 011 Cooling Coil Vent	RCR	752'A"	105K	C								
	AC Unit 011 Cooling Coil Drain	RCR	752'A"	105K	C								
	Unit Cooler 024 Cooling Coil Vent	RCR	794	152	C								
	Unit Cooler 024 Cooling Coil Drain	RCR	794	152	C								
	Unit Cooler 021 Cooling Coil Vent	RCR	R42	165	C								
	Unit Cooler 021 Cooling Coil Drain	RCR	R42	165	C								
	Unit Cooler 022 Cooling Coil Vent	RCR	R42	163	C								
	Unit Cooler 022 Cooling Coil Drain	RCR	R42	163	C								
	Unit Cooler 023 Cooling Coil Vent	RCR	R42	167	C								
	Unit Cooler 023 Cooling Coil Drain	RCR	R42	167	C								
	AHU 200 Heating Coil Vent	SGR	R36	271	C								
	AHU 200 Heating Coil Drain	SGR	R36	271	C								

Valve Numbers are preceded by 25AR
C = closed

SDO-25A
REV. B
UNBASELINED

MV-501, MV-502

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /FLEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
ADD-069A	U.C. 020A Discharge	RCR	R16	161A	0							
ADD-069B	U.C. 020B Discharge	RCR	R16	161A	0							
ADD-069C	U.C. 020C Discharge	RCR	R16	161A	0							
ADD-095	Operating Floor Discharge	RCR	R16	161A	0							
ADD-096	Operating Floor Discharge	RCR	R16	161A	0							
ADD-097	Operating Floor Discharge	RCR	R16	161A	0							
ADD-098	Operating Floor Discharge	RCR	R16	161A	0							
MOD-001A	Annulus Cooling Fan 174A Discharge	RSR	R16	392	C							
MOD-001B	Annulus Cooling Fan 174B Discharge	RSR	R16	392	C							
MOD-001C	Annulus Cooling Fan 174C Discharge	RSR	R16	392	C							
MOD-001D	Annulus Cooling Fan 174D Discharge	RSR	R16	392	C							
MOD-001E	Annulus Cooling Fan 174E Discharge	RSR	R16	392	C							
MOD-001F	Annulus Cooling Fan 174F Discharge	RSR	R16	392	C							
MOD-015A	Annulus Press Maint. Fan 172A Disc.	RSR	R61'6"	395	*							
MOD-015B	Annulus Press Maint. Fan 172B Disc.	RSR	R40	39A	*							
MOD-016A	Annulus Filter Fan 173A Discharge	RSR	R61'6"	395	C							
MOD-016B	Annulus Filter Fan 173B Discharge	RSR	R40	39A	C							
ADD-017A	Annulus Discharge	RSR	R40	39A	C							
ADD-017B	Annulus Discharge	RSR	R40	39A	0							
ADD-018A	Annulus Supply	RSR	R40	39A	0							
ADD-018B	Annulus Supply	RSR	R40	39A	0							
MOD-090A	Annulus Vent	RCR	R	-	C							
MOD-090B	Annulus Vent	RCR	R	-	C							
MOD-090C	Annulus Vent	RCR	R	-	C							
MOD-090D	Annulus Vent	RCR	R	-	C							

Damper Numbers are preceded by 25AR
C = closed
0 = open

* = Either A or B is open
with other in closed
position

R = Roof

SND-25A
REV. B
UNRAE LINED

KV-503

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
A00-037	AHI 200 Outside Air Supply	SGR	R36	271	O							
A00-043A	RCR Supply Fan 240A Discharge	SGR	R36	271	O							
A00-043B	RCR Supply Fan 240B Discharge	SGR	R36	271	O							
A00-07A	RCR Exhaust Fan 165A Discharge	SGR	R36	271	O							
A00-07B	RCR Exhaust Fan 165B Discharge	SGR	R36	271	O							
PAD-112A	RCR Exhaust Fan 165A Damper	SGR	R36	271	M							
PAD-112B	RCR Exhaust Fan 165B Damper	SGR	R36	271	M							

Damper Numbers are preceded by 25AR
O = open
M = modulate

S70-25A
REV. R
UMHASELNER

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	BLDG /ELEV.	LOCATION CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01
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V-001	Cell 320 Outlet Isolation	RSR	779	306AA	0						
V-002	Cell 378 Outlet Isolation	RSR	779	306AA	0						
V-003	Cell 379 Outlet Isolation	RSR	779	306AA	C						
V-004	Cell 397 Outlet Isolation	RSR	779	306AA	0						
V-005	Cell 390 Outlet Isolation	RSR	779	306AA	C						
V-006	Cell 375 Outlet Isolation	RSR	779	306AA	0						
V-007	Cell 317 Outlet Isolation	RSB	775	306AA	0						
V-008	Cell 371 Outlet Isolation	RSR	755	306AA	0						
V-009	Cell 365 Outlet Isolation	RSR	755	306AA	0						
V-010	Cell 366 Outlet Isolation	RSR	755	306AA	0						
V-011	Cell 370 Outlet Isolation	RSR	755	306AA	0						
V-012	Cell 369 Outlet Isolation	RSR	779	307A	0						
AND-026	RAPS and CAPS Exhaust Isolation	RSR	779	307A	0						
AND-090A	RAPS and CAPS Exhaust Fan 162A Discharge	RSR	779	307A	0						
AND-090R	RAPS and CAPS Exhaust Fan 162B Discharge	RSB	779	307A	0						

HOLD
25000566

THE FOLLOWING VENT AND DRAIN VALVE NUMBERS ARE TBN

Unit Cooler 104A Cooling Coil Vent	RSR	R16	327	C
Unit Cooler 104B Cooling Coil Drain	RSR	R16	327	C
Unit Cooler 104B Cooling Coil Vent	RSR	R16	326	C
Unit Cooler 104B Cooling Coil Drain	RSR	R16	326	C
Unit Cooler 132 Cooling Coil Vent	RSR	R40	308	C
Unit Cooler 132 Cooling Coil Drain	RSR	R40	308	C
Unit Cooler 133 Cooling Coil Vent	RSR	R16	301	C
Unit Cooler 133 Cooling Coil Drain	RSR	R16	301	C

* = Either Valve A or B
is open and other valve
is closed.

Valve Numbers are preceded by 25AS
C = closed
0 = open

SWD-25A
REV. A
UNBASELINED

NV-509, NV-512, NV-520

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV. CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	Unit Cooler 134 Cooling Coil Vent	RSR 816 347	C								
	Unit Cooler 134 Cooling Coil Drain	RSB 816 347	C								
	Unit Cooler 137 Cooling Coil Vent	RSR 733 30SE	C								
	Unit Cooler 137 Cooling Coil Drain	RSR 733 30SE	C								
	Unit Cooler 138 Cooling Coil Vent	RSR 733 30SF	C								
	Unit Cooler 138 Cooling Coil Drain	RSR 733 30SF	C								
	Unit Cooler 142A Cooling Coil Vent	RSR 755 359	C								
	Unit Cooler 142A Cooling Coil Drain	RSB 755 359	C								
	Unit Cooler 142B Cooling Coil Vent	RSB 75A 359	C								
	Unit Cooler 142B Cooling Coil Drain	RSR 75A 359	C								
	Unit Cooler 143 Cooling Coil Vent	RSR 816 34A	C								
	Unit Cooler 143 Cooling Coil Drain	RSB 816 34A	C								
	Unit Cooler 145 Cooling Coil Vent	RSB 840 349	C								
	Unit Cooler 145 Cooling Coil Drain	RSR 840 349	C								
	Unit Cooler 146 Cooling Coil Vent	RSR 861'6" 395	C								
	Unit Cooler 146 Cooling Coil Drain	RSB 861'6" 395	C								
	A/C Unit 103 Cooling Coil Vent	RSR 854 32A	C								
	A/C Unit 103 Cooling Coil Drain	RSB 854 32A	C								
	Unit Cooler 131 Cooling Coil Vent	RSR 861'6" 365	C								
	Unit Cooler 131 Cooling Coil Drain	RSB 861'6" 365	C								
	AIRU 101 Cooling Coil Vent	RSR 867 660	C								
	AIRU 101 Cooling Coil Drain	RSB 867 660	C								
	AIRI 101 Cooling Coil Vent	RSR 867 660	C								
	AIRU 101 Cooling Coil Drain	RSB 867 660	C								
	AIRI 101 Cooling Coil Vent	RSR 867 660	C								
	AIRI 101 Cooling Coil Drain	RSB 867 660	C								

Valve Numbers are preceded by 25AS
C = closed

SDD-25A
REV. B
UNBASELINED

NY-520, NY-511

Operational Valve position table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	AHU 100 Cooling Coil Vent	RSR	733	305H	C							
	AHU 100 Cooling Coil Drain	RSR	733	305H	C							
	AHU 100 Cooling Coil Vent	RSR	733	305H	C							
	AHU 100 Cooling Coil Drain	RSR	733	305H	C							
	AHU 100 Cooling Coil Vent	RSR	733	305H	C							
	AHU 100 Cooling Coil Drain	RSR	733	305H	C							
	AHU 100 Heating Coil Vent	RSR	733	305H	C							
	AHU 100 Heating Coil Drain	RSR	733	305H	C							
	AHU 100 Heating Coil Vent	RSR	733	305H	C							
	AHU 100 Heating Coil Drain	RSR	733	305H	C							
	AHU 100 Heating Coil Vent	RSR	733	305H	C							
	AHU 100 Heating Coil Drain	RSR	733	305H	C							
	AHU 100 Heating Coil Vent	RSR	733	305H	C							
	AHU 100 Heating Coil Drain	RSR	733	305H	C							
	AHU 100 Heating Coil Vent	RSR	733	305H	C							
	AHU 100 Heating Coil Drain	RSR	733	305H	C							
	AHU 100 Heating Coil Vent	RSR	733	305H	C							
	AHU 100 Heating Coil Drain	RSR	733	305H	C							
	Unit Heater 191 Heating Coil Vent	RSR	840	312	C							
	Unit Heater 191 Heating Coil Drain	RSR	840	312	C							
	Unit Cooler 139A Cooling Coil Vent	RSR	733	305F	C							
	Unit Cooler 139A Cooling Coil Drain	RSR	733	305F	C							
	Unit Cooler 139B Cooling Coil Vent	RSR	733	305G	C							
	Unit Cooler 139B Cooling Coil Drain	RSR	733	305G	C							

Valve Numbers are preceded by 25AS
C = closed

SDD-25A
REV. 9
UNBASELINED

NV-520, NV-501

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	Unit Heater 135 Heating Coil Vent	RSB	816	640	C							
	Unit Heater 135 Heating Coil Drain	RSB	816	640	C							
	Unit Heater 136 Heating Coil Vent	RSB	816	644B	C							
	Unit Heater 136 Heating Coil Drain	RSB	816	644B	C							
	Unit Heater 180 Heating Coil Vent	RSB	867	660	C							
	Unit Heater 180 Heating Coil Drain	RSB	867	660	C							
	Unit Heater 181 Heating Coil Vent	RSB	867	660	C							
	Unit Heater 181 Heating Coil Drain	RSB	867	660	C							
	Unit Heater 193 Heating Coil Vent	RSB	867	660	C							
	Unit Heater 193 Heating Coil Drain	RSB	867	660	C							
	Unit Heater 194 Heating Coil Vent	RSB	867	660	C							
	Unit Heater 194 Heating Coil Drain	RSB	867	660	C							
	AHU 101 Heating Coil Vent	RSB	867	660	C							
	AHU 101 Heating Coil Drain	RSB	867	660	C							
	AHU 101 Heating Coil Vent	RSB	867	660	C							
	AHU 101 Heating Coil Drain	RSB	867	660	C							
	AHU 101 Heating Coil Vent	RSB	867	660	C							
	AHU 101 Heating Coil Drain	RSB	867	660	C							
AOV-069A	U.C. 020A Isolation	RCB	884	161A	0							
AOV-069B	U.C. 020B Isolation	RCB	884	169A	0							
AOV-069C	U.C. 020C Isolation	RCB	884	161A	0							

Valve Numbers are preceded by 25AS

C = closed

0 = open

SYD-25A
REV. 8
UNBASELINED

NY-509, NY-510, NY-511

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
A00-171	A/C Unit 103 Outside Air Supply	RSB	865	328	0							
A00-009A	RSB Supply Fan 140A Discharge	RSB	733	305H	0							
A00-009B	RSB Supply Fan 140B Discharge	RSB	733	305H	0							
A00-010	AHU 100 Outside Air Supply	RSB	733	305H	0							
A00-025A	RSB Exhaust Fan 160A Discharge	RSB	733	305H	0							
A00-025B	RSB Exhaust Fan 160B Discharge	RSB	733	305H	0							
MOD-200A	RSB Recirculating Discharge	RSB	733	305H	C							
MOD-200B	RSB Recirculating Discharge	RSB	733	305H	C							
MOD-203A	RSB Filter Unit 184A Inlet	RSB	816	391	*							
MOD-203B	RSB Filter Unit 184B Inlet	RSB	794'6"	347	*							
MOD-197A	RSB Filter Unit 184A Recirculation Inlet	RSB	816	391	C							
MOD-197B	RSB Filter Unit 184B Recirculation Inlet	RSB	794'6"	347	C							
MOD-186A	RSB Filter Unit 184A Exhaust	RSB	816	391	*							
MOD-186B	RSB Filter Unit 184B Exhaust	RSB	794'6"	347	*							
MOD-269A	RSB Filter Fan 185A Discharge	RSB	816	391	*							
MOD-269B	RSB Filter Fan 185B Discharge	RSB	794'6"	347	*							
MOD-157	Stairwell Pressurization Fan 167 Discharge	RSB	R		C							
MOD-158	Stairwell Pressurization Fan 168 Discharge	RSB	R		C							
MOD-159	Stairwell Pressurization Fan 166 Discharge	RSB	W		C							
MOD-160	Stairwell Pressurization Fan 169 Discharge	RSB	W		C							

Damper Numbers are preceded by 25AS
C = closed
O = open

* = Either Damper A or B
is open and other damper
is closed.

R = Roof
W = Exterior Wall

SDO-25A
REV. R
UNBASELINED

NV-513, NV-520

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
A00-032A	Cell 336 Supply Isolation	RSB	755	306A	0							
A00-032B	Cell 336 Supply Isolation	RSB	755	306A	0							
A00-033A	Cell 336 Exhaust Isolation	RSB	755	306A	0							
A00-033B	Cell 336 Exhaust Isolation	RSB	755	306A	0							
A00-262A	Cell 310 Supply Isolation	RSB	816	303	0							
A00-262B	Cell 310 Supply Isolation	RSB	816	303	0							
A00-263A	Cells 32A, 324, 308A & 325 Supply Isolation	RSB	816	303	?							
A00-263B	Cells 32A, 324, 308A & 325 Supply Isolation	RSB	816	303	0							
A00-264A	Cells 308A & 313 Supply Isolation	RSB	816	303	0							
A00-264B	Cells 308A & 313 Supply Isolation	RSB	816	303	0							
A00-265A	Cell 308A Exhaust Isolation	RSB	816	303	0							
A00-265B	Cell 308A Exhaust Isolation	RSB	816	303	0							
A00-050	AHH-101 Outside Air Inlet	RSB	867	660	0							
A00-050A	RSB-RWA Supply Fan 141A Discharge	RSB	867	660	0							
A00-050B	RSB-RWA Supply Fan 141B Discharge	RSB	867	660	0							
A00-065A	RWA Exhaust Isolation	RSB	867	660	C							
A00-065B	RWA Filter Unit 171 Inlet	RSB	867	660	0							
A00-069A	RSB-RWA Exhaust Fan 161A Discharge	RSB	867	660	0							
A00-069B	RSB-RWA Exhaust Fan 161B Discharge	RSB	867	660	0							
M00-073	Cell 395 Exhaust Isolation	RSB	861'6"	305	0							
M00-074	Cell 398 Exhaust Isolation	RSB	840	305	0							
M00-075	Cell 391 Exhaust Isolation	RSB	816	305	0							
M00-076	Cell 347 Exhaust Isolation	RSB	794'6"	305	0							
M00-077	Cell 359 Exhaust Isolation	RSB	758	305	0							
M00-078	Cell 305H Exhaust Isolation	RSB	733	315	0							

Damper Numbers are preceded by 25AS

C = closed

0 = open

HOLD
26-000566

Operational Valve Position Table

Valve Numbers are preceded by 25AG
C = closed
O = open

SDO-25A
REV. B
UNBASELINED

NV-549, NV-547, NV-545

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	AHU 206 Cooling Coil Drain	SGB	A36	271	C							
	AHU 203 Cooling Coil Vent	SGB	A06	246	C							
	AHU 203 Cooling Coil Drain	SGA	A06	246	C							
	AHU 203 Cooling Coil Vent	SGB	A06	246	C							
	AHU 203 Cooling Coil Drain	SGA	A06	246	C							
	AHU 203 Cooling Coil Vent	SGB	A06	246	C							
	AHU 203 Cooling Coil Drain	SGA	A06	246	C							
	AHU 203 Cooling Coil Vent	SGA	A06	246	C							
	AHU 203 Cooling Coil Drain	SGB	A06	246	C							
	AHU 203 Cooling Coil Vent	SGA	A06	246	C							
	AHU 203 Cooling Coil Drain	SGA	A06	246	C							
	AHU 203 Cooling Coil Vent	SGA	A06	246	C							
	AHU 203 Cooling Coil Drain	SGB	A06	246	C							
	AHU 203 Cooling Coil Vent	SGA	A06	246	C							
	AHU 203 Cooling Coil Drain	SGA	A06	246	C							
	AHU 203 Cooling Coil Vent	SGA	A06	246	C							
	AHU 203 Cooling Coil Drain	SGB	A06	246	C							
	AHU 203 Cooling Coil Vent	SGA	A06	246	C							
	AHU 204 Cooling Coil Vent	SGA	A16	262	C							
	AHU 204 Cooling Coil Drain	SGA	A16	262	C							
	AHU 204 Cooling Coil Vent	SGA	A16	262	C							
	AHU 204 Cooling Coil Drain	SGA	A16	262	C							
	AHU 204 Cooling Coil Vent	SGA	A16	262	C							
	AHU 204 Cooling Coil Drain	SGB	A16	262	C							
	AHU 201 Cooling Coil Vent	SGB	A06	244	C							
	AHU 201 Cooling Coil Drain	SGB	A06	244	C							
	AHU 201 Cooling Coil Vent	SGB	A06	244	C							

Valve Numbers are preceded by 25AG
C = closed

SDD-25A
REV. 8
UNBASELINED

NV-545, NV-547, NV-549, NV-546

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AHU 201 Cooling Coil Drain	SGR	806	244	C							
	AHU 201 Cooling Coil Vent	SGR	806	244	C							
	AC Unit 210 Cooling Coil Vent	SGR	816	261	C							
	AC Unit 210 Cooling Coil Drain	SGR	816	261	C							
	Unit Cooler 223A Cooling Coil Vent	SGR	733	216	C							
	Unit Cooler 223A Cooling Coil Drain	SGR	733	216	C							
	Unit Cooler 223B Cooling Coil Vent	SGR	733	217	C							
	Unit Cooler 223B Cooling Coil Drain	SGR	733	217	C							
	Unit Cooler 221A Cooling Coil Vent	SGR	733	204A	C							
	Unit Cooler 221A Cooling Coil Drain	SGR	733	204A	C							
	Unit Cooler 221B Cooling Coil Vent	SGR	733	204B	C							
	Unit Cooler 221B Cooling Coil Drain	SGR	733	204B	C							
	Unit Cooler 222A Cooling Coil Vent	SGR	731'11"	202	C							
	Unit Cooler 222A Cooling Coil Drain	SGR	731'11"	202	C							
	Unit Cooler 222B Cooling Coil Vent	SGR	733	202B	C							

Valve Numbers are preceded by 25AG

C = closed

SDO-25A
REV. B
UNBASELINED

NV-545, NV-549, NV-547, NV-546

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELEV. CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	Unit Cooler 222R Cooling Coil Drain	SGR 733 202B	C								
	Unit Cooler 237A Cooling Coil Vent	SGR 836 272A	C								
	Unit Cooler 237A Cooling Coil Drain	SGR 836 272A	C								
	Unit Cooler 237B Cooling Coil Vent	SGR 836 272B	C								
	Unit Cooler 237B Cooling Coil Drain	SGR 836 272B	C								
	Unit Cooler 237C Cooling Coil Vent	SGR 836 272C	C								
	Unit Cooler 237C Cooling Coil Drain	SGR 836 272C	C								
	AC Unit 210 Heating Coil Vent	SGR 816 261	C								
	AC Unit 210 Heating Coil Drain	SGR 816 261	C								
	AHU 204 Heating Coil Vent	SGR 816 262	C								
	AHU 204 Heating Coil Drain	SGR 816 262	C								
	AHU 204 Heating Coil Vent	SGR 816 262	C								
	AHU 204 Heating Coil Drain	SGR 816 262	C								
	AHU 204 Heating Coil Vent	SGR 816 262	C								
	AHU 204 Heating Coil Drain	SGR 816 262	C								
	AHU 206 Heating Coil Vent	SGR 816 271	C								
	AHU 206 Heating Coil Drain	SGR 816 271	C								
	AHU 206 Heating Coil Vent	SGR 816 271	C								
	AHU 206 Heating Coil Drain	SGR 816 271	C								
	AHU 206 Heating Coil Vent	SGR 816 271	C								
	AHU 206 Heating Coil Drain	SGR 816 271	C								

Valve Numbers are preceded by 25AG
C = closed

SDO-25A
REV. B
UNBASELINED

NY-545, NY-546, NY-547

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
MOD-001A	AHU 201 Outside Air Damper	SGR	R06	244	0							
TMD-001B	AHU 201 Outside Air Damper	SGR	R06	244	0							
TMD-001C	AHU 201 Return Air Damper	SGR	R06	244	0							
TMD-001D	Return Air	SGR	R06	244	0							
TMD-001E	Exhaust Air	SGR	R06	244	0							
MOD-010A	Supply Fan 241A Discharge Isolation	SGR	R06	244	*							
MOD-010B	Supply Fan 241B Discharge Isolation	SGR	R06	244	*							
MOD-012A	Exhaust Fan 261A Discharge Isolation	SGR	R06	244	*							
MOD-012B	Exhaust Fan 261B Discharge Isolation	SGR	R06	244	*							
MOD-190	Cell 201, Stairwell Pressurization Fan 246A Isolation	SGR	731'11"	201	C							
MOD-025A	AHU 202 Outside Air Damper	SGR	R36	245	0							
TMD-025B	AHU 202 Outside Air Damper	SGR	R36	245	0							
TMD-025C	AHU 202 Return Air Damper	SGR	R36	245	0							
TMD-025D	Return Air Damper	SGR	R36	245	0							
TMD-025E	Exhaust Air Damper	SGR	R36	245	0							
TMD-173	Bypass AHU 201	SGR	R06	244	C							
TMD-31	Bypass AHU 202	SGR	R36	245	C							
MOD-033A	Supply Fan 242A Discharge Isolation	SGR	R36	245	*							
MOD-033B	Supply Fan 242B Discharge Isolation	SGR	R36	245	*							
MOD-036A	Exhaust Fan 262A Discharge Isolation	SGR	R36	245	*							
MOD-036B	Exhaust Fan 262B Discharge Isolation	SGR	R36	245	*							
MOD-047A	AHU 203 Outside Air Damper	SGR	R06	246	0							
TMD-047B	AHU 203 Outside Air Damper	SGR	R06	246	0							
TMD-047C	AHU 203 Return Air Damper	SGR	R06	246	0							
TMD-047D	Return Air Damper	SGR	R06	246	0							
TMD-047E	Exhaust Air Damper	SGR	R06	246	0							

Damper Numbers are preceded by 25AG
C = closed
0 = open

* = Either Damper A or B is
open and other damper is
closed.

SDD-25A
REV. 9
UNRAE LINED

NY-547, NY-549

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
MOD-056A	Supply Fan 243A Discharge Isolation	SGA	R06	246	*							
MOD-056B	Supply Fan 243B Discharge Isolation	SGB	R06	246	*							
MOD-058A	Supply Fan 263A Discharge Isolation	SGB	R06	246	*							
MOD-058B	Supply Fan 263B Discharge Isolation	SGB	R06	246	*							
TAD-062A	AC Unit 210 Outside Air Isolation	SGA	R16	261	0							
TAD-062B	AC Unit 210 Return Air Isolation	SGA	R16	261	0							
TMD-54	AHU 203 Bypass Air Damper	SGA	R06	246	C							
MOD-072A	AHU 204 Outside Air Damper	SGA	R16	262	0							
TMD-072B	AHU 204 Outside Air Damper	SGA	R16	262	0							
TMD-072C	AHU 204 Return Air Damper	SGB	R16	262	0							
TMD-072D	Return Air Damper	SGB	R16	262	0							
TMD-072E	Exhaust Air Damper	SGA	R16	262	0							
MOD-092A	Supply Fan 244A Discharge Isolation	SGB	R16	262	*							
MOD-092B	Supply Fan 244B Discharge Isolation	SGB	R16	262	*							
MOD-094A	Exhaust Fan 264A Discharge Isolation	SGA	R16	262	*							
MOD-095B	Exhaust Fan 264B Discharge Isolation	SGA	R16	262	*							
TMD-110	AHU 204 Bypass Damper	SGA	R16	262	C							
MOD-196A	AHU 206 Outside Air Damper	SGA	R36	271	0							
TMD-196B	AHU 206 Outside Air Damper	SGB	R36	271	0							
TMD-196C	AHU 206 Return Air Damper	SGB	R36	271	0							
TMD-196D	Return Air Damper	SGA	R36	271	0							
TMD-196E	Exhaust Air Damper	SGB	R36	271	0							
MOD-198A	Supply Fan 249A Discharge Isolation	SGA	R36	271	*							
MOD-198B	Supply Fan 249B Discharge Isolation	SGA	R36	271	*							
MOD-200A	Exhaust Fan 267A Discharge Isolation	SGB	R36	271	*							
MOD-200B	Exhaust Fan 267B Discharge Isolation	SGB	R36	271	*							

Damper Numbers are preceded by 25AG

C = closed

0 = open

* = Either Damper A or B is
open and other damper is
closed.

SDD-25A
REV. 8
UNBASELINED

NY-549

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	LOCATION BLDG /ELEV. CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
MOD-099	Cell 271, Smoke Vent Fan 266 Isolation	SGR 836 271	C								
MOD-100	Cell 262, Smoke Vent Fan 266 Isolation	SGR 816 262	C								
MOD-101	Cell 247, Smoke Vent Fan 266 Isolation	SGR 794 247	C								
MOD-102	Cell 216, Smoke Vent Fan 266 Isolation	SGR 733 216	C								
MOD-103	Cell 217, Smoke Vent Fan 266 Isolation	SGR 733 217	C								
MOD-203	Stairwell (Cell 233) Pressurization Fan 248B Isolation	SGR 857'6" R	C								
MOD-204	Stairwell (Cell 212) Pressurization Fan 246B Isolation	SGR 857'6" W	C								
MOD-205	Stairwell (Cell 213) Pressurization Fan 247B Isolation	SGR 857'6" W	C								
MOD-206	Stairwell (Cell 214) Pressurization Fan 247A Isolation	SGR 836 W	C								

4-196

Damper Numbers are preceded by 25AG
C = closed

R = Roof
W = Wall

SDO-25A
REV. B
UNCLASSIFIED

NV-530, NV-528

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	BLDG	LOCATION /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
MOV-047A	Main Air Intake Isolation	CB	R63'3"	410A	O								
MOV-047B	Main Air Intake Isolation	CB	R63'3"	410A	O								
MOV-104A	Remote Air Intake Isolation	SGB	R63'3"	413	O								
MOV-104B	Remote Air Intake Isolation	SGB	R63'3"	413	O								
AOV-064A	Exhaust Isolation	CR	R80	R	O								
AOV-064B	Exhaust Isolation	CR	R80	R	O								
AOV-122A	AC Unit 410A & B Inlet Isolation	CR	R63'3"	410A	O								
AOV-122B	AC Unit 410A & B Inlet Isolation	CR	R63'3"	410A	O								
AOV-123A	Filter Unit 471A & B Inlet Isolation	CR	R63'3"	410A	C								
AOV-123B	Filter Unit 471A & B Inlet Isolation	CR	R63'3"	410A	C								

THE FOLLOWING VENT AND DRAIN VALVE NUMBERS ARE TBD

AHJ 400 Cooling Coil Vent	CR	R47'3"	412	C
AHJ 400 Cooling Coil Drain	CB	R47'3"	412	C
AHJ 400 Cooling Coil Vent	CB	R47'3"	412	C
AHJ 400 Cooling Coil Drain	CR	R47'3"	412	C
AHJ 400 Cooling Coil Vent	CB	R47'3"	412	C
AHJ 400 Cooling Coil Drain	CB	R47'3"	412	C
AHJ 400 Cooling Coil Vent	CB	R47'3"	412	C
AHJ 400 Cooling Coil Drain	CR	R47'3"	412	C
AHJ 400 Cooling Coil Vent	CR	R47'3"	412	C
AHJ 400 Cooling Coil Drain	CR	R47'3"	412	C
AHJ 400 Cooling Coil Vent	CR	R47'3"	412	C
AHJ 400 Cooling Coil Drain	CR	R47'3"	412	C
AC Unit 410A Cooling Coil Vent	CR	R63'3"	410A	C
AC Unit 410A Cooling Coil Drain	CR	R63'3"	410A	C
AC Unit 410A Cooling Coil Vent	CR	R63'3"	410A	C

HOLD
25000566

Valve Numbers are preceded by 25AC

C = Closed

O = Open

SDO-25A
REV. B
INBASELINED

NV-530, NV-528, NV-529

Operational Valve Position Table

VALVE NUMBER	VALVE NOMENCLATURE	LOCATION BLDG /ELFV. CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
	AC Unit 410A Cooling Coil Drain	CR 863'3" 410A	C								
	AC Unit 410B Cooling Coil Vent	CR 863'3" 411A	C								
	AC Unit 410B Cooling Coil Drain	CR 863'3" 411A	C								
	AC Unit 410B Cooling Coil Vent	CR 863'3" 411A	C								
	AC Unit 410B Cooling Coil Drain	CR 863'3" 411A	C								
	AC Unit 411 Cooling Coil Vent	CR 863'3" 413	C								
	AC Unit 411 Cooling Coil Drain	CR 863'3" 413	C								
	AC Unit 411 Cooling Coil Vent	CR 863'3" 413	C								
	AC Unit 411 Cooling Coil Drain	CR 863'3" 413	C								
	AC Unit 412 Cooling Coil Vent	CR 847'3" 412	C								
	AC Unit 412 Cooling Coil Drain	CR 847'3" 412	C								
	AC Unit 412 Cooling Coil Vent	CR 847'3" 412	C								
	AC Unit 412 Cooling Coil Drain	CR 847'3" 412	C								
	Unit Cooler 421 Cooling Coil Vent	CR 733 470	C								
	Unit Cooler 421 Cooling Coil Drain	CR 733 470	C								
	Unit Cooler 422 Cooling Coil Vent	CR 733 470	C								
	Unit Cooler 422 Cooling Coil Drain	CR 733 470	C								
	Unit Cooler 423 Cooling Coil Vent	CR 733 471	C								
	Unit Cooler 423 Cooling Coil Drain	CR 733 471	C								
	Unit Cooler 424 Cooling Coil Vent	CR 733 471	C								
	Unit Cooler 424 Cooling Coil Drain	CR 733 471	C								

Valve Numbers are preceded by 25AC
C = Closed

SXD-25A
REV. B
UNBASELINED

NV-528, NV-529, NV-530

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	BLDG	LOCATION /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
A00-022A	Return Fan 450A Discharge	CB	R63'3"	413	O								
A00-022B	Return Fan 450B Discharge	CB	R63'3"	413	O								
TAD-023A	Exhaust Air Damper	CB	R63'3"	413	M								
TAD-023B	Recirculating Damper	CB	R63'3"	413	M								
TAD-023C	Supply Air Damper	CB	R63'3"	413	C								
A00-030A	Supply Fan 440A Discharge	CB	R47'3"	412	O								
A00-030B	Supply Fan 440B Discharge	CB	R47'3"	412	O								
A00-035	MG Set 56PRH205A Return Air	CB	733	470	O								
A00-039	MG Set 56INH205A Return Air	CB	733	470	O								
A00-042	MG Set 56PRH205B Return Air	CB	733	471	O								
A00-046	MG Set 56INH205B Return Air	CB	733	471	O								
M00-138	Cell 445, Smoke Vent Fan 466 Inlet Isolation	CB	794	445	C								
M00-139	Cell 444, Smoke Vent Fan 466 Inlet Isolation	CB	831	444	C								
M00-140	Cell 412, Smoke Vent Fan 466 Inlet Isolation	CB	R47'3"	412	C								
M00-141	Cell 413, Smoke Vent Fan 466 Inlet Isolation	CB	R63'3"	413	C								
M00-057A	AC Unit 410A Discharge	CB	R63'3"	410A	O								
M00-057B	AC Unit 410B Discharge	CB	R63'3"	411A	O								
M00-075AA	AC Unit 410A Outside Air Inlet	CB	R63'3"	410A	O								
M00-075AB	AC Unit 410A Supply From Filter Unit 471A	CB	R63'3"	410A	C								
M00-075BA	AC Unit 410B Outside Air Inlet	CB	R63'3"	411A	O								
M00-075BB	AC Unit 410B Supply from Filter Unit 471B	CB	R63'3"	411A	C								
M00-076A	Filter Unit 471A Discharge Isolation	CB	R63'3"	410B	C								
M00-076B	Filter Unit 471B Discharge Isolation	CB	R63'3"	411A	C								
M00-077A	AC Unit 410A Return Air Inlet	CB	R63'3"	410A	O								
M00-077B	AC Unit 410B Return Air Inlet	CB	R47'3"	411A	O								

Damper Numbers are preceded by 25AC

C = Closed
O = Open
M = Modulate

SND-25A
REV. B
UNBASELINED

NV-530

Operational Valve Position Table

DAMPER NUMBER	DAMPER NOMENCLATURE	BLDG	LOCATION /ELEV.	CELL	NORMAL POSIT.	S01	S01	S01	S01	S01	S01	S01	S01
MND-167A	Filter Unit 471A Outside Air Inlet	CR	863'3"	410B	C								
MND-167B	Filter Unit 471A Outside Air Inlet	CR	847'3"	411B	C								
AOD-168	Kitchen and Toilet Exhaust Isolation	CR	863'3"	413	O								
AOD-169	Kitchen and Toilet Exhaust Isolation	CR	863'3"	413	O								
MND-143	Stairwell (Cell 414) Pressurization Fan 442 Isolation	CR	880	R	C								

4-200

Damper Numbers are preceded by 25AC
C = Closed
O = Open

SDO-25A
REV. B
UNBASELINED

Operational Valve Position Table

MV-539	VALVE NUMBER	VALVE NOMENCLATURE	BLDG /ELEV.	CELL	NORMAL POSIT.	S01							HOLD
						S01	S01	S01	S01	S01	S01	S01	

THE FOLLOWING VENT AND DRAIN VALVE NUMBERS ARE TBD

H & V Unit 331 Heating Coil Vent	DGB	R16	511	C
H & V Unit 331 Heating Coil Drain	DGB	R16	511	C
H & V Unit 332 Heating Coil Vent	DGB	R16	512	C
H & V Unit 332 Heating Coil Drain	DGB	R16	512	C
Unit Cooler 321 Cooling Coil Vent	DGB	733	542	C
Unit Cooler 321 Cooling Coil Drain	DGB	733	542	C
Unit Cooler 321 Cooling Coil Vent	DGB	733	542	C
Unit Cooler 321 Cooling Coil Drain	DGB	733	542	C
Unit Cooler 322 Cooling Coil Vent	DGB	733	543	C
Unit Cooler 322 Cooling Coil Drain	DGB	733	543	C
Unit Cooler 322 Cooling Coil Vent	DGB	733	543	C
Unit Cooler 322 Cooling Coil Drain	DGB	733	543	C

25000566

SDD-25A
REV. B
UNBASELINED

NY-539		Operational Valve Position Table										
DAMPER NUMBER	DAMPER NOMENCLATURE	BLDG	LOCATION /ELEV.	CELL	NORMAL POSIT.	SOI	SOI	SOI	SOI	SOI	SOI	SOI
TMD-001A	Cell 511 Outside Air	DGB	816	511	C							
TMD-001B	Cell 511 Outside Air	DGB	816	511	C							
TMD-001C	Cell 511 Recirculation	DGB	816	511	O							
TMD-001D	Cell 511 Recirculation	DGB	816	511	O							
MOD-002A	Fan 341A Discharge Isolation	DGB	816	511	C							
MOD-002B	Fan 341B Discharge Isolation	DGB	816	511	C							
TAD-005A	H & V Unit 331 Return Air	DGB	816	511	C							
TAD-005B	H & V Unit 331 Outside Air	DGB	816	512	C							
TMD-008A	Cell 512 Outside Air	DGB	816	512	C							
TMD-008B	Cell 512 Outside Air	DGB	816	512	O							
TMD-008C	Cell 512 Recirculation	DGB	816	512	O							
TMD-008D	Cell 512 Recirculation	DGB	816	512	C							
MOD-010A	Fan 342A Discharge Isolation	DGB	816	512	C							
MOD-010B	Fan 342B Discharge Isolation	DGB	816	512	C							
TAD-012A	H & V Unit 332 Return Air	DGB	816	512	O							
TAD-012B	H & V Unit 332 Outside Air	DGB	816	542	M							
AOD-019	U.C. 321 Return Air	DGB	816	543	M							
AOD-023	U.C. 322 Return Air	DGB	847'3"	R	C							
MOD-101	Cell 521, Smoke Vent Fan Isolation	DGB	847'3"	R	C							
MOD-102	Cell 522, Smoke Vent Fan Isolation											

Damper Numbers are preceded by 25AD

C = Closed
O = Open
M = Modulate

5.0 Casualty Events and Recovery Procedures

5.1 Reactor Containment Building

Instrument numbers are prefixed by 25AR, Equipment numbers are prefixed by 25AR, Panel numbers are prefixed by 25NI (local) and 25AA (Back Panel).

5.1.1 RCB A/C System (200) (AOI 25A-6)

This system consists of redundant Supply and Exhaust Fans (240A, 165A & 240B, 165B) and one air handling unit (200).

5.1.1.1 Supply Fan (240A or 240B) Failure

Design Features to Mitigate Effects: Supply Fans (240A and 240B) are redundant. If fan fails the redundant Supply and Exhaust Fan (240A & 165A or 240B & 165B) will start to maintain system operation.

Indication:

1. AHU 200 discharge air flow low alarm (PAR 25A-6).
2. Energized fan status indicator light (XL-240AB or 240BB) located on Local Panel (B001A).

Recovery: Operator action is not required to continue system (200) operation.

1. Place affected Supply Fan (240A or 240B) control (HS-240A or 240B), located on Local Panel (B001A), in the "STOP" position.
2. Place related Exhaust Fan (165A or 165B) control (HS-165A or 165B), located on Local Panel (B001A), in the "STOP" position.

3. Verify redundant Supply & Exhaust Fans (240A & 165A) or (240B & 165B) operating status lights (XL-240AA or 165AA) or (XL-240BA & 165BA), located on Local Panel (B001A) are energized.
4. Repair/replace fan as described by section 6.2.1.1.1 of this SDD.

5.1.1.2 Exhaust Fan (165A or 165B) Failure

Design Features to Mitigate Effects: Exhaust Fans (165A or 165B) are redundant. If fan fails the redundant fan will start to maintain system operation.

Indication:

1. AHU 200 Exhaust Air Flow Low Alarm (PAR 25A-5).
2. Air Flow indicator (FI-060) located on Local Panel (B001A).
3. Energized fan status indicator light (XL-165AB or 165BB), located on Local Panel (B001A).

Recovery: Operator action is not required to continue system (200) operation.

1. Place affected Fan (165A or 165B) Control (HS-65A or 165B), located on Local Panel (B001A), in the "STOP" positions.
2. Place related Supply Fan (240A or 240B) Control (HS-240A or 240B) in the "STOP" position.
3. Verify redundant Supply & Exhaust Fans (240A & 165A) or (240B & 165B) operating status lights (XL-240AA & 165AA) or (240BA & 165BA), located on Local Panel (B001A).
4. Repair/replace fan as described in section 6.2.1.1.2 of this SDD.

5.1.1.3 Air Handling Unit (200) Component Failure

5.1.1.3.1 Roll Filter Failure

Design Features to Mitigate Effects: Roll Filter is provided with a media advance (manual) switch, a media runout alarm (PAR 25A-287), and a high d/p alarm (PAR-25A-286) to alert operator of roll filter failure.

Indication:

1. RCB AHU (200) Trouble alarm PAR 25A-2, located on Back Panel (B002).
2. Roll Filter d/p indication (PDISH-39) locally is within range specified by Section 3 (table 3-1) of this SDD.

Recovery:

1. Runout
 - a. Manually advance filter media.
 - b. Replace roll filter media as described by section 6.3.8.1 of this SDD.
2. High d/p
 - a. Manually advance filter media.
 - b. Replace media as described by MOP (25A-55).

5.1.1.3.2 Bag Filter Failure

Design Features to Mitigate Effects: Bag filter is provided with a d/p indicator and high d/p alarm to alert operator.

Indication:

1. RSB AHU Trouble alarm PAR 25A-2, located on Back Panel B002.
2. Bag Filter d/p Indication (PDISH-040) locally is within range specified by section 3 (table 3-1) of this SDD.

Recovery:

1. Replace Bag Filter as described by section 6.3.8.3 of this SDD.

5.1.1.3.3 Heating/Cooling Coil Failure

Design Features to Mitigate Effects: Loss of cooling or heating coil will not immediately affect plant operation. Loss of cooling or heating coil will initially be evidenced by a supply temperature outside range, specified in section 3 (Table 3-1) of this SDD.

Indication: (local)

	<u>Inst. #</u>
1. Heating Coil Outlet Temperature	TI-042
2. Supply Fan Outlet (cooling coil) Temperature	TIC-044

Recovery:

1. Upon failure of cooling or heating coil, sufficient time exists, without interrupting plant operation, to restore cooling/heating. Bypass valves are provided by system 23 and 75A if the loss of cooling/heating is due to failed (shut) temperature control valve.
2. Repair/replace cooling/heating coil as described by section 6.2.1.1.3 of this SDD.

5.1.1.3.4 Dampers (AOD-43A, 43B, 78A, 78B, PAD-112A, or 112B) Failure

Damper Failure (shut) will cause a low flow alarm (PAR 25A-5), and start (automatic) trouble alarm (PAR 25A-2) redundant Supply & Exhaust Fans (240A & 165A) or (240B & 165B).

Design Features to Mitigate Effects: Dampers are provided with manual operation capability.

Indication:

1. Damper status Indicator:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
AOD-043A	B002	XL-043AC	XL-043AD
AOD-043A	B001A	XL-043AA	XL-043AB
AOD-043B	B002	XL-043BC	XL-043BD
AOD-043B	B001A	XL-043BA	XL-043BB
AOD-078A	B002	XL-078AC	XL-078AD
AOD-078A	B001A	XL-078AA	XL-078AB
AOD-078B	B002	XL-078BC	XL-078BD
AOD-078B	B001A	XL-078BA	XL-078BB

2. RCB AHU (200) Trouble alarm PAR 25A-2, located on Back Panel (B002).

3. Fan (Supply & Exhaust) operating status lights (XL-240AB & 165AB) or (XL-240BB & 165BB), located on Local Panel (B001A).

Recovery: No operator action is required to continue system operation (refer to section 5.1.1.1 or 5.1.1.2 of this SDD).

1. Place related Supply & Exhaust Fan Controls (HS-240A & 165A) or (240B & 165B), located on Local Panel (B001A), in the "STOP" position.

2. Repairs/replace damper as described by section 6.2.1.1 of this SDD & MOP 25A-053.

5.1.2 Above Operating Floor Unit Cooler (020A, 020B, 020C) Failure (AOI 25A-7)

5.1.2.1 Fan Failure

Design Features to Mitigate Effects: Failure of Unit Cooler (020A, 020B or 020C) will shut the above operating floor discharge dampers (AOD-95, 096, 097 & 098) maintain air flow to the EI&C cubicles & System-56 lube oil cooling panels.

Indication:

1. U.C. Discharge Air Flow Low alarm (as indicated below) by trouble alarm, (PAR 25A-2).

<u>U.C.</u>	<u>Panel</u>	<u>Inst.</u>	<u>PAR</u>
020A	B001C	FSL-064A	25A-19
020B	B001C	FSL-064B	25A-20
020C	B001C	FSL-064C	25A-21

Recovery:

1. Verify affect U.C. outlet damper (AOD-069A, 069B or 069C) closed as indicated on Back Panel (B002), by operating status lights (XL-069AD, 069BD, 069CD).
2. Place affected U.C. Fan (020A, 020B or 020C) Control (HS-020A, 020B or 020C), located on Back Panel (B001C), in the "STOP" position.
3. Repair/replace fan is described by section 6.2.1.2 of this SDD.

5.1.2.2 Cooling Coil Failure

Design Features to Mitigate Effects: Unit coolers are provided with indication (as listed below), to alert operator of a cooling coil failure.

Indication:

<u>U.C.</u>	<u>Inst.#</u>	<u>Panel</u>
020A	TI-063A	B001C
020A	TIC-063A	local
020B	TI-063B	B001C
020B	TIC-063B	local
020C	TI-063C	B001C
020C	TIC-063C	local

Recovery:

1. Place affected U.C. (020A, 020B or 020C) Control (HS-020A, 020B or 020C) located on Back Panel (B001C), in the "STOP" position.

NOTE: This will close dampers (AOD-095, 096, 097 & 098)

2. Verify affected U.C. outlet Damper (AOD-069A, 069B or 069C) closed status indicator lights (XL-069AB, 069BB or 069CB) is energized), on Back Panel (B001C).
3. Repair/replace U.C. as described by section 6.2.1.2 of this SDD.

5.1.2.3 Discharge Air Damper (AOD-069A, 069B, 069C) & Operating Floor Discharge Dampers (AOD-095, 096, 097 & 098) Failure

Design Features to Mitigate Effects: Above operating Floor Unit Coolers (020A, 020B & 020C) are provided with annunciation (as listed below), to alert operator of an air flow low condition.

Indication:

1. Alarm

<u>Title</u>	<u>Location</u>	<u>PAR</u>
a. Unit Cooler 020A Trouble	B001C	25A-19
b. Unit Cooler 020B Trouble	B001C	25A-20
c. Unit Cooler 020C Trouble	B001C	25A-21
d. NI Non-safety HVAC Trouble	90CSB016	25A-22

2. Indication, located on Local Panel (B001C) is energized.

		<u>Status</u>	<u>Open</u>	<u>Closed</u>
a. U.C. (020A) Discharge Damper	069A	-	XL-069AA	069AB
b. U.C. (020B) Discharge Damper	069B	-	XL-069BA	069BB
c. U.C. (020C) Discharge Damper	069C	-	XL-069CA	069CB
d. Above Operating Floor Discharge Damper	A0D-095	Closed	XL-095A	095B
e. Above Operating Floor Discharge Damper	A0D-096	Closed	XL-096A	096B
f. Above Operating Floor Discharge Damper	A0D-097	Closed	XL-097A	097B

B

		<u>Status</u>	<u>Open</u>	<u>Closed</u>
g. Above Operating Floor Discharge Damper	A00-098	Closed	XL-098A	098B

Recovery:

1. Verify malfunctioning U.C. Discharge Damper and above floor discharge damper closed (as listed above).
2. Place affect U.C. Fan (020A, 020B or 020C) Control (HS-020A, 020B or 020C), located on Local Panel (B001C), in the "STOP" position.
3. Repair/replace affected damper as described by section 6.2.1.2 of this SDD.

5.1.3 EI&C Cubicle Unit Cooler (021, 022, 023) Failure (AOI 25A-8)

5.1.3.1 Fan Failure

Design Features to Mitigate Effects: Unit coolers are provided with malfunction alarm (as listed below), to alert operator to unit failure.

Indication:

1. Unit cooler outlet air flow low alarm.

<u>U.C.</u>	<u>Inst.#</u>	<u>Panel</u>	<u>PAR</u>
021	FSL-116	B002	25A-8
		B001D	25A-9
022	FSL-120	B002	25A-10
		B001E	25A-11
023	FSL-124	B002	25A-12
		B001F	25A-13

2. Fan operating status light on Back Panel (B002) and local panel and local panel (B001D, B001E or B001F).

<u>U.C.</u>	<u>Panel</u>	<u>Start</u>	<u>Stop</u>
021	B002	XL-021C	XL-021D
	B001D	XL-021A	XL-021B
022	B002	XL-022C	XL-022D
	B001E	XL-022A	XL-022B
023	B002	XL-023C	XL-023D
	B001F	XL-023A	XL-023B

Recovery:

1. Place affected Unit Cooler Fan (021, 022 or 023) control (HS-021B, 022B or 023B), located on Back Panel (B002), in the "STOP" position.
2. Repair/replace fan as described by section 6.2.1.3 of this SDD.

5.1.3.2 Cooling Coil Failure

Design Features to Mitigate Effects: Unit cooler is provided with temperature indication to alert operator to a cooling coil malfunction.

Indication:

1. EI&C cell (163, 165 or 167) temperature indicator (Computer input - TBD).
Hold
25000540
2. Cooling Coil outlet temperature (TI-115, 119 or 123) locally.

Recovery:

1. Place affected U.C. (020A, 020B or 020C) Control (HS-021B, 022B or 023B), located on Back Panel (B002), in the "STOP" position.

3. Repair/replace cooling coil as described by section 6.2.1.3 of this SDD.

5.1.3.3 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit Coolers are supplied by a safety related bus and upon failure of off-site AC power the Diesel Generator load sequencer (following a 20 sec time delay) will automatically start Unit Cooler.

Indication: Unit Operating status lights, located on Local Panel (B001D, 001E or 001F) and Back Panel (B002).

<u>U.C.</u>	<u>Panel</u>	<u>Stop</u>
021	B002	XL-021D
	B001D	XL-021B
022	B002	XL-022D
	B001E	XL-022B
023	B002	XL-023D
	B001F	XL-023B

Recovery: Following restoration of off-site AC power, no operator action is required to continue Unit Cooler (021, 022 & 023) operation.

5.1.4 LCCV Cell Unit Cooler (053) Failure (AOI 25A-18)

Design Features to Mitigate Effects: Unit cooler is provided with trouble alarm to alert operator.

Indication:

1. Unit cooler (053) trouble alarm (PAR 25A-14) located on Back Panel (B002).

2. Unit cooler (053) trouble alarm (PAR 25A-18) located on Local Panel (B001C).
3. Operating status lights (XL-053B & 053D), located on Local Panel (B001C).

Recovery:

1. Place Unit Cooler (053) Control (HS-053), located on Local Panel (B001C) in the "STOP" position.
2. Repair/replace unit cooler component as described by section 6.2.1.4 of this SDD.

5.1.5 Below Operating Floor A/C Unit (010 or 011) Failure (AOI 25A-19)

5.1.5.1 A/C Unit Supply Fan Failure

Design Features to Mitigate Effects: A/C cooler is provided with control room and local alarms (PAR 25A-15/16) to alert operator of failure. In addition Return Fan (050 or 051) are automatically shutdown.

Indication:

1. A/C Unit outlet air low flow and trouble alarm (FSL-55, FSL-158), located on Local Panel (B001C) and Back Panel (B002). Refer to PAR's (25A-15 or 16 and 25A-14).
2. Supply & Return fan operating status lights (as listed below), located on Local Panel (B001C), is energized.

<u>Fan</u>	<u>Status</u>
10	XL-010B
50	XL-050B
11	XL-011B
51	XL-051B

Recovery:

1. Place affected A/C Unit (010 or 011) Supply Fan Control (HS-010 or 011), located on Local Panel (B001C), in the "STOP" position.
2. Place related Return Fan (050 or 051) Control (HS-050 or 051), located on Local Panel (B001C), in the "STOP" position.
3. Verify Supply and Return Fan operating status lights, located on Local Panel (B001C). If A/C Unit (010) and Return Fan (050) is shutdown, indicating lights (XL-010B & XL-050B) and (XL-011A & XL-051A) will be energized. If A/C Unit (011) and Return Fan (051) are shutdown, indicating lights (XL-011B & XL-051B) and (XL-010A & XL-050A) will be energized.
4. Repair/replace A/C Unit (010 or 011) Supply Fan as described by section 6.2.1.5 of this SDD.

5.1.5.2 Cooling Coil Failure

Design Features to Mitigate Effects: Temperature indication for the cooling coil inlet & outlet, return fan inlet and cell is provided to alert operator of a malfunction.

Indication:

	<u>010</u>	<u>011</u>	<u>Panel</u>
1. Area temperature indication	TIC-159	TIC-56	TBD
2. Supply fan outlet temperature	TIC-159	TI- 56	B001C
3. Return air temperature	TI- 150	TI- 57	B001C

B

HOLD
250005:

Recovery:

1. Place Supply and Return Fan (010 & 050 or 011 & 051) control (HS-010 & 050) or (HS-011 & 051), located on Local Panel (B001C), in the "STOP" position.
2. Verify fan operating status lights on Local Panel (B001C).

If A/C Unit (010) and Return Fan (050) is shutdown, indicating lights (XL-010B & XL-050B) and (XL-011A & XL-051A) will be energized. If A/C Unit (011) (XL-011B & 051B) and (XL-010A & 050A) will be energized.

3. Repair/replace cooling coil as described by section 6.2.1.5 of this SDD.

5.1.5.3 Return Fan (050 or 051) Failure

Design Features to Mitigate Effects: Return Fan is provided with operating status indication to inform operator of fan status.

B

Indication:

1. Fan operating status lights, located on Local Panel (B001C).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
050	XL-050A	XL-050B
051	XL-051A	XL-051B

Recovery:

1. Place affected fan control (HS-050 or 051), located on Local Panel (B001C), in the "STOP" position.

2. Verify fan operating status light (XL-050B or XL-051), located on Local Panel (B001C) is energized.
3. Repair/replace fan as described by section 6.2.1.5 of this SDD.

5.1.6 Dome Recirculating Fan (052A or 52B) Failure (AOI 25A-23)

Design Features to Mitigate Effects: Dome Recirculating Fans are not required for safe shutdown and loss of Recirculating Fan (052A or 052B) will have minimal effect on containment building temperature.

Indication:

Fan operating status light, located on Local Panel (B001C).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
052A	XL-052AA	XL-052AB
052B	XL-052BA	XL-052BB

Recovery:

1. Place affected fan (052A or 052B) Control (HS-052A or 052B), located on Local Panel (B001C), in the "STOP" position.
2. Repair/replace fan as described by section 6.2.1.6 of this SDD.

5.1.7 Annulus Pressure Maintenance Fan (172A,172B (AOI 25A-25)

5.1.7.1 Annulus Pressure Maintenance Fan (172A or 172B) Failure

Design Features to Mitigate Effects: Annulus Pressure Maintenance Fan (172A & 172B) operate in conjunction with their related Annulus Filter Unit (182A & 182B). Failure of Fan will automatically start the redundant Fan and Filter Unit.

Indication:

1. Annulus Pressure Maintenance Fan Exhaust Fan Flow Low (PAR 25A-23 & 24 or 25A-36 & 37) alarm located on Local Panel (B001G or B001H) and Back Panel (B002).
2. Fan operating status light, located on Local Panel (B001G or B001H) (XL-172AB) or (XL-172BB) and Back Panel (B002) (XL-172AD) or (XL-172BD) is energized.

Recovery:

1. Verify start of redundant Fan and Filter (172A & 182A or 172B or 182B) by observing operating status lights (XL-172AC) or (XL-172BC), located on Back Panel (B002) is energized.
2. Place affected Fan (172A or 172B) control (HS-172 AB or 172BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-172AD) or (XL-172BD), located on Back Panel (B002) is energized.
3. Repair/replace fan as described by section 6.2.1.7 of this SDD.

5.1.7.2 Loss of Off-site AC Power

Design Features to Mitigate Effects: Maintenance Fans and Filter Fans, are supplied by a safety related bus and upon failure of off-site AC power the Diesel Generator load sequencer (following a 10 sec time delay) will automatically start Fan.

Indication: Fan operating status lights (as listed below), is energized on Local Panel (B001G or B001H) and Back Panel (B002).

<u>Fan</u>	<u>Panel</u>	<u>Start</u>
172A	B002	XL-172AC
	B001G	XL-172AA
172B	B002	XL-172BC
	B001H	XL-172BA

Recovery: Following restoration of off-site AC power, no operator action is required to continue Annulus Pressure Maintenance Fan (172A or 172B) and Annulus Filter Fans (182A or 182B) operation.

5.1.7.3 Vortex Damper (PAD-138A, 183B) Failure

Design Features to Mitigate Effects: Redundant Annulus Pressure Maintenance Fans (172A & 172B) are provided in addition to annunciation alerting operator of a fan or damper malfunction causing a low air flow.

Indication:

1. Alarms

		<u>PAR</u>	
		<u>B002</u>	<u>B001G</u>
a.	Annulus Pressure Maintenance Fan Exhaust Air Flow Low	25A-23	25A-24
		<u>B002</u>	<u>B001H</u>
b.	Annulus Pressure Maintenance Fan Exhaust Air Flow Low	25A-36	25A-37

2. Indications

- a. Annulus differential pressure indicator PDI-140.

Recovery: Low exhaust air flow will shutdown operating Annulus Filter Fan (172A or 172B) and start redundant Fan (172A or 172B).

1. Verify start of redundant Fan and Filter (172A & 182A or 172B & 182B) by observing operating status lights (XL-172AC or 172C), located on Back Panel (B002).
2. Place affected Fan (172A or 172B) Control (HS-172AB or 172BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-172AD or 172BD), located on Back Panel (B002) is energized.
3. Repair/replace damper as described by section 6.2.1.7 of this SDD.

5.1.7.4 Discharger Damper (MOD-015A, 015B) Failure

Design Features to Mitigate Effects: Redundant Annulus Pressure Maintenance Fans (172A & 172B) are provided in addition to annunciation alerting operator of a fan or damper malfunction causing a low air flow.

Indication:

1. Alarms

	<u>PAR</u>	
	<u>B002</u>	<u>B001G</u>
a. Annulus Pressure Maintenance Fan Exhaust Air Flow Low	25A-23	25A-24
	<u>B002</u>	<u>B001H</u>
b. Annulus Pressure Maintenance Fan Exhaust Air Flow Low	25A-36	25A-37

2. Indications

- a. Annulus differential pressure indicator PDI-140.

Recovery: Low exhaust air flow will shutdown operating Annulus Filter Fan (172A or 172B) and start redundant Fan (172A or 172B).

1. Verify start of redundant Fan and Filter (172A & 182A or 172B & 182B) by observing operating status lights (XL-172AC or 172C) energized, on Back Panel (B002).
2. Place affected Fan (172A or 172B) Control (HS-172AB or 172BB), located on Back Panel (B002), in the "STOP" position. Verify operating status light (XL-172AD or 172BD), located on Back Panel (B002) is energized.
3. Repair/replace damper as described by section 6.2.1.7 of this SDD.

5.1.8 Annulus Filter Fan (173A, 173B) (AOI 25A-26)

5.1.8.1 Annulus Filter Fan (173A or 173B) Failure

Annulus Filter Fans (173A & 173B) operate only during containment isolation and refueling mode.

Design Features to Mitigate Effects: Filter Fans are redundant and capable of being started from the control room Back Panel (B002) or Local Panel (B001G or B001H).

Indication:

1. Filter Fan outlet in flow recorder (FR-014A or 014B), located on Back Panel (B002).
2. Filter Fan outlet in flow indicator (FIC-14A or 14B), located on Local Panel (B001G or B001H).
3. Fan operating status light, located on Back Panel (B002) and Local Panel (B001G or B001H).

<u>Fan</u>	<u>Panel</u>	<u>Start</u>	<u>Stop</u>
173A	B002	XL-173AC	XL-173AD
	B001G	XL-173AA	XL-173AB
173B	B002	XL-173BC	XL-173BD
	B001H	XL-173BA	XL-173BB

Recovery:

1. Start redundant annulus filter train (A or B), as described by section 4.1.2.10 of this SDD, and verify, operating status lights and air flow recorder, located on Back Panel (B002).
2. Repair/replace fan as described by section 6.2.1.8 of this SDD.

5.1.8.2 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Filter Fans (173A, 173B) are supplied by a safety related bus and upon failure of off-site AC power the Diesel Generator load sequencer (following a 10 sec time delay) will automatically start Filter Fan (173A, 173B).

Indication: Filter Fan operating status light, located on Local Panel (B001G or B001H) and Back Panel (B002).

<u>Fan</u>	<u>Panel</u>	<u>Start</u>	<u>Stop</u>
173A	B002	XL-173AC	XL-173AD
	B001G	XL-173AA	XL-173AB
173B	B002	XL-173BC	XL-173BD
	B001H	XL-173BA	XL-173BB

Recovery: Following restoration of off-site AC power, no operator action is required to continue Filter Fan operation.

5.1.9 Annulus Cooling Fans (174A, C or E; B, D or F) Failure (AOI 25A-27)

Annulus cooling fans only operate following TMBDB.

5.1.9.1 Annulus Cooling Fans (174A,C or E; 174B,D or F) Failure

Design Features to Mitigate Effects: Annulus cooling fans are provided in redundant sets (A,C,E & B,D,F). All fans are provided with operating status lights in addition to air flow low alarms, located on Back Panel (B002), to alert operator.

Indication:

1. Annulus Cooling Fan trouble alarm, located on Back Panel (B002).

<u>Fan</u>	<u>Inst.#</u>	<u>Start</u>	<u>Stop</u>	<u>PAR</u>
174A	FSL-73A	XL-174AA	XL-174AB	25A-42
174C	FSL-73C	XL-174CA	XL-174CB	25A-44
174E	FSL-73E	XL-174EA	XL-174EB	25A-46
174B	FSL-73B	XL-174BA	XL-174BB	25A-43
174D	FSL-73D	XL-174DA	XL-174DB	25A-45
174F	FSL-73F	XL-174FA	XL-174FB	25A-47

Recovery:

1. Place redundant Annulus Cooling Fans (174A,C,E) or (174B,D,F) ENABLE/DISABLE control (HS-183 & 184), located on Back Panel (B002), in the ENABLE position.
2. Start redundant Annulus Cooling Fans (174A,C,E) or (174B,D,F) as described in section 4.1.3.8 of this SDD.
3. Place malfunction fans (174A,C,E or 174B,D,F) Control (HS-183 or 184), located on Back Panel (B002) in the "STOP" position.

4. Verify operating status lights (as listed above) and located on Back Panel (B002) are energized.

5.1.9.2 Loss of Off-Site A/C Power

Design Features to Mitigate Effects: Annulus Cooling Fans (174A,C&E; 174B,D&F) are supplied by a safety related bus and upon failure of off-site A/C power the Diesel Generator load sequencer (following a 1 hour time delay) will allow Cooling Fans to be started (manually).

Indication: Fan operating status lights (as listed in section 5.1.9.1 of this SDD) and located on Back Panel (B002).

Recovery: Following restoration of off-site A/C power, no operator action is required to continue Annulus Cooling Fan operation.

5.1.10 Containment Clean Up Scrubber Exhaust Fan (175A, 175B) Failure (AOI 25A-28)

Design Features to Mitigate Effects: Redundant Scrubber Fans are provided with outlet air flow indication, and low flow alarms. Redundant Scrubber Fan (175A or 175B) will automatically start when low air flow is sensed at outlet of operating fan.

Indication:

1. Scrubber Exhaust Fan indication and alarm, located in Back Panel (B002).

<u>Unit</u>	<u>Inst.#</u>	<u>PAR</u>
175A Air Flow Low	FSL-26A	25A-48
175A Air Flow Indication	FIC-27A	-
175A Operating Status Lights	XL-175AC	-
175B Air Flow Low	FSL-26B	25A-50
175B Air Flow Indication	FIC-27B	-
175B Operating Status Lights	XL-175BC	-

Recovery:

1. Verify start of redundant Scrubber Exhaust Fan (175A or 175B) using indication above.
2. Place affected Exhaust Fan (175A or 175B) control (HS-175A or 175B), located on Back Panel (B002), in the "STOP" position.
3. Repairs/replace Exhaust Fan (when conditions permit) as described by section 6.2.1.1 of this SDD.

5.1.10.2 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Fans (175A & 175B) are supplied by a safety related bus and upon failure of offsite AC power the Diesel Generator load sequencer (following a 1 hour time delay) will allow Cooling Fans to be started (manually) as described by section 4.1.7.8 of this SDD.

Indication: Energized fan (175A or 175B) operating status light located on Back Panel (B002) (after 1 hr).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
175A	XL-175AA	XL-175AB
175B	XL-175BA	XL-175BB

Recovery: Following restoration of off-site AC power, operator must manually restart Exhaust Fan as described by section 4.1.7.8 of this SDD.

5.1.11 HAA Unit Cooler (024) Failure (AOI 25A-29)

Design Features to Mitigate Effects: Head access area is open to the operating floor to allow some cooling following failure of Unit Cooler.

In addition Unit Cooler is provided with operating status indication in addition to malfunction alarms to alert operator.

Indication:

1. HAA Unit Cooler trouble alarm (PAR 25A-14) located on Back Panel (B002).
2. HAA Unit Cooler (024) trouble alarm (PAR 25A-17), located on Local Panel (B001C).
3. Energized operating status light (XL-24B), located on Local Panel (B001C).

Recovery:

1. Place Unit Cooler (024) Control (HS-024), located on Local Panel (B001C), in the "STOP" position.
2. Repair/replace unit cooler component as described by section 6.2.1.11 of this SDD.

5.1.12 RCB Inerted Cell Booster Fan (061, 062) Failure (AOI 25A-30)

Design Features to Mitigate Effects: Booster Fans (061 & 062) are provided to service separate headers. Refer to SDD-82 (PAR 82-50) for associated indication, operation and annunciation.

Indication:

1. Energized fan (061 or 062 operating status light, located on Local Panel (B001C).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
061	XL-061A	XL-061B
062	XL-062A	XL-062B

Recovery:

1. Place malfunctioning Booster Fan (061 or 062) Control (HS-061 or 062), located on Local Panel (B001C), in the "STOP" position.
2. Verify Booster fan operating status lights are energized on Local Panel (B001C). If fan (061) malfunctions, indication (XL-061B or XL-062A) will be energized, while failure of fan (062) will cause indication (XL-061A & XL-062B) to be energized.

<u>Fan</u>	<u>Indication Start</u>	<u>Stop</u>
061	XL-061A	XL-061B
062	XL-062A	XL-062B

3. Repair affected Booster Fan as described by MDP 25A-62.

5.1.13 Potential Spread of Radioactive Airborne Contamination (EOI 25A-1)

5.1.13.1 Cells Containing Radioactive Sources

Design Features to Mitigate Effects: Spaces containing radioactive sources are pressure controlled. During plant operation the inert atmosphere cells are maintained at a pressure lower than surrounding spaces to prevent possible contamination in the cell from spreading.

Indication:

1. Energized component status indication:

<u>Component</u>	<u>Position</u>	<u>Indication</u>	<u>Location</u>
Supply Fan (A240A)	STOP	XL-240AB	Local (B001A)
Supply Fan (A240B)	STOP	XL-240BB	Local (B001A)
Exhaust Fan (A165A)	STOP	XL-165AB	Local (B001A)

<u>Component</u>	<u>Position</u>	<u>Indication</u>	<u>Location</u>
Exhaust Fan (A 165B)	STOP	XL-165BB	Local (B001A)
Damper AOD043A	CLOSED	XL-043AB	Local (B001A)
Damper AOD043B	CLOSED	XL-043BB	Local (B001A)
Damper AOD078A	CLOSED	XL-078AB	Local (B001A)
Damper AOD078B	CLOSED	XL-078BB	Local (B001A)
CIS Valve AOV046A	CLOSED	99ESCVZ1004B	MCP (90CSB016)
CIS Valve AOV046B	CLOSED	99ESCVZ1003B	MCP (90CSB016)
CIS Valve AOV046C	CLOSED	99ESCVZ1021B	MCP (90CSB016)
CIS Valve AOV047A	CLOSED	99ESCVZ1002B	MCP (90CSB016)
CIS Valve AOV047B	CLOSED	99ESCVZ1001B	MCP (90CSB016)
CIS Valve AOV047C	CLOSED	99ESCVZ1022B	MCP (90CSB016)
CIS Valve MOV19A-D	CLOSED	XL-019AB-DB	BP (B002)
CIS Valve MOV106A-D	CLOSED	XL-106AB-DB	BP (B002)

2. Refer to PAR 99-25 for System 99 indication.

Recovery:

1. Verify (following a containment isolation signal) the CIS valves listed above get closed, as indicated by their energized status lights. CIS valves (MOV19A-D) and (MOV106A-D) must be closed manually by placing their control switches located on BP (B002) in "CLOSE" position.
 - a) If any valve does not indicate "CLOSED" the operator should depress the "CLOSE" pushbutton (as listed below).

<u>Valve</u>	<u>HS</u>	<u>Location</u>	<u>CI Breaker</u>
AOV-046A	99ESHVHS-154	MCP (90CSB016)	99ESB600D
AOV-046B	99ESHVHS-120	MCP (90CSB016)	99ESB600C
AOV-046C	99ESHVHS-122	MCP (90CSB016)	99ESB600C
AOV-047A	99ESHVHS-156	MCP (90CSB016)	99ESB006D
AOV-047B	99ESHVHS-124	MCP (90CSB016)	99ESB006C
AOV-047C	99ESHVHS-126	MCP (90CSB016)	99ESB006C
MOV-19A-D	HS 19A-D	BP (8002)	
MOV-106A-D	HS 106A-D	BP (8002)	

- b) If any indication is not energized, operator should attempt (locally) to close the valve at the CIS Breaker Panel located in the SGB by deenergizing the CIS breakers listed above. MOV 19A-D and MOV 106A-D must be closed manually by using their handwheels.
- c) If Containment Isolation Valves (AOV-046A, 046B, 046C, 047A, 047B & 047C, MOV 19A-D, 106A-D) close now, indicator lights listed in step 1 above will indicate CLOSED.
- d) If all CIS valves indications (listed above) are not energized, operator should verify the following indicators:

	<u>Panel</u>	<u>Position</u>	<u>Indicator</u>
Supply Fan A240A	B001A	STOP	XL-240AB
Supply Fan A240B	B001A	STOP	XL-240BB
Exhaust Fan A165A	B001A	STOP	XL-165AB
Exhaust Fan A165B	B001A	STOP	XL-165BB
Damper AOD-078A	B001A	CLOSED	XL-078AB
Damper AOD-078B	B001A	CLOSED	XL-078BB
Damper AOD-043A	B001A	CLOSED	XL-043AB
Damper AOD-043B	B001A	CLOSED	XL-043BB

5.1.13.2 TMBDB Event (Base Case Scenario)

A. Scope

TMBDB Event (Base Case) means both Reactor Vessel penetration and RC Liner Failure have occurred following offsite power failure and Reactor Scram failure.

This outline describes the automatic actions and the operator actions to be carried out (following the TMBDB Base Case Event) to bring the RCB pressure, temperature and hydrogen concentrations to their permissible levels and to maintain them within safe limits. This outline does not include operator actions for the post TMBDB event, viz long term recovery and clean up of the plant.

B. Indications

B.1 Indications of a TMBDB Event

1. Refer to Section 2.0 of BDB 10-1.
2. Increase in Containment Atmosphere Temperature as indicated by TI101A-B and TI102A-B on MCP (27ICB002 and B005).
3. Increase in Containment Pressure as indicated by PI001A-B on BP (27IC B002 and B005).
4. Increase in Containment Radiation Levels as indicated by Area Monitors (Refer to Table 2.1.1 of SDD-96), Continuous Air Monitors (Refer to Table 2.1.2 of SDD-96) and Process Radiation Monitors (Refer to Table 2.2 of SDD-96).

B.2 Indications of Reactor Vessel and Guard Vessel Penetration

1. Refer to Section 2.0 of BDB 10-1.

C. Immediate Actions

C.1 Immediate Automatic Actions

1. Diesel-Generators A&B will start automatically as indicated on panels 12 NIB019A,B in the Control Room. Load sequencers will connect the System 25A loads per Part I and II Appendix N of SDD 12.
2. Closure of Containment Isolation Valves and stoppage of RCB supply and Exhaust Fans initiated by (2/3 coincidence) the Radiation Monitors 96PMB001A-C and/or 96PMB002A-C located on Head Access Area Walls (Elev. 802') and RCB Exhaust Duct located within RCB. Refer to Section 5.1.13.1 of this SDD.

C.2 Immediate Operator Actions

1. Refer to Section 3.2 of BDB 10-1.
2. Start monitoring H₂ concentration in RCB per SOI 27-14. Hydrogen Indicators AI001A-B and AI002A-B are located on BP (27IC8002 and B005).

D. Subsequent Operator Actions

1. Refer to Section 4.0 of BDB 10-1.

E. Recovery Actions

- E.1 Deenergize the System 25A equipments not required for TMBDB operation as listed in Appendix N of SDD-12. Verify load shedding from Diesel Generators A and B by observing the decrease in power usage on System 12 panels 12NIB019A and B.

E.2 Verify the criteria for activating the TMBDB features as given in Appnedix A of BOB 10-1 are satisfied. Energize the following by placing its ENABLE/DISABLE switches in "ENABLE" position. Verify its "ENABLE" status alarms indicating containment isolation in jeopardy are annunciated on MCP (90CSB016).

	<u>Equipment</u>	<u>Equipment #</u>	<u>Enable/ Disenable Control Switch #</u>	<u>Switch Location</u>	<u>Alarm #</u>
i)	RCB Annulus Cooling Fans (Train A)	A174A,C,E	HS183	BP(B002)	XA183
ii)	RCB Annulus Cooling Fans (A174A,C,E) Discharge Dampers (Train A)	MOD-1A,1C,1E	HS183	BP(B002)	XA183
iii)	RCB Annulus Roof Exhaust Dampers (Train A)	MOD-90A,90C	HS183	BP(B002)	XA183
iv)	RCB Annulus Cooling Fans (Train B)	A174B,D,F	HS184	BP(B002)	XA184

	<u>Equipment</u>	<u>Equipment #</u>	<u>Enable/ Disable Control Switch #</u>	<u>Switch Location</u>	<u>Alarm #</u>
v)	RCB Annulus Cooling Fans (A174B,D,E) Discharge Dampers (Train B)	MOD-1B,1D,1F	HS184	BP(B002)	XA184
vi)	RCB Annulus Roof Exhaust Dampers (Train B)	MOD-90B,90D	HS184	BP(B002)	XA184
vii)	RCB Contain- ment vent valves (Train A)	MOV-106A,106C	HS181	BP(B002)	XA181
viii)	RCB Contain- ment Purge Valves (Train A)	MOV-19A,19C	HS181	BP(B002)	XA181

D

	<u>Equipment</u>	<u>Equipment #</u>	<u>Enable/ Disenable Control Switch #</u>	<u>Switch Location</u>	<u>Alarm #</u>
ix)	RCB Contain- ment vent valves (Train B)	MOV-106B,106D	HS182	BP(B002)	XA182
x)	RCB Contain- ment Purge Valves (Train B)	MOV-19B,19D	HS182	BP(B002)	XA182

E.3 Verify TMBDB alarms listed below are clear. The alarms are annun-
ciated in Control Room.

D

<u>Alarm</u>	<u>Alarm #</u>	<u>Alarm Location</u>	<u>PAR #</u>
Annulus cooling fans (A174A-F)	25NI UA904 (Train A)	MCP(90CSB016)	22
Air Flow Low	25NI UA905 (Train B)	MCP(90CSB016)	35
Annulus cooling fans (A174A-F)	UA916 to UA921	BP(B002)	42 to 47
Air Flow Low			

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<u>Alarm</u>	<u>Alarm #</u>	<u>Alarm Location</u>	<u>PAR #</u>		
Containment Clean-up Pump (75CCP001A-B) Discharge Pressure Low	TBD	MCP(90CSB016)	TBD		
Containment Clean-up Pump (75CCP001A-B) Discharge Pressure Low	TBD	BP(B002)	TBD		
Containment Clean-up Water Storage Tank (75CCT001) Level High High/Low Low	TBD	MCP(90CSB016)	TBD	HOLD 75001097	D
Containment Clean-up Water Storage Tank (75CCT001) Level High High/Low Low	TBD	BP(B002)	TBD		

<u>Alarm</u>	<u>Alarm #</u>	<u>Alarm Location</u>	<u>PAR #</u>
RCB Differential	Window	MCP(90CSB016)	423
Pressure High/Low	25NIBA 3H/3L		
Pressure High/Low	UA901	BP (B002)	
Pressure High/Low	PDAL 143	LOCAL (B001A)	424
			4
Containment Vent	25NIUA904 (Train A)	MCP(90CSB016)	22
Air Flow Low	25NIUA905 (Train B)	MCP(90CSB016)	35
Containment Vent	UA915 (Train A)	BP(B002)	48
Air Flow Low	UA916 (Train B)	BP(B002)	50
TMBDB HVAC	25NIUA904 (Train A)	MCP(90CSB016)	22
Train A&B	25NIUA905 (Train B)	MCP(90CSB016)	35
Trouble			

E.4 Activation of the Annulus Cooling

NOTE: Steel containment shell temperatures are used to activate the Annulus Cooling System. Steel Shell temperatures are indicated by Temperature Indicators (listed below) in the Control Room on Panels (27ICB001-Ch.A and 27ICB002-Ch.B)

Steel Containment Shell Temperatures

<u>Indicator #</u>	<u>Sensor Elev.</u>	<u>Sensor Azimuth</u>
27ICTI001A&1B	817'	111°
27ICTI002A&2B	823'	110°
27ICTI007A&7B	833'9"	209°
27ICTI003A&3B	853'10"	197°
27ICTI004A&4B	857'10"	45°
27ICTI005A&5B	902'	331°
27ICTI008A&8B	964'	225°
27ICTI006A&6B	974'	45°

E.4.1 Verify criteria for activating the Annulus Cooling System, as given in Appendix A, Section A.1 of BDB 10-1 are satisfied.

E.4.2 Start the Annulus Cooling System Train 'A' per SOI 25A-2 (Section 4.1.2.11 of this SDD) and SOI 25A-37 (Section 4.1.7.7 of this SDD.)

E.4.3 If there is any malfunction in Train 'A' operation as indicated in item E.3 of this outline, shutdown Train 'A' per SOI 25A-30 (Section 4.1.4.11 of this SDD).

E.4.4 Start the Annulus Cooling System Train 'B' per SOI 25A-2 (Section 4.1.2.11 of this SDD) and SOI 25A-37 (Section 4.1.7.7 of this SDD).

E.5 Stop the Annulus Filtration Fans by placing their control switches (listed below) located on BP(B002) in "STOP" position. Verify their status lights on BP(B002).

<u>Equipment</u>	<u>Equipment #</u>	<u>Control Switch #</u>	<u>Status</u>
- Annulus Filter Fan	A173A-B	HS173AB-BB	STOPPED
- Fan Discharge Damper	MOD16A-B	-	CLOSED
- Fan Flow Control Damper	FMD14A-B	-	CLOSED

E.6 Stop the Annulus Pressure Maintenance Fans by placing their control switches (listed below) located in BP(B002) in "STOP" position. Verify their status lights on BP(B002).

<u>Equipment</u>	<u>Equipment #</u>	<u>Control Switch #</u>	<u>Status</u>
Annulus Pressure Main- tenance Fan	A172A-B	HS172AB-BB	STOPPED
Fan (A172A-B) Discharge Damper	MOD15A-B	-	CLOSED
Fan (A172A-B) Flow Control Damper	FMD138A-B	-	CLOSED
Annulus Filter Cell Unit Cooler Fans	A146A A132	-	STOPPED
Filter Unit Heating Coil	A182A or A182B	-	OFF

E.7 Activation of the Containment Clean-up System

NOTE: The clean-up system may be operated with, but not necessarily limited to operation with the Annulus Cooling System.

E.7.1 Verify criteria for activating the containment clean-up system as per Appendix A, Sections A.2 and A.3 of BDB 10-1 are satisfied.

E.7.2 Start the Containment clean-up system Train "A" or Train "B" per SOI 25A-2 (Section 4.1.2.12 of this SDD) and SOI 25A-33 (Section 4.1.7.8 of this SDD).

F.0 Follow-up Actions

F.1 When criteria (Appendix A, Section A.1 of BDB 10-1) for stopping the Annulus Cooling System are fulfilled, shutdown the Annulus Cooling System per SOI 25A-30 (Section 4.1.4.11 of this SDD).

F.2 When criteria (Appendix A, Sections A.2 and A.3 of BDB 10-1) for stopping the containment clean-up system are fulfilled, shutdown the containment clean-up system per SOI 25A-30 (Section 4.1.4.12 of this SDD).

F.3 Deenergize the components listed in item E.2 of this outline by placing their control switches in "DISABLE" position. Verify their "ENABLE" position alarms (indication of containment isolation in jeopardy) located on MCP(90CSB016) are clear (deenergized).

F.4 Restarting of Annulus Filter System

Restarting procedure for the Annulus Recirculation and Annulus Pressure Maintenance circuits will be developed at a later date as part of the long term recovery procedures.

5.1.13.3 TMBDB Event [No Reactor Vessel Penetration Scenario]

A. Scope

This outline describes the automatic and the operator actions that should occur following the TMBDB event caused by the loss of offsite power and the Reactor Scram failure. In this case, Reactor Vessel penetration has not occurred. This outline does not include long term recovery actions and cleanup of the plant.

B. Indications

B.1 Refer to step B.1 Section 5.1.13.2 of this SDD.

C. Immediate Actions

C.1 Immediate Automatic Actions

Refer to step C.1 Section 5.1.13.2 of this SDD.

C.2 Immediate Operator Actions

Refer to step C.2 Section 5.1.13.2 of this SDD.

NOTE: If the decay heat removal is successful, the sodium temperature in the Reactor Vessel would remain below boiling point and no TMBDB action will be required.

D. Subsequent Operator Actions

If the containment steel shell temperature or the RCB pressure or the H₂ concentration inside RCB meet the criteria given in Appendix A of BDB 10-1 proceed in accordance with steps E. and F. Section 5.1.13.2 of this SDD.

5.1.13.4 TMBDB Event [No Reactor Cavity Floor Liner Failure Scenario]

A. Scope

This outline describes the automatic and the operator actions that should occur following the TMBDB event. In this case both Reactor Vessel and Guard Vessel penetrations have occurred, but the Reactor Cavity Floor Liner has not failed. This outline does not include long term recovery actions and cleanup of the plant.

B. Indications

Refer to step B.1 Section 5.1.13.2 of this SDD.

C. Immediate Actions

C.1 Immediate Automatic Actions

Refer to step C.1 Section 5.1.13.2 of this SDD.

C.2 Immediate Operator Actions

Refer to step C.2 Section 5.1.13.2 of this SDD.

NOTE: Hydrogen concentration may not exceed 0.5 percent at the expected maximum containment pressure of 6 psig. Consequently, containment venting and purging may not be required.

D. Subsequent Operator Actions

Refer to steps D., E. and F., Section 5.1.13.2 of this SDD.

D

5.1.14 RCB RAPS Cell Exhaust System Radiation Detection (EOI 25A-12)

Design Features to Mitigate Effects: Upon radiation detection, as sensed by 96PMB067, RAPS cells will be isolated to prevent spread of radioactivity.

Indication:

1. AOD-079 position status light (XL-079B), located on Local Panel (B005Q).

Recovery:

1. Verify the Exhaust Damper (AOD-079) closed status indication (XL-079B), located on Local Panel (B005Q).
2. Refer to SDD-82 for actions related to cell cleanup.
3. Following cleanup by System 82 and atmosphere verification by Health Physics, reopen AOD-79 to establish a normal HVAC alignment.

5.1.15 Casualties in TMBDB Features

5.1.15.1 RCB Purge Air Reverse Flow during TMBDB (AOI 25A-43)

Design Features to Mitigate Effects

Automatic closure of purge valves (MOV19A-D) actuated by RCB negative differential pressure switch thus preventing uncontrolled release of radiation to outside atmosphere. In addition check valves are provided in the purge lines.

Indications

1. TMBDB HVAC Train "A" or "B" common trouble alarm (UA904 or UA905) located on MCP (90CSB016). Refer to PARs 25A-22 and 25A-35.
2. Containment differential pressure high/low alarm (UA 901) on BP (B002). Refer to PAR 25A-424. Containment Differential pressure high alarm (PDAL143) located on Local Panel (B001A). Refer to PAR 25A-4.
3. RCB Annulus high radiation alarm. Refer to PAR 96-04 to 96-06.
4. Containment Purge valves (MOV19A-D) open status lights located on BP (B002).
5. Containment pressure is above atmospheric as indicated by PI 001A-B on BP (27ICB002 and B005).

Recovery

1. Verify containment purge valves (MOV19A-D) are closed as indicated by their status lights on BP (B002).

2. Verify containment clean-up system Train "A" or "B" is operating per EOI 25A-2. If there is any malfunction in any of the operating Trains as indicated by the alarms on MCP (90CSB016) and BP (B002), start the redundant Train "A" or "B" per SOI 25A-2 (Section 4.1.2.12 and SOI 25A-33 Section 4.1.7.8) of this SDD. Refer to step E.3, Section 5.1.13.2 of this SDD for possible control room alarms of a malfunction.
3. When RCB pressure as indicated by 27ICPI001A-B on BP (27ICB002 and B005) reaches below atmospheric reopen the purge valves (MOV19A,C or 19B,D) by placing their control switches (HS19A-D) located on BP (B002) in OPEN position. Verify the valves open status lights on BP (B002).
4. Verify RCB purge air reverse flow indications (listed above) are clear.

5.1.15.2 Annulus Cooling Fans (A174A-F) Low Air Flow (AOI 25A-45)

Design Features to Mitigate Effects

Two 100% capacity redundant trains of fans and dampers are provided. All the fans and dampers are powered by Class 1E power divisions.

Indications

1. TMBDB HVAC Train "A" or "B" trouble alarms (UA904 or UA905) located on MCP (90CS8016). Refer to PAR 25A-22 or 35.
2. Annulus Cooling Fans A174A-F air flow low alarms (UA916 to UA921) located on BP(B002). Refer to PARs 25A-42 to 25A-47.

Recovery

1. Stop the operating Train "A" or "B" Fans (A174A,C,E or A174B,D,F) by placing their control switches (HS174A,C,E or HS174B,D,F) located on BP(B002) in the "STOP" position. Verify their stop status lights on BP(B002).
2. Verify dampers (MOD1A,C,E or 1B,D,E and MOD 90A,C or 90B,D) are closed as indicated by their close status lights on BP(B002).
3. Start the redundant Train "B" Fans (A174A,C,E or A174B,D,F) by placing their control switches (HS174A,C,E or HS174B,D,F) in the "START" position. Verify their start status lights on BP(B002).
4. Verify dampers (MOD1A,B,D,F or 1A,C,E MOD90B-D or MOD90A-C) are open as indicated by their open status lights on BP(B002).

5.1.15.3 Annulus Cooling Fans (A174A-F) High Vibration (AOI 25A-46)

Design Features to Mitigate Effects

Two 100% capacity redundant trains of fans and dampers are provided. All the fans and dampers are powered by Class 1E power divisions.

Indications

1. TMBDB HVAC Train "A" or "B" trouble alarm (UA904 or UA905) on MCP (90CSB016). Refer to PAR 25A-22 or 35.
2. Annulus Cooling Fans A174A,C,E or A174B,D,F vibration high alarms (YAH70A,C,E or 70B,D,F) on BP(B002). Refer to PAR 25A-42 to 25A-47.

Recovery

Refer to AOI 25A-45

5.1.15.4 Containment Clean-up Scrubber Exhaust Fans (A175A-B) High Vibration (AOI 25A-47)

D

Design Features to Mitigate Effects

Two 100% capacity redundant fans and dampers are provided. Both the fans and dampers are powered by Class 1E power divisions.

Indications

1. TMBDB HVAC Train "A" or "B" trouble alarm (UA904 or UA905) on MCP (90CSB016). Refer to PAR 25A-22 or 35.
2. Containment Clean-up Exhaust Fan (A175A or B) vibration high alarms (YAH68A or 68B) on BP(B002). Refer to PAR 25A-48 or 25A-50.

Recovery

1. Stop the operating Train "A" or "B" Fan A175A or A175B by placing its control switch HS175A or HS175B located on BP(B002) in the "STOP" position. Verify Fan A175A or A175B stop status light on BP(B002).
2. Close Containment Vent Valves MOV106A and 106C by placing their control switches HS106A and HS106C in the close position. Verify valves closed status lights on BP(B002).
3. Open containment vent valves MOV106B and 106D by placing their control switches HS106B and HS106D in the "OPEN" position. Verify valves open status lights on BP(B002).
4. Start the redundant Train "A" or "B" Fan A175A or A175B by placing its control switch HS175A or HS175B located on BP(B002) in the "START" position. Verify Fan Start Status Light on BP(B002).
5. Verify Fan A175A or A175B discharge dampers MOV109A or A109B open position status and bypass dampers MOV108A or MOV108B closed position status lights on BP(B002).

5.1.15.5 Containment Exhaust Air Low Flow (ACI 25A-48)

Design Features to Mitigate Effects

Two 100% capacity redundant Fan and Dampers are provided and they are powered by Class 1E power divisions.

Indications

1. TMBDB HVAC Train "A" or "B" trouble alarms (UA904 or UA905) on MCP(90CSB016). Refer to PAR 25A-22 or 35.
2. Containment Clean-up Exhaust Fan A175A or A175B air flow low alarm (UA915 or UA916) on BP(B002). Refer to PAR 25A-420 or 421.
3. Containment Clean-up Exhaust Air Flow as indicated by FIC27A or B on BP(B002).

Recovery

1. Perform steps 1 to 5 Section 5.1.15.5 of this SDD.
2. Verify containment Clean-up Exhaust Air Flow as indicated by FIC27A or B has returned to normal (21770ACFM). If the flow is still low, close the containment purge valves MOV19A,C or 19B,D by placing their control switches HS19A,C or 19B,D located on BP (B002) in the "CLOSE" position. Verify these valves status lights on BP(B002).
3. Rectify the low flow causing trouble in the affected train per PAR 25A-420 on 421.

5.2 Reactor Service Building

Equipment and numbers are prefixed by 25AS.

Panel numbers are prefixed by 25AS (Back) and 25NI (Local).

The following precautions are common to the RSB HVAC System:

1. High supply or return air temperatures may indicate malfunctioning of the cooling coil, its chilled water supply or associated controls.
2. Low air flow may indicate malfunctioning of supply fan, damper, or excess d/p across Air Handling Unit Filter.

3. Low supply air temperature may indicate malfunctioning of the Air Handling unit heating coil or associated controls.

5.2.1 Casualties

5.2.1.1 Potential Spread of Radioactive Airborne Contamination (EOI 25A-2)

Design Features to Mitigate Effects: The spaces containing radioactive sources are pressure controlled. During normal plant operation the inert atmosphere cells are maintained at a pressure lower than surrounding spaces to prevent possible contamination in the cell from spreading.

Indication: Monitors are provided by the Radiation Monitoring System (SDD-96).

Recovery: Normally the air atmosphere cells inside containment building are sealed and not occupied. Should radioactivity leakage occur, the CAPS system, which monitors the atmosphere, will automatically process the gas and initiate an alarm. Refer to SDD-82 for recovery of this condition.

5.2.1.2 RSB Accident Condition (EOI 25A-3)

Design Features to Mitigate Effects: Radiation monitors are located in the operating floor (cell 308A) return duct and the spent fuel cask corridor (cell 336) return duct. On indication of high radiation the cell is isolated from the main system. The main system intake and exhaust ducts are closed and the RSB HVAC system goes into a recirculating mode. Return air from cell (308A and 336) is filtered by the Cleanup Filter System and returned to the operating floor.

Energized Indication:

1. Cell Isolation

<u>Cell</u>	<u>Monitor</u>	<u>Isolation</u>	<u>Indication</u>	<u>Panel</u>
308A	96PMB069	AOD-262A	XL-262AD	B002
		AOD-262B	XL-262BD	B002
		AOD-263A	XL-263AD	B002
		AOD-263B	XL-263BD	B002
		AOD-264A	XL-264AD	B002
		AOD-264B	XL-264BD	B002
		AOD-265A	XL-265AD	B002
336	96PMB070	AOD-265B	XL-265BD	B002
		AOD-032A	XL-032AD	B002
		AOD-032B	XL-032BD	B002
		AOD-033A	XL-033AD	B002
		AOD-033B	XL-033BD	B002

2. Dampers

<u>Dampers</u>			<u>Position</u>	<u>Indication</u>	<u>Panel</u>
a.	Air Intake	AOD-010	Closed	XL-010D	B002
b.	Air Exhaust	MOD-203A	Closed	XL-023AD	B002
		MOD-203B	Closed	XL-023BD	B002
c.	Filter Unit Inlet	MOD-197A	Open	XL-197AC	B002
		MOD-197B	Open	XL-197BC	B002
d.	Filter Unit Outlet	MOD-200A	Open	XL-200AC	B002
		MOD-186A	Closed	XL-186AD	B002
		MOD-186B	Closed	XL-186BD	B002
		MOD-200B	Open	XL-200BC	B002

3. Air flow indication, located on Back Panel (B002).

a.	Supply Fan Outlet	FI-182
b.	Exhaust Fan Outlet	FI-181
c.	Filter Unit Inlet	FI-196A
		FI-196B

Recovery:

1. Verify Supply and Exhaust air isolation dampers (AOD-010 & MOD 203A) "CLOSE" indications, located Back Panel (B002) are energized.
2. Verify Cleanup Filter Unit (184A or 184B) operation as indicated by:
 - a. Fan operating status light (XL-184AC or 184BC), located on Back Panel (B002) is energized.
 - b. Filter Unit air flow indicator (listed above), located on Back Panel (B002).
3. Following determination of safe atmosphere in affected area return HVAC system to normal as described in section 4.2.6.5 of this SDD.

5.2.1.3 RWA Radiation Detection (EOI 25A-4)

Design Features to Mitigate Effects: Radiation monitors located in the RWA exhaust duct will cause a shutdown of Exhaust Fans (161A & 161B) and start of Filter Unit (171) and Filter Fan (163).

Indication:

1. System 96 radiation monitor (96PMB002 & 96PMB068).
2. Exhaust Fan (161A & 161B) operating status lights (XL-161AB & 161BB), located on Local Panel (B006).
3. Cleanup Filter Unit (171) operating status light (XL-171A), located on Local Panel (B006) is energized.
4. Cleanup Filter Fan (163) air flow indication (FI-196A, 196B), located on Back Panel (B002).

Recovery:

Verify Exhaust Fan (161A & 161B) shutdown, damper (A0D-065A & 065B) shift and Filter Unit (171) operation as indicated on local panel (B006) by air flow, as sensed by FT-122.

Following Health Physics determination of safe atmosphere in affected area return HVAC system to normal as described by section 4.2.6 of this SDD.

5.2.2 RSB Supply/Exhaust System Failure (AOI 25A-31)

5.2.2.1 Supply Fan (140A, 140B)

Design Features to Mitigate Effects: Two (50%) Supply fans are provided in addition to annunciation alerting operator of a malfunction.

Indication:

1. Energized operating status light, located on Local Panel (B005D).

<u>Fan</u>	<u>Stop</u>
140A	XL-140AB
140B	XL-140BB

2. Annunciation:

- a. RSB Supply Air Flow Low Alarm (PAR 25A-292) and Air Flow Low Low Alarm (PAR 25A-293).

Recovery:

1. Verify effected Fan (140A or 140B) operating status light located on Local Panel (B005D) as listed above is energized.

2. Place affected Supply and related Exhaust Fans (140A & 160A) or (40B & 160B) Control (HS-140A & 160A) or (HS-140B & 160B), located on Local Panel (B005D) in the "STOP" position.
3. Verify RSB cleanup Filter Unit (184A or 184B) operation as indicated by Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002), is within range specified by Section 3 (Table 3-2) of this SDD.
4. Repair/replace Fan as described in section 6.2.2.1.1. of this SDD.

5.2.2.2 Exhaust Fan (160A,160B)

Design Features to Mitigate Effects: Two (50%) Exhaust Fans are provided in addition to annunciation alerting operator of a malfunction.

Indication:

1. Energized operating status lights, located on Local Panel (B005D).

<u>Fan</u>	<u>Stop</u>
160A	XL-160AB
160B	XL-160BB

2. Annunciation:

- a. RSB Exhaust Air Flow Low Alarm (PAR 25A-294) and Air Flow Low Low Alarm (PAR 25A-295).

Recovery:

1. Verify effected Fan (160A or 160B), operating status light (XL-160AB or 160BB), located on Local Panel (B005D), is energized.

2. Place affected Supply and Exhaust Fan (140A & 160A) or (140B & 160B) Control (HS-140A & 160A) or (HS-140B & 160B), located on Local Panel (B005D), in the "STOP" position.
3. Verify RSB Cleanup Filter Unit (184A or 184B) operation as indicated by Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002) is within range specified by Section 3 (Table 3-2) of this SDD.
4. Repair/replace Fan as described by section 6.2.2.1.2 of this SDD.

5.2.2.3 Damper Failure

5.2.2.3.1 Supply Fan Discharge Damper (A0D-009A, 009B)

Design Features to Mitigate Effects: Two (50%) Supply Fans and Dampers are provided in addition to annunciation alerting operating of a malfunction.

Indication:

1. Energized damper status lights, located on Local Panel (B005D).

<u>Damper</u>	<u>Closed</u>
009A	XL-009AB
009B	XL-009BB

2. Annunciation:

- a. RSB Supply Air Flow Low Alarm (PAR 25A-292) and Air Flow Low Low Alarm (PAR 25A-293).

Recovery:

1. Verify Damper (A00-009A or 009B) operating status light (XL-009AB or 009RB), located on Local Panel (B005D), is energized.
2. Place affected Supply and related Exhaust Fans (140A & 160A) or (140B & 160B) Control (HS-140A & 160A) or (HS-140B & 160B), located on Local Panel (B005D), in the "STOP" position.
3. Verify RSB Cleanup Filter Unit (184A or 184B) operation as indicated by air flow recorder (FR-196A or 196B), located on Back Panel (B002), is within range specified in Section 3 (Table 3-2) of this SDD.
4. Repair/replace Damper as described by section 6.2.2.1.4 of this SDD.

5.2.2.3.2 Exhaust Fan Discharge Damper (A00-025A, 025B)

Design Features to Mitigate Effects: Two (50%) Exhaust Fans and Dampers are provided in addition to annunciation alerting operator of the malfunction.

Indication:

1. Energized damper status lights, located on Local Panel (B005D).
2. Annunciation:
 - a. RSB Exhaust Air Flow Low Alarm (PAR 25A-294) and Air Flow Low Low Alarm (PAR 25A-295).

Recovery:

1. Verify Damper (A00-25A or 25B) operating status light (XL-025AB or 025BB), located on Local Panel (B005D), is energized.

2. Place affected Supply and Exhaust Fan (140A & 160A) or (140B & 160B) Control (HS-140A & 160A) or (HS-140B & 160B), located on Local Panel (B005D), in the "STOP" position.
3. Verify RSB Cleanup Filter Unit (184A or 184B) operation as indicated by Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002) is within range specified by Section 3 (Table 3-2) of this SDD.
4. Repair/replace Fan as described by section 6.2.2.1.4 of this SDD.

5.2.2.3.3 Cell 308A & 313 Inlet Air Damper (AOD-264A, 264B) Failure

Design Features to Mitigate Effects: Cell (308A) differential pressure is monitored and annunciated when it exceeds range specified by Section 3 (Table 3-2) of this SDD.

Indication:

1. Damper status indications:

<u>Damper</u>	<u>Closed</u>	<u>Panel</u>
AOD-264A	XL-264AD	B002
AOD-264A	XL-264AB	B005E
AOD-264B	XL-264BD	B002
AOD-264B	XL-264BB	B005F

2. Cell 308A differential pressure alarm (PAR 25A-301) located on Local Panel (B005E).

Recovery:

1. Ensure System 96 signal (96PMRE069A, 069B) not present.
2. Manually open affected Damper (264A or 264B).

3. Verify cell 308A Differential Pressure Alarm (PAR 25A-301) has cleared located on Local Panel (B005E).
4. When possible repair/replace damper as described by section 6.2.2.1.4 of this SDD.

5.2.2.3.4 Cell 310 Inlet Air Damper (AOD-262A, 262B) Failure

Design Features to Mitigate Effects: Inlet Air Dampers (AOD-262A & 262B) are provided with status indication allowing operator to determine Inlet Air Damper position.

Indication:

Energized damper status indicator light.

<u>Damper</u>	<u>Closed</u>	<u>Panel</u>
AOD-262A	XL-262AD	B002
AOD-262A	XL-262AB	B005E
AOD-262B	XL-262BD	B002
AOD-262B	XL-262BB	B005F

Recovery:

1. Ensure System 96 signal (96PMRE069A, 069B) not present.
2. Manually open affected Damper (AOD-262A or 264B).
3. Repair/replace Damper as described by section 6.2.2.1.4 of this SDD.

5.2.2.3.5 Cell 336 Inlet Air Damper (AOD-032A, 032B) Failure

Design Features to Mitigate Effects: Cell 336 Inlet Air Dampers (AOD-032A & 032B) are provided with status indication allowing operator to determine

Damper position. In addition when cell 336 differential pressure reaches normal limits it will be annunciated to alert operator of a malfunction.

Indication:

1. Cell 336/306A differential pressure indicator (PDIC-032), located on Local Panel (B005D).
2. RSB Cell 336 Differential Pressure Low Alarm (PAR 25A-302).

Recovery:

1. Ensure System 96 signal (96PMRE069A, 069B) not present.
2. Manually open affected Damper (AOD-032A or 032B).
3. Repair/replace Damper as described by section 6.2.2.1.4 of this SDD.

5.2.3 AHU (100) Component Failure (AOI 25A-32)

AHU (100) is not redundant and RSB HVAC must be interrupted to correct malfunctions requiring violation of System boundaries.

5.2.3.1 Roll Filter Differential Pressure High

Design Features to Mitigate Effects: Roll Filter is provided with indications and alarm to alert operator of a malfunction.

Indication:

1. Roll Filter differential pressure drop indicator (PDISH-003) located on Local Panel (B005D).
2. Roll Filter Differential Pressure Drop Alarm (PAR 25A-297).

Recovery:

1. When conditions permit, shutdown AHU (100) as described by section 4.2.4.1 of this SDD.
2. Refer to section 6.2.2.1.3 of this SDD, for Roll Filter Media replacement.

5.2.3.2 Bag Filter Differential Pressure High

Design Features to Mitigate Effects: Bag Filter is provided with indication and alarm to alert operator of a malfunction.

Indication:

1. Bag Filter Differential Pressure Drop Indication (PDISH-005), located on Local Panel (8005D).
2. Bag Filter Differential Pressure High Alarm (PAR 25A-299).

Recovery:

1. When conditions permit, shutdown AHU (100) as described by section 4.2.4.1 of this SDD.
2. Replace Filter Bag(s) as described by section 6.2.2.1.3 of this SDD.

5.2.3.3 Heating/Cooling Coil Failure

Design Features to Mitigate Effects: Indication is provided with indication and alarm to alert operator of a malfunction.

Indications:

1. Heating Coil Leaving Temperature Indicator (TI-006), located on Local Panel (B005D).
2. AHU Supply air Temperature Indicator (TIC-008), located on Local Panel (B005D).
3. Normal Chilled Water Leakage. Refer to AOI 23-30.

Recovery:

1. When conditions permit, shutdown AHU (A100) as described by section 4.2.4.1 of this SDD.
2. Inspect the AHU for any chilled water leakage. If the leak is confirmed, isolate the leaky section of the AHU by closing the appropriate isolation valves 23NCV300A-F and 23NCV297A-F. Ensure the leaked out water is directed to the cell 305H floor drain. Prevent entry of the leaked water into nearby sodium bearing cells by guiding it to the nearest floor drain. Refer to EOI 21-4.
3. Repair/replace Heating/Cooling coil as described in section 6.2.2.1.3 of this SDD.

5.2.4 RAPS and CAPS Exhaust Fan (162A or 162B) Failure (AOI-25A-1)

Design Features to Mitigate Effects: Redundant fan is provided with a low air flow start signal.

Indications:

1. Exhaust Fans (162A & 162B) trouble alarm (PAR 25A-53) located on Back Panel (B002).
2. Exhaust Fan (162A or 162B) air flow low alarm (PAR 25A-54), located on Local Panel (B005Q).
3. Exhaust Fan operating status light, located on Local Panel (B005Q).

Recovery:

1. Verify affected fan operating status lights, located on BP (B002) and Local Panel (B005Q) are energized.

D

2. Place affected Fan (A162A or A162B) Control (HS-162A or 162B), located on Local Panel (B005Q), in the "STOP" position.
3. Verify affected fan (A162A or A162B) outlet damper (A00-90A or 90B) closed status indication, located on Local Panel (B005Q).
4. Close affected fan inlet damper.
5. Repair/replace fan as described by section 6.2.2.3 of this SDD.

5.2.5 ABHX Cell Unit Cooler (A104A or A104B) Failure (AOI 25A-2)

5.2.5.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit coolers are supplied by a safety related bus (1E) and upon failure of off-site AC power the Diesel Generator load sequencer (following a 1 minute time delay) will automatically start the Unit Coolers.

Indications

1. Loss of off-site power light indication on MCP (12N1B020). Refer to AOI 12-1, 12-2.
2. Nuclear Island Train "A" or "B" HVAC trouble alarm (UA901 or UA902) on MCP (90CSB016). Refer to PAR 25A-22 or 25A-35.
3. Unit Cooler (A104A or A104B) low flow alarm (UA917B or UA918B) on BP (B002). Refer to PAR 25A-425 or 25A-427.
4. Unit Cooler (A104A or A104B) stopped alarm (XA104AC or XA104BC) on BP (B002). Refer to PAR 25A-429 or 25A-430.

5. Unit Cooler (A104A or A104B) low flow alarm (UA917A or UA918A) on local panels (B001G or B001H). Refer to PARs 25A-426 or 25A-428.
6. Unit Cooler (A104A or A104B) stop light indications on BP (B002) and local panels (B001G, B001H).

Recovery

1. Verify diesel power is on as indicated by red light indications on MCP (12NIB019A,B). Refer to AOI 12-1, 12-2.
2. Verify unit cooler (A104A or A104B) has restarted automatically as indicated by its START status lights on BP (B002) and local panel (B001G or B001H).
3. If unit cooler (A 104A or A 104B) has not started, manually start A 104A or A 104B by placing its control switch HS 104AC or HS 104BC located on BP (B002) in START position. Verify unit cooler start indication lights on BP (B002) and local panel (B001G or B001H).
4. Verify indications listed above are clear.
5. On resumption of normal off-site AC power, verify unit cooler normal operation per SOI 25A-5. (Section 4.2.3.5 of this SDD)

5.2.5.2 Loss or Leakage of Normal Chilled Water

Design Features to Mitigate Effect: The Unit Cooler is automatically supplied cooling water by the Emergency Chilled Water (SDD-23) System.

Indications

1. Refer to Emergency Chilled Water System (SDD-23) for Emergency Chiller operating status light indication (SOI 23-9) for resumption of chilled water supply.
2. Chilled Water Leakage. Refer to AOI 23-28 and AOI 23-30

Recovery

1. Verify ECW System Loop A-B has started per SOI 23-10 in case of loss of normal chilled water supply.
2. In case of chilled water leakage, inspect the coolers (104A-B) and isolate the leaky cooler by closing its isolation valves 23ECV195A-B, and 23ECV194A-B. Guide the leaked out water to the cell 326/327 floor drain. Refer to EOI 21-4.

D

3. Repair the defective cooler per Section 6.2.2.5 of this SDD.

5.2.5.3 High Differential Pressure across the Filter in Unit Cooler
(A 104A or A 104B)

Design Features to Mitigate Effects

Filter is throwaway type and is replaceable.

Indications

1. Refer to indications 2, 3, 5 in section 5.2.5.1 above of this SDD.
2. Unit Cooler (A 104A or A 104B high differential pressure as indicated by PDI 14A or B locally on the unit cooler.
3. Increase in RSB cell 352A or 353A temperature as indicated by T058A or T060A on control room PDH and DS display.

Recovery

1. Shutdown the unit cooler A 104A or A 104B per SOI 25A-6, Section 4.2.4.5 of this SDD.
2. Replace the filter in the unit cooler per MOP 25A-5.
3. Restart the unit cooler A 104A or A 104B per SOI 25A-4, Section 4.2.2.5 of this SDD.

5.2.5.4 Unit Cooler (A 104A or A 104B) Fan High Vibration

Design Features to Mitigate Effects: Alarm annunciation in Control Room and local panels.

Indications

1. Nuclear Island Train A or B HVAC Trouble Alarm (UA901 or UA 902) on MCP (90CSB016). Refer to PAR 25A-22 or 25A-35.
2. Unit cooler A 104A or A 104B fan high vibration alarm (YAH 177AB or YAH 177BB) on BP (B002). Refer to PAR 25A-435 or 25A-436.
3. Unit cooler A 104A or A 104B fan high vibration alarm (YAH 177AA or YAH 177BA) on local panels (B001G or B001H). Refer to PAR 25A-437 or 25A-438.

Recovery

1. Shutdown the unit cooler A 104A or A 104B per SOI 25A-6, Section 4.2.4.5 of this SDD.
2. Repair the unit cooler fan per MOP 25A-5.
3. Restart the unit cooler per SOI 25A-4, Section 4.2.2.5 of this SDD.

5.2.6 Annulus Filter Unit Cooler (A146 and A132) Failure (AOI 25A-3)

5.2.6.1 Loss of Normal Power

Design Features to Mitigate Effect: The Unit Coolers are not scheduled for high priority restart. Unit Coolers are connected to the Class 1E bus and may be manually restarted following the sequencer time delay of 1 hour.

Recovery: Following restoration of AC power restart Unit as described in section 4.2.2.7 of this SDD.

5.2.6.2 Loss of Normal Chilled Water

Design Features to Mitigate Effects: The Unit Coolers are automatically connected to Emergency Chilled Water (SDD-23) upon loss of Normal Chilled Water supply.

Indication: Refer to Emergency Chilled Water System (SOI 23-10) for Emergency Chiller operating status light indication.

Recovery: Refer to SDD-23 (SOI 23-03) for restart of NCW System.

5.2.6.3 Leakage of Chilled Water

Design Features to Mitigate Effects

Manual isolation valves are provided to isolate and stop the leak.

Indication: Refer to AOI 23-28 and AOI 23-30.

Recovery:

1. Inspect the coolers (A146 and A132) to determine which of the coolers is leaking. Isolate the leaking cooler by closing its isolation valves V23EC 60A-B and V23EC 58A-B. Guide the leakage water to the cell floor drain. Refer to EOI 21-4 for floor sump operation.
2. Repair the leaky cooler per Section 6.2.2.11 of this SDD.

5.2.7 RSB Clean-up Filter Train (A&B) Failure (AOI 25A-4)

5.2.7.1 RSB Clean-up Filter Cell Unit Coolers (133 and 134)

5.2.7.1.1 Loss of Normal Power

Design Features to Mitigate Effect: The Unit Coolers (A133 and 134) are supplied by a safety related bus and upon failure of off-site AC power the diesel generator load sequencer will start unit coolers.

Indication: Unit Cooler operating status lights located on Back Panel (B002) and Local Panel (B002J or B002K).

Recovery:

Following restoration of off-site AC power, no operator action is required to continue Unit Cooler operation.

5.2.7.1.2 Loss of Normal Chilled Water

Design Features to Mitigate Effect: The Unit Cooler (133 or 134) is automatically supplied by the Emergency Chilled Water system (SDD-23).

Indication: Refer to Emergency Chilled Water System (SOI 23-10) for Emergency Chiller operation status indication located on Main Panel (90CSB016).

Recovery: Refer to SDD-23 (SOI 23-03) for restart of NCW system.

5.2.7.1.3 Leakage of Chilled Water

Design Features to Mitigate Effect

Manual isolation valves are provided to isolate and stop the leak.

Indication: Refer to AOI 23-28 and AOI 23-30.

Recovery:

1. Inspect the coolers (133 and 134) to determine which of the cooler is leaking. Isolate the leaking cooler by closing its isolation valves 23ECV308A-B and 23ECV309A-B. Guide the leakage water to the cell floor drain. Refer to SOI 21-4 for floor sump operation.
2. Repair the leaky cooler per Section 6.2.2.7.1 of this SDD.

5.2.7.2 RSB Clean-up Filter Unit (184A, 184B) Failure

Design Features to Mitigate Effect: Redundant RSB Clean-up Filter Units (184A & 184B) are provided allowing one Filter Unit (184A or 184B) to be taken out of service without affect on the RSB HVAC System.

Indication: Filter Unit malfunction will be indicated by one or more of the following indications exceeding range specified in Section 3 (Table 3-2) of this SDD.

1. Clean-up Filter Unit (184A)

	<u>Inst.#</u>	<u>Panel</u>	<u>PAR</u>
a. Exhaust Air Radiation High	96EMRE016	96EMB016	25A-259
b. Moisture Separator Differential Pressure High	PDISH-198A	B005E	25A-248
c. Bag Filter Differential Pressure Drop High	PDISH-193A	B005E	25A-250
d. HEPA Filter Differential Pressure Drop High	PDISH-192A	B005E	25A-251
e. Adsorbant Filter Differential Pressure High	PDISH-191A	B005E	25A-253
f. HEPA Filter Differential Pressure High	PDISH-190A	B005E	25A-255
g. Clean-up Filter Unit Air Flow	FR-196A	B002	-

2. Clean-up Filter Unit (184B)

	<u>Inst.</u>	<u>Panel</u>	<u>PAR</u>
a. Exhaust Air Radiation High	96EMRE017	96EMB017	25A-259

	<u>Inst.</u>	<u>Panel</u>	<u>PAR</u>
b. Moisture Separator Differential Pressure High	PDISH-198A	B005B	25A-418
c. Bag Filter Differential Pressure Drop High	PDISH-193B	B005F	25A-333
d. HEPA Filter Differential Pressure Drop High	PDISH-192B	B005B	25A-334
e. Adsorbant Filter Differential Pressure High	PDISH-191B	B005F	25A-335
f. HEPA Filter Differential Pressure High	PDISH-190B	B005F	25A-336
g. Clean-up Filter Unit Air Flow	FR-196B	B002	-

Recovery:

1. Shift operating RSB Clean-up Filter Unit (184A or 184B) as described by section 4.2.3.15.2 or 4.2.3.15.3 of this SDD.
2. Repair malfunctioning RSB Clean-up Filter Unit (184A or 184B) as described by section 6.2.2.7.2 of this SDD.

5.2.7.3 RSB Clean-up Filter Fan (185A, 185B) Failure

Design Features to Mitigate Effects: Redundant RSB Clean-up Filter Fans (185A or 185B) are provided allowing one Filter Fan (train A or B) to be taken out of service. In addition air flow is monitored to alert operator of a Fan (185A or 185B) malfunction and redundant Filter Unit start.

Indication:

1. Fan operating status lights, located on Back Panel (B002).

NOTE: Failed fan (185A or 185B) STOP indicating light (XL-185AD or 185BD) shall be energized while remaining Fan (185A or 185B) indicating light (XL-185AC or 185BC) shall be energized.

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
185A	XL-185AC	XL-185AD
185B	XL-185BC	XL-185BD

2. Clean-up Filter Unit Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002).

Recovery:

1. Verify start of redundant Clean-up Filter Unit and Fan (184A & 185A) or (184B & 185B), as indicated by Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002).
2. Repair/replace malfunctioned Filter Fan (195A or 185B) as described by section 6.2.2.7.2 of this SDD.

5.2.7.4 RSB Clean-up Filter Fan Vortex Damper (FMD-196A, 196B) Failure

Design Features to Mitigate: Malfunction causing a low air flow will be alarmed and automatically start the redundant Filter Unit and Fan (184A & 185A) or (184B & 185B).

Indication:

1. Energized fan operating status lights, located on Back Panel (B002).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
185A	XL-185AC	XL-185AD
185B	XL-185BC	XL-185BD

NOTE: Damper (FMD-196A) will cause status lights (XL-185AD & 185BC) to be energized, while failure of Damper (FMD-196B) will cause (XL-185AC & 185BD) to be energized.

2. Clean-up Filter Unit Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002).
3. RSB Clean-up Filter air flow low alarm (PAR 25A-348 or 25A-338), located on Back Panel (B002).

Recovery:

1. Verify start of redundant Clean-up Filter Unit and Fan (184A & 185A) or (184B & 185B), as indicated by Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002).
2. Repair/replace malfunctioned damper as described by section 6.2.2.7.3 of this SDD.

5.2.7.5 RSB Exhaust Line Damper (MOD-203A,203B) Failure

Failure of this Damper (MOD-203A or 203B) would cause low air flow through RSB Clean-up Filter Train (A or B). Low air flow as sensed by (FSL-183A or 183B) will start redundant Filter Train.

Design Features to Mitigate Effects: Redundant Clean-up Filter Unit (184A or 184B) supply air lines are provided to allow operation of standby RSB Clean-up Filter Unit (184A or 184B).

Indication:

1. Annunciation

	<u>Panel</u>	<u>PAR</u>
a. Filter 184A Air Flow Low	B002	25A-348
b. Filter 184B Air Flow Low	B002	25A-338

2. Clean-up Filter Unit air flow recorder (FR-196A or 196B), located on Back Panel (B002).

3. Energized fan operating status lights, located on Back Panel (B002).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>
185A	XL-185AC	XL-185AD
185B	XL-185BC	XL-185BD

NOTE: Failure of Damper (MOD-203A) will cause status indication (XL-185AD & XL-185BC) to be energized, while failure of Damper (MOD-203B) will cause indication (XL-185AC & 185BD) to be energized.

Recovery:

1. Verify start of redundant Clean-up Filter Unit and Fan (184A & 185A) or (184B & 185B), as indicated by Air Flow Recorder (FR-196A or 196B), locate on Back Panel (B002).
2. Repair/replace malfunctioned damper as described by section 6.2.2.7.3 of this SDD.

5.2.7.6 RSB Clean-up Filter Fan Exhaust Fan Damper (MOD-296A, 296B)
Failure

Failure of this Damper (MOD-269A or 269B) would cause low air flow through RSB Clean-up Filter Train (A or B). Low air flow would be sensed and alarmed by (FSL-183A or 183B) and indicated by (FR-196A or 196B) on Back Panel (B002).

Design Features to Mitigate Effects: Redundant Clean-up Filter Units and Fans (184A & 184B) & (184B & 185B) are provided to allow operation of standby RSB Clean-up Filter Unit (184A or 184B).

Indication:

1. Annunciation

<u>Damper</u>	<u>Panel</u>	<u>PAR</u>
MOD-269A Filter 184A Air Flow Low	B002	25A-343
MOD-269B Filter 184B Air Flow Low	B002	25A-338

2. Clean-up Filter Unit Air Flow Recorder (FR-196A or 196B), located on Back Panel (B002).

3. Energized status lights, located on Back Panel (B002).

<u>Damper</u>	<u>Open</u>	<u>Closed</u>
MOD-269A	XL-269AC	XL-269AD
MOD-269B	XL-269BC	XL-269BD

NOTE: Failure of Damper (MOD-269A) will cause status indication (XL-269AD & XL-269BC) to be energized, while failure of Damper (MOD-269B) will cause indication (XL-269AC & 269BD) to be energized.

Recovery:

1. Verify start of redundant Clean-up Filter Unit and Fan (184A & 185A) or (184B & 185B), as indicated by (FR-196A or 196B), locate on Back Panel (B002).

2. Repair/replace damper as described by section 6.2.2.7.3 of this SDD.

5.2.7.7 RSB Clean-up Exhaust Isolation Damper (MOD-186A, 186B) Failure

Damper is open when related RSB Clean-up Filter Unit (184A or 184B) is operating. Failure of this damper will cause a low air flow condition that is recorded and alarmed.

Design Features to Mitigate Effects: Redundant Clean-up Filter Unit and Fans (184A & 185A) or (184B & 185B) are provided to allow operation of standby RSB Clean-up Filter Train (A or B).

Indication:

1. Annunciation, located on Back Panel (B002).

<u>Damper</u>	<u>PAR</u>
186A	25A-348
186B	25A-338

2. Clean-up Filter Unit Air Flow Recorder (FR-196A & 196B), located on Back Panel (B002).

3. Energized damper status lights, located on Back Panel (B002).

<u>Damper</u>	<u>Open</u>	<u>Closed</u>
MOD-186A	XL-186AC	XL-186AD
MOD-186B	XL-186BC	XL-186BD

NOTE: Failure of Damper (MOD-186A) will cause status indication (XL-186AD & XL-186BC) to be energized, while failure of Damper (MOD-186B) will cause indication (XL-186AC & XL-186BD) to be energized.

Recovery:

1. Verify start of redundant Clean-up Filter Unit and Fan (184A & 185A) or (184B & 185B), located on Back Panel (B002).
2. Repair/replace damper as described by section 6.2.2.7.3 of this SDD.

5.2.8 RWA A/C System (101) (AOI 25A-5)

5.2.8.1 Smoke

Design Features to Mitigate Effects: Smoke detectors (AE-032, 030) located in the main supply and exhaust ducts downstream of the fans, will shut down the system if smoke is present.

Indication:

1. AHU (101) smoke present alarm (PAR 25A-55), located on Local Panel (26BDB050).
2. AHU (101) and Exhaust Fans (161A & 161B) trouble alarm (PAR 25A-56), located on Back Panel (B002).
3. Supply and Exhaust Fan (141A, 141B, 161A & 161B) operating status lights (XL-141AB, 141BB, 161AB & 161BB) are energized on Local Panel (B006).
4. Supply and Exhaust air flow indication (FI-059 & 070) located on Local Panel (B006) is less than range specified by Section 3 (Table 3-2) of this SDD.

Recovery:

1. Place Supply & Exhaust Fan (141A, 141B, 161A & 161B) Control (HS-141A, 141B, 161A & 161B) located on Local Panel (B006) in the "STOP" position.
2. Refer to SDD-26 (SOI 26-13)
3. Following removal of smoke from RWA restart RSB-RWA HVAC System (101) as described by section 4.2.2.12.1 of this SDD.

B

5.2.8.2 Loss of RWA Negative Pressure (EOI 25A-5)

Design Features to Mitigate Effects: RSB RWA is monitored and alarmed to indicate an abnormal building pressure. In addition redundant Supply and Exhaust Fans are provided.

Indication:

1. RSB-RWA HVAC Trouble alarm (PAR 25A-57), located on Back Panel (B002).
2. Cell 640 d/p low alarm (PAR 25A-58), located on Local Panel (B006).
3. Cell 640 d/p indicator (PDIC-064), located on Local Panel (B006).

Recovery:

1. If loss of negative pressure is due to fan failure (141A & 161A or 141B & 161B), verify operation of Supply & Exhaust Fan (141A & 161A or 141B & 161B) as indicated by fan operating status lights, located on Local Panel (B006).
2. If loss of negative pressure is due to damper (AOD-068A, 059A or 058B, 069B) failure, manually open damper to restore negative pressure as sensed by cell 640 d/p indicator (PDIC-064), located on Local Panel (B006), refer to Section 5.2.8.7.2 of this SDD.

5.2.8.3 RSB-RWA Exhaust Filter Unit (171)

This unit will operate only during a high radiation condition sensed by System 96 monitor (164 RE068). For operation refer to section 5.2.3.1 RSB-RWA Radiation detection, and section 3.3 of this SDD for precautions relating to replacement of unit filter.

5.2.8.4 Failure of RWA Supply (141A, 141B) or Exhaust (161A, 161B) Fan

Design Features to Mitigate Effects: Two (50% capacity) Supply and Exhaust Fans are provided in addition to low air flow alarms. System operation may continue at reduced a capacity with one Supply and Exhaust Fan operating.

Indication:

1. AHU (101) supply air flow low and low-low alarms (PAR 25A-60 & 61), located on Back Panel (B002).
2. AHU (101) supply air flow low and low-low alarms (PAR 25A-59 & 62), located on Local Panel (B006).
3. AHU (101) exhaust air flow low and low-low alarm (PAR 25A-64 & 65), located on Back Panel (B002) and Local Panel (B006).
4. AHU (101) exhaust air flow low and low-low alarm (PAR 25A-63 & 66), located on Local Panel (B006).

B

Recovery:

1. Verify Exhaust Fan (161A & 161B) control (HS-161A & 161B) in the "AUTO" position on Local Panel (B006).

<u>Fan</u>	<u>Indication Start/Stop</u>
141A	XL-141AA-141AB
141B	XL-141BA-144BB
161A	XL-161AA-161AB
161B	XL-161BA-161BB

2. Place affected Supply and Exhaust Fan (141A or 161A or 141B or 161B) control (HS 141A & 161A) or (HS-141B & 161B), located on Local Panel (B006) in the "STOP" position.
3. Repair/replace affected fan as described by section 6.2.2.13 of this SDD.

5.2.8.5 AHU (101) Roll Filter

5.2.8.5.1 High d/p

Design Features to Mitigate Effects: Roll Filter is provided with a (manual) media advance switch and runout set point allowing sufficient time to allow filter media replacement.

Indication:

1. RSB RWA HVAC trouble alarm (PAR 25A-57), located on Back Panel (B002).
2. Roll Filter d/p high alarm (PAR 25A-67), located on Local Panel (B006).
3. Roll Filter d/p indicator (PDISH-051) locally.

Recovery:

1. Manually (TBD) advance filter media.
2. Repairs/replace media advance or media (as necessary) as described by section 6.3.8.1 of this SDD.

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5.2.8.5.2 Runout

Design Features to Mitigate Effects: Sufficient time exist following filter media runout alarm to replace filter.

B

Indication:

1. RSB-RWA HVAC trouble alarm (PAR 22A-57), located on Back Panel (B002).
2. Roll filter runout alarm (PAR 25A-68), located on Local Panel (B006).

Recovery:

1. Replace roll filter media as described by section 6.3.8.1 of this SDD.

5.2.8.5.3 AHU (101) Bag Filter (high d/p)

Design Feature to Mitigate Effects: Bag Filter d/p switch (PDISH-53) will activate an alarm if d/p exceeds limits.

Indication: High alarm (PAR 25A-69), located on the Local Panel (B006).

1. Bag Filter d/p.
2. RSB/RWA HVAC Trouble alarm (PAR 25A-57) located on Back Panel (B002).

Recovery: Refer to section 6.3.8.3 of this SDD.

5.2.8.6 Deleted

5.2.8.7 Damper Failure

5.2.8.7.1 RSB-RWA Supply Fan Discharge Damper (A0D-058A, 058B) Failure

This damper is open during normal operation and failure will cause reduced air flow through AHU (101).

Design Features to Mitigate Effects: Two (50%) Supply Fans and Discharge Dampers (A0D-058A & 058B) are provided in addition to annunciation alerting operator of a malfunction:

Indication:

1. Alarms located on Back Panel (B002) and Local Panel (B006).

	<u>PAR</u>
a. RSB-RWA HVAC Trouble	25A-57
b. AHU 101 Supply Air Flow Low	25A-60/59
c. AHU 101 Supply air Flow Low Low	25A-61/62

2. Damper (AOD-058A or 058B) status indicating lights located on Local Panel (B006).

<u>Damper</u>	<u>Open</u>	<u>Closed</u>
AOD-058A	XL-058AA	XL-058AB
AOD-058B	XL-058BA	XL-058BB

Recovery:

1. Verify damper status lights, located on Local Panel (B006). Failure of Damper (AOD-058A) will cause indication (XL-058AB & XL-058BA) to be energized, while failure of Damper (AOD-058B) will cause indication (XL-058AA & XL-058BB) to be energized.
2. Place related Supply and Exhaust Fan (141A & 161A) or (141B & 141B) Control (HS-141A & 161A) or (HS-141B & 161B), located on Local Panel (B006) in the "STOP" position.
3. Repair/replace affected Damper (AOD-058A or 058B) as described by section 6.2.2.13 of this SDD.

5.2.8.7.2 Exhaust Fan Discharge Damper (AOD-069A & 069B)

Design Features to Mitigate Effects: Two (50%) Exhaust Fans (161A & 161B) and Dampers (AOD-069A & 069B) are provided in addition to annunciation alerting operator of a malfunction.

Indication:

1. Alarm located on Back Panel (B002)

	<u>PAR</u>
a. AHU 101 Exhaust Fan Trouble	25A-56
b. RSB-RWA HVAC Trouble	25A-57
c. RWA Cell 640 d/p Low	25A-58
d. AHU 101 Exhaust Air Flow Low	25A-64
e. AHU 101 Exhaust Air Flow Low Low	25A-65

Recovery:

1. Verify Damper status lights, located on Local Panel (B006).

<u>Damper</u>	<u>Open</u>	<u>Closed</u>
069A	XL-069AA	069AB
069B	XL-069BA	069BB

2. Place related Supply and Exhaust Fan (141A & 161A) or (141B & 161B) Control (HS-141A & 161A) or (HS-141B & 161B), located on Local Panel (B006) in the "STOP" position.
3. Repair/replace affected Damper (A0D-069A or 069B) as described by section 6.2.2.13 of this SDD.

5.2.8.7.3 Exhaust Fan Vortex Damper (PAD-064A, 064B) Failure

Design Features to Mitigate Effects: Malfunction of Exhaust Fan (161A or 161B) Vortex Damper (A0D-064A or 064B) will be annunciated to alert operator.

Indication:

1. Alarms, located on Local Panel (B006) and Back Panel (B002).

	<u>Panel</u>	<u>PAR</u>
a. RWA Cell 640 d/p Low	B006	25A-58
b. RSB-RWA HVAC Trouble	B002	25A-57

2. Cell 640 Differential Pressure indicator, (PDIC-064) located on Local Panel (B006).

Recovery:

1. Verify Cell 640 Differential Pressure, as indicated by (PDIC-064) located on Local Panel (B006) is within range specified by Section 3 (Table 3-2) of this SDD.
2. If d/p as indicated by (PDIC-064) is not within range specified, place related Supply and Exhaust Fan (141A & 161A) or (141B & 161B) Control (HS-141A & 161SA) or (HS-141B & 161B), located on Local Panel (B006) in the "STOP" position.
3. Refer to section 6.2.2.13 of this SDD for repair/replacement of affected damper.

5.2.9 RSB-FHA Handling Unit (100) Operation During TMBDB (EOI 25A-10)

Air Handling Unit (100) operates continuously during normal plant operation and as described by section 5.2.1.2 of this SDD during off normal conditions. During a TMBDB scenario prior to venting of containment the following components should be shutdown.

<u>Component</u>		<u>Section</u>
RSB-AHU	100	4.2.4.1
Supply Fans	140A & 140B	4.2.4.1
Exhaust Fans	160A & 160B	4.2.4.1
Clean-up Filter Unit	184A & 184B	4.2.4.1

5.3 STEAM GENERATOR BUILDING

All equipment and instrument numbers are prefixed by 25AGA.

All rack and panel numbers are prefixed by 25AA (Back) and 25NI (Local).

5.3.1 Steam Generator (Loops 1, 2, & 3), AC System (201, 202 and 203) (AOI 25A-9)

5.3.1.1 Loss of Off-Site A/C Power

Design Features to Mitigate Effects: AC System (201, 202 and 203) are provided with redundant Supply (241A,B, 242A,B, 243A,B) and Exhaust Fans (261A,B 262A,B, 263A,B) that are supplied by a class 1E bus (following a 1 minute time delay) and are automatically started "A" Fans are started while "B" Fans are supplied as backup.

Indication:

1. Operating status lights (following diesel sequence) System 201, located on Back Panel (B002) will be energized.

			<u>Status</u>	<u>Indication</u>
a.	Damper	MOD-001A	Open	XL-001AC
b.	Damper	TMD-001B	Modulate	XL-001BC
c.	Damper	TMD-001C	Modulate	XL-001CC
d.	Damper	TMD-001D	Modulate	XL-001DC
e.	Damper	TMB-001E	Modulate	XL-001EC
f.	Supply Fan	241A	*	XL-241AC
g.	Supply Fan	241B	*	XL-241BC
h.	Exhaust Fan	261A	*	XL-261AC
i.	Exhaust Fan	261B	*	XL-261BC
j.	Discharge Damper	MOD-010A	*	XL-010AC
k.	Discharge Damper	MOD-010B	*	XL-010BC
l.	Discharge Damper	MOD-012A	*	XL-012AC
m.	Discharge Damper	MOD-012B	*	XL-012BC

*NOTE: Only 1 Supply/Exhaust Fan (241A & 261A) or (241B & 261B) normally operate.

2. Operating status lights (following diesel sequence) System 202, located on Back Panel (B002) will be energized.

			<u>Status</u>	<u>Indication</u>
a.	Damper	MOD-025A	Open	XL-025AC
b.	Damper	TMD-025B	Modulate	XL-025BC
c.	Damper	TMD-025C	Modulate	XL-025CC
d.	Damper	TMD-025D	Modulate	XL-025DC
e.	Damper	TMD-025E	Modulate	XL-025EC
f.	Supply Fan	242A	*	XL-242AC
g.	Supply Fan	242B	*	XL-242BC
h.	Exhaust Fan	262A	*	XL-262AC
i.	Exhaust Fan	262B	*	XL-262BC
j.	Discharge Damper	MOD-033A	*	XL-033AC
k.	Discharge Damper	MOD-033A	*	XL-033BC
l.	Discharge Damper	MOD-036A	*	XL-036AC
m.	Discharge Damper	MOD-036B	*	XL-036BC

*NOTE: Only 1 Supply/Exhaust Fan (242A & 262A) or (242B & 262B) normally operate.

3. Operating status lights (following diesel sequence) System 203, located on Back Panel (B002) will be energized.

			<u>Status</u>	<u>Indication</u>
a.	Damper	MOD-047A	Open	XL-047AC
b.	Damper	TMD-047B	Modulate	XL-047BC
c.	Damper	TMD-047C	Modulate	XL-047CC
d.	Damper	TMD-047D	Modulate	XL-047DC
e.	Damper	TMD-047E	Modulate	XL-047EC

			<u>Status</u>	<u>Indication</u>
f.	Supply Fan	243A	*	XL-243AC
g.	Supply Fan	243B	*	XL-243BC
h.	Exhaust Fan	263A	*	XL-263AC
i.	Exhaust Fan	263B	*	XL-263BC
j.	Discharge Damper	MOD-056A	*	XL-056AC
k.	Discharge Damper	MOD-056B	*	XL-056BC
l.	Discharge Damper	MOD-058A	*	XL-058AC
m.	Discharge Damper	MOD-058B	*	XL-058BC

*NOTE: Only 1 Supply/Exhaust Fan (243A & 263A) or (243B & 263B) normally operate.

Recovery: No operator action is required to continue operation following restoration of off-site AC power.

1. Verify Loop 1, 2 & 3 Supply & Exhaust Fans start, following sequencing by diesel (1 minute time delay) as indicated on Local Panel (B002A, B002B & B002C) or Back Panel (B002) by energized status lights.

<u>Loop</u>	<u>Fan</u>	<u>Indication</u>	<u>Panel</u>
1	241A & 261A	XL-241AC & 261AC	B002
2	242A & 262A	XL-242AC & 262AC	B002
3	243A & 263A	XL-243AC & 263AC	B002

NOTE: If Loop Cell Fan "A" malfunctions fan "B" (as indicated below) shall start.

<u>Loop</u>	<u>Fan</u>	<u>Indication</u>	<u>Panel</u>
1	241B & 261B	XL-241BC & 261BC	B002
2	242B & 262B	XL-242BC & 262BC	B002
3	243B & 263B	XL-243BC & 263BC	B002

2. Verify the damper positions as indicated above (indication section).

5.3.1.2 Loss of Chilled Water

Design Features to Mitigate Effects: Upon sensing an excessive temperature at the fan outlet, the system sequence will shift to mitigate effects of cooling loss.

Indication:

1. Redundant Supply and Exhaust Fan (241A, 261A; 242A, 262A, 243A, 263A or 241B, 261B; 242B, 262B; 243B, 263B) start status lights on Back Panel (B002).
2. System Bypass Damper (TMD-173, 031, 054) status indication, located on Back Panel (B002).
3. System Return and Bypass Dampers (TMD-001B, 001C, 001D, 001E; 025B, 025C, 025D, 025E; 047B, 047C, 047D, 047E) status (modulate) indications, located on Back Panel (B002) are energized.

Recovery: Upon reaching a temperature of 75°F (Supply Air) the system will operate as described above.

1. Verify indications described above and located on Back Panel (B002) are energized.
 - a. Loop 1

<u>Component</u>		<u>Status</u>
Fans	241A & 261A or 241B & 261B	Start
Dampers	TMD-173	Open
	TMD-001B, 001C, 001D, 001E	Modulate

b. Loop 2

Fans	242A & 262A or 242B & 262B	Start
Dampers	TMD-031	Open
	TMD-025B, 025C, 025D, 025E	Modulate

<u>Component</u>	<u>Status</u>
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c. Loop 3

Fans	243A & 263A or 243B & 263B	Start
Dampers	TMD-054	Open
	TMD-047B, 047C, 047D, 047E	Modulate

2. Following restoration of Chilled Water, return system to operation as described by section 4.3.2.1 of this SDD.

NOTE: System must be reset (manually) by stopping both fans.

5.3.1.3 Damper Failure

5.3.1.3.1 Loop 1 Supply Fan Discharge Damper (MOD-010A, 010B) Failure

Damper related to operating Supply Fan (241A or 241B) is open during normal operation. Damper related to standby Supply Fan is closed during normal operation.

Design Features to Mitigate Effects: Redundant Supply Fans (241A & 241B) are provided to allow Loop 1 HVAC operation with one Supply Fan shutdown.

Indication:

1. Energized damper status indicator lights, located on Back Panel (B002).

<u>Damper</u>	<u>Open</u>	<u>Closed</u>
MOD-010A	XL-010AC	XL-010AD
MOD-010B	XL-010BC	XL-010BD

NOTE: Failure of Damper (MOD-010A) will cause indication (XL-010AB & XL-010BC) to be energized, while failure of Damper (MOD-010B) will cause indication (XL-010AC & XL-010BB) to be energized.

2. Annunciation:

AHU 201 Supply Air Flow Low Alarm (PAR 25A-306).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (241A & 261A) or (241B & 261B), as indicated by:
 - a. Supply Fan operating status light (XL-241AC or 241BC), located on Back Panel (B002) is energized.
 - b. AHU 201 Supply Air Flow Alarm (PAR 25A-306) deenergized, on Back Panel (B002).
2. Repair/replace Damper (010A or 010B) as described by section 6.2.3.1 of this SDD and MOP 25A-53.

5.3.1.3.2 Loop 1 Exhaust Fan Discharge Damper (MOD-012A, 012B) Failure

Damper related to operating Exhaust Fan (261A or 261B) is open during normal operation. Damper related to standby Exhaust Fan is closed during normal operation.

Design Features to Mitigate Effects: Redundant Exhaust Fans (261A & 261B) are provided to allow Loop 1 HVAC operation with one Exhaust Fan shutdown.

Indication:

1. Damper status indicator lights, located on Back Panel (B002) are energized.

NOTE: Failure of Damper (MOD-012A) will cause indication (XL-012AB & XL-012BC) to be energized, while failure of Damper (MOD-012B) will cause indication (XL-012AC & XL-012BB) to be energized.

2. Damper status indication, located on Local Panel (B002A) Failure of Damper (MOD-012A) will cause indication (XL-012AB & XL-012BA) to be energized, while failure of Damper (MOD-012B) will cause indication (XL-012AB & XL-012BA) to be energized.

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-012A	B002A	XL-012AA	XL-012AB
MOD-012A	B002	XL-012AC	XL-012AD
MOD-012B	B002A	XL-012BA	XL-012BD
MOD-012B	B002	XL-012BC	XL-012BD

3. Annunciation:

AHU 201 Return Air Flow Low Alarm (PAR 25A-307).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (241A & 261A) or (241B & 261B), as indicated by:
 - a. Exhaust Fan operating status light (XL-261AC or 261BC), located on Back Panel (B002) is energized.
 - b. AHU 201 Supply Air Flow Alarm (PAR 25A-306) deenergized, on Back Panel (B002).

2. Repair/replace Damper (012A or 012B) as described by section 6.2.3.1 of this SDD and MOP 25A-53.

5.3.1.3.3 Loop 2 Supply Fan Discharge Damper (MOD-033A, 033B) Failure

Damper related to Operating Supply Fan (242A or 242B) is open during normal operation. Damper related to standby Supply Fan is closed during normal operation.

Design Features to Mitigate Effects: Redundant Supply Fans (242A & 242B) are provided to allow Loop 2 HVAC operation with one Supply Fan shutdown.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-033A	B002B	XL-033AA	XL-033AB
MOD-033A	B002	XL-033AC	XL-033AD
MOD-033B	B002	XL-033BC	XL-033BD
MOD-033B	B002B	XL-033BA	XL-033BB

1. Damper status indicator lights, located on Back Panel (B002). Failure of Damper (MOD-033A) will cause indication (XL-033AD & XL-033BC) to be energized, while failure of Damper (MOD-033B) will cause indication (XL-033AC & XL-033BD) to be energized.
2. Damper status indicating lights, located on Local Panel (B002B). Failure of Damper (MOD-033A) will cause indication (XL-033AB & XL-033BA) to be energized while failure of Damper (MOD-033B) will cause indication (XL-033AA & XL-033BB) to be energized.
3. Annunciation:

AHU 202 Supply Air Flow Low Alarm (PAR 25A-311).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (242A & 262A) or (242B & 246B), as indicated by:
 - a. Supply Fan operating status light (XL-242AC or 242BC), located on Back Panel (B002) is energized.
 - b. AHU 202 Supply Air Flow Alarm (PAR 25A-311) deenergized, on Back Panel (B002).
2. Repair/replace Damper (033A or 033B) as described by section 6.2.3.1 of this SDD and MOP 25A-53.

5.3.1.3.4 Loop 2 Exhaust Fan Discharge Damper (MOD-036A, 036B) Failure

Damper related to operating Exhaust Fan (262A or 262B) is open during normal operation. Damper related to standby Exhaust Fan is closed during normal operation.

Design Features to Mitigate Effects: Redundant Exhaust Fans (262A & 262B) are provided to allow Loop 2 HVAC operation with one Exhaust Fan shutdown.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-036A	B002B	XL-036AA	XL-036AB
MOD-036A	B002	XL-036AC	XL-036AD
MOD-036B	B002	XL-036BC	XL-036BD
MOD-036B	B002B	XL-036BA	XL-036BC

1. Damper status indicator lights, located on Back Panel (B002). Failure of Damper (MOD-036A) will cause indication (XL-036AD & XL-036AC) to be energized, while failure of Damper (MOD-036B) will cause indication (XL-036AC & XL-036BD) to be energized.
2. Damper status indication lights, located on Local Panel (B003B). Failure of Damper (MOD-036A) will cause indication (XL-036AB & XL-036BA) to be energized, while failure of Damper (MOD-036B) will cause indication (XL-036AA & XL-036BB) to be energized.
3. Annunciation:

AHU 202 Exhaust Air Flow Low Alarm (PAR 25A-312).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (242A & 262A) or (242B & 262B), as indicated by:
 - a. Exhaust Fan operating status light (XL-262AC or 262BC), located on Back Panel (B002) is energized.
 - b. AHU 202 Exhaust Air Flow Alarm (PAR 25A-312) deenergized on Back Panel (B002).
2. Repair/replace Damper (036A or 036B) as described by section 6.2.3.1 of this SDD and MOP 25A-53.

5.3.1.3.5 Loop 3 Supply Fan Discharge Damper (MOD-056A, 056B) Failure

Damper related to operating Supply Fan (243A or 243B) is open during normal operation. Damper related to standby Supply Fan is closed during normal operation.

Design Features to Mitigate Effects: Redundant Supply Fans (243A & 243B) are provided to allow Loop 3 HVAC operation with one Supply Fan shutdown.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-056A	B002C	XL-056AA	XL-056AB
MOD-056A	B002	XL-056AC	XL-056AD
MOD-056B	B002	XL-056BC	XL-056BD
MOD-056B	B002C	XL-056BA	XL-056BB

1. Damper status indicator lights, located on Back Panel (B002). Failure of Damper (MOD-056A) will cause indication (XL-056AD & XL-056BC) to be energized, while failure of damper (MOD-056B) shall cause indication (XL-056AC & XL-056BD) to be energized.
2. Damper status indication, located on Local Panel (B002C). Failure of Damper (MOD-056A) will cause indication (XL-056AB & XL-056BA) to be energized, while failure of Damper (MOD-056B) shall cause indication (XL-056AA & XL-056BB) to be energized.
3. Annunciation:

AHU 203 Supply Air Flow Low Alarm (PAR 25A-316).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (243A & 263A) or (243B & 263B), as indicated by:
 - a. Supply Fan operating status light (XL-243AC or 243BC), located on Back Panel (B002) is energized.

b. AHU 203 Supply Air Flow Alarm (PAR 25A-317) deenergized, on Back Panel (B002).

2. Repair/replace Damper (056A or 056B) as described by section 6.2.3.1 of this SDD and MOP 25A-53.

5.3.1.3.6 Loop 3 Exhaust Fan Discharge Damper (MOD-058A, 058B) Failure

Damper related to operating Exhaust Fan (263A or 263B) is open during normal operation. Damper related to standby Exhaust Fan is closed during normal operation.

Design Features to Mitigate Effects: Redundant Exhaust Fans (263A & 263B) are provided to allow Loop 3 HVAC operation with one Exhaust Fan shutdown.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-058A	B002C	XL-058AA	XL-058AB
MOD-058A	B002	XL-058AC	XL-058AD
MOD-058B	B002C	XL-058BA	XL-058BB
MOD-058B	B002	XL-058BC	XL-058BD

1. Damper status indicator lights, located on Back Panel (B002). Failure of Damper (MOD-058A) will cause indication (XL-058AD & XL-058BC) to be energized, while failure of Damper (MOD-058B) will cause indication (XL-058AC & XL-048BD) to be energized.
2. Damper status indicator lights, located on Local Panel (B002C). Failure of Damper (MOD-058A) will cause indication (XL-058AB & XL-058BA) to be energized, while failure of Damper (MOD-058B) will cause indication (XL-058AA & XL-058BB) to be energized.

3. Annunciation:

AHU 203 Exhaust Air Flow Low Alarm (PAR 25A-317).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (243A & 263A) or (243B & 263B), as indicated by:
 - a. Exhaust Fan operating status light (XL-263AC or 263BC), located on Back Panel (B002) is energized.
 - b. AHU 203 Exhaust Air Flow Alarm (PAR 25A-316) deenergized, on Back Panel (B002).
2. Repair/replace Damper 058A or 058B) as described by section 6.2.3.1 of this SDD and MOP 25A-53.

5.3.2 IB A/C System (204, 206) (AOI 25A-10)

5.3.2.1 Operating Fan Failure

Design Features to Mitigate Effects: Redundant Supply and Exhaust Fans are provided and shall automatically start on failure of operating Supply or Exhaust Fan.

Indication:

1. Fan status indicator lights located on Back Panel (B002) and Local Panel (B002L or B002M).

<u>Fan</u>	<u>Start</u>	<u>Stop</u>	<u>Panel</u>
244A	XL-244AA	XL-244AB	B002M
244A	XL-244AC	XL-244AD	B002
244B	XL-244BA	XL-244BB	B002M
244B	XL-244BC	XL-244BD	B002
264A	XL-264AA	XL-264AB	B002M
264A	XL-264AC	XL-264AD	B002
264B	XL-264BA	XL-264BB	B002M
264B	XL-264BC	XL-264BD	B002
249A	XL-249AA	XL-249AB	B002L
249A	XL-249AC	XL-249AD	B002
249B	XL-249BA	XL-249BB	B002L
249B	XL-249BC	XL-249BD	B002
267A	XL-267AA	XL-267AB	B002L
267A	XL-267AC	XL-267AD	B002
267B	XL-267BA	XL-267BB	B002L
267B	XL-267BC	XL-267BD	B002

B

2. Air flow low alarm (PAR 25A-70,71,72,73) or (PAR 25A-240,247,52,419), located on Back Panel (B002) and Local Panel (B002M or B002L).

Recovery:

1. Verify Redundant Supply and Exhaust Fan (244A, 264A) or (244B, 264B); (249A, 267A) or (249B, 267B) operating status indication, located on Back Panel (B002) or Local Panel (B002M or B002L).
2. Place affected fan and related fan (Supply & Exhaust) Control (HS-244AB & 264AB) or (HS-244BB & 264BB); (HS249AB & 267AB) or (HS249BB & 267BB), located on Back Panel (B002) in the "STOP" position.

3. Repair/replace affected fan as described by section 6.2.3.2 of this SDD.

5.3.2.2 Loss of Off-Site AC Power

Design Features to Mitigate Effects: AC System (204, 206) are provided with redundant Supply (244A,B, 249A,B) and Exhaust (264A,B, 267A,B) Fans that are supplied from Class 1E power (diesel) automatically, following 1 minute time delay. Should Fan "A" fail to start followings sequencing by the diesel, Fan "B" shall be started automatically.

Indication:

1. Fan operating status light, as listed in section 5.3.2.1 of this SDD, located on Back Panel (B002) and Local Panel (B002L or B002M) are energized.
2. Air Flow Low alarm (PAR 25A-70,71,72,73) or (PAR 25A-240,247,52,414), located on Back Panel (B002L or B002M).

Recovery:

No operator action is required, upon restoration of off-site AC power, to continue Unit operation.

5.3.2.3 Loss of Chilled Water

Design Features to Mitigate Effects: Upon sensing an excessive temperature at the fan outlet, the system sequence will shift to mitigate effects of cooling loss.

Indication:

1. System Bypass Damper (TMD-110, 238) open status indication (XL-110A & 238A), located on Back Panel (B002).
2. Dampers (TMD-072B, 072C, 072D & 072E, 196B, 196C, 196D & 196E) status indication (Modulate), located on Back Panel (B002).

Recovery: Upon reaching a temperature of 75°F (Supply Air) the system will operate as described.

1. Verify indications described above, and located on Back Panel (B002) are energized.

	<u>Component</u>	<u>Status</u>
<u>204</u>		
Fan	244A, 244B, 264A, 264B	Start
Dampers	TMD-110	Open
	TMD-072B, 072C, 072D, 072E	Modulate
<u>206</u>		
Fan	249A, 249B, 267A, 267B	Start
Dampers	TMD-238	Open
	TMD-196B, 196C, 196D, 196E	Modulate

2. Following restoration of Chilled Water, return system to operation as described by section 4.3.2.2 of this SDD.

NOTE: System must be reset (manually) by stopping both fans.

5.3.2.4 Fan Excess Vibration (244A, 244B, 264A, 264B, 249A, 249B, 267A, 267B)

Design Features to Mitigate Effects: The Supply and Exhaust Fans are provided with Vibration switches (YSH-129A, 129B, 199A, 199B for System 204; YSH-126A, 126B, 128A, 128B for System 206), and will alarm if vibration beyond a safe limit is detected.

Indication:

1. Fan vibration alarm, located on Back Panel (B002) and Local Panel (B002L or B002M).

<u>Fan</u>	<u>PAR</u>	<u>Panel</u>
244A	25A-74	B002
	25A-75	B002L
244B	25A-76	B002
	25A-77	B002M
264A	25A-78	B002L
	25A-79	B002
264B	25A-80	B002M
	25A-81	B002
249A	25A-82	B002L
	25A-83	B002
249B	25A-84	B002M
	25A-85	B002

B

<u>Fan</u>	<u>PAR</u>	<u>Panel</u>
267A	25A-86	B002L
	25A-87	B002
267B	25A-88	B002M
	25A-89	B002

Recovery:

1. Shift operating fans as described by section 4.3.3.12.1 or 4.3.3.12.2.
2. Determine source of vibration and repair/replace as described by MOP 25A-17.

5.3.2.5 AHU (204, 206) Roll Filter High d/p

Design Features to Mitigate Effects: Roll Filter automatically advances media until it reaches a runout point (indicated in section 3 (Table 3-3) of this SDD). Indication and a high d/p alarm are provided to alert operator of excessive d/p across the Roll Filter.

Indication:

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
204	d/p Indicator	PDISH-074	Local	-
204	High d/p Alarm	PDSHH-075	B002M	25A-91
		PDSHH-075	B002	25A-92
206	d/p Indicator	PDISH-086	Local	-
206	High d/p Alarm	PDSHH-087	B002L	25A-94
		PDSHH-087	B002	25A-95

Recovery: Replace roll filter media as described by section 6.3.8.1 of this SDD.

5.3.2.6 AHU (204, 206) Roll Filter Runout

Design Features to Mitigate Effects: Roll Filter is equipped with an alarm to alert operator when Roll Filter media has run out.

Indication:

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
204	Runout Switch	ZSL-112	B002	25A-90
		ZSL-112	B002M	25A-90
206	Runout Switch	ZSL-113	B002	25A-97
		ZSL-113	B002L	25A-93

Recovery:

1. Replace Roll Filter as described by section 6.3.8.1 of this SDD.

5.3.2.7 AHU (204, 206) Bag Filter

Design Features to Mitigate Effects: Bag Filter is equipped with an alarm to alert operator of a high d/p.

Indications:

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
204	d/p Indication	PDISH-076	Local	-
204	High d/p Alarm	PDISH-076	B002	25A-99
		PDISH-076	B002M	25A-98
206	d/p Indication	PDISH-088	Local	-
206	High d/p Alarm	PDISH-088	B002	25A-101
		PDISH-088	B002L	25A-100

Recovery: Replace Bag Filter as described by section 6.3.8.3 of this SDD.

5.3.2.8 AHU (204, 206) Low Temperature

Design Features to Mitigate Effects: Upon sensing a low temperature (AHU outlet) will alarm, alerting operator to loss of heating.

Indication:

1. Temperature indicator (TI-077, 089), located on Local Panel (B002L or B002M).
2. AHU leaving air temperature (logging) (TI-011A, TI-012A).
3. AHU (204 or 206) high temperature alarm (PAR 25A-102, 103, 104, 105), located on Back Panel (B002) and Local Panel (B002L or B002M).

Recovery:

Verify hot water temperature control valve position (visually) if low temperature is due to TCV failure repair/replace as described by SDD-75A.

5.3.2.9 Damper Failure

5.3.2.9.1 AHU 204 Supply Fan Discharge Damper (MOD-082A, 082B) Failure

Damper related to operating Supply Fan (244A or 244B) is open during normal operation. Damper related to standby Supply Fan is closed during normal operation. Malfunction of damper will cause shutdown of operating fan and start of redundant fan.

Design Features to Mitigate Effects: Redundant Supply Fans and Discharge Dampers (MOD-082A & 082B) are provided to allow continued operation of AHU 204 upon malfunction (shutdown) of one Supply fan.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
082A	B002M	XL-082AA	XL-082AB
082A	B002	XL-082AC	XL-082AD
082B	B002	XL-082BC	XL-082BD
082B	B002M	XL-082BA	XL-082BA

1. Damper status indication, located on Back Panel (B002). Failure of Damper (MOD-082A) will cause indication (XL-082AD and XL-082BC) to be energized, while failure of Damper (MOD-082B) will cause indication (XL-082AC and XL-082BD) to be energized.
2. Damper status indication, located on Local Panel (B002M). Failure of Damper (MOD-082A) will cause indication (XL-082AB and XL-082BA) to be energized, while failure of damper (MOD-082B) will cause indication (XL-082AA and XL-082BB) to be energized.
3. Annunciation, located on Back Panel (B002).
 - a. Train A Air Flow Low Alarm (PAR 25A-71/73).
 - b. Train B Air Flow Low Alarm (PAR 25A-52/419).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (244A & 264A) or (244B & 264B), as indicated by:
 - a. Supply Fan operating status light (XL-244AC or 244BC), located on Back Panel (B002) is energized.
 - b. Exhaust Fan operating status light (XL-264AC or 264BC), located on Back Panel (B002) is energized.

- c. AHU (204) Supply Air Flow Low Alarm (PAR 25A-71152) deenergized, located on Back Panel (B002).
2. Repair/replace Damper (082A or 082B) as described by section 6.2.3.2 of this SDD.

5.3.2.9.2 AHU 204 Exhaust Fan Discharge Damper (MOD-095A, 095B) Failure

Damper related to operating Exhaust Fan is open during normal operation. Damper related to standby Exhaust Fan is closed during normal operation. Malfunction of damper will cause shutdown of operating fans and start of redundant fans.

Design Features to Mitigate Effects: Redundant Exhaust Fans and Discharge Dampers (MOD-095A & 095B) are provided to allow continued operation of AHU 204 upon malfunction (shutdown) of one Exhaust Fan.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-045A	B002M	XL-095AA	XL-095AB
MOD-095A	B002	XL-095AC	XL-095AD
MOD-095B	B002	XL-095BC	XL-095BD
MOD-095B	B002M	XL-095BA	XL-095BB

1. Damper status indication, located on Back Panel (B002). Failure of Dampers (MOD-095A) will cause indication (XL-095AD and XL-095BC) to be energized, while failure of Damper (MOD-095B) will cause indication (XL-095AC and XL-095BD) to be energized.
2. Damper status indication, located on Local Panel (B002M). Failure of Damper (MOD-095A) will cause indication (XL-095AB and XL-095BA) to be energized, while failure of Damper (MOD-095B) will cause indication (XL-095AA and XL-095BB) to be energized.

3. Annunciation, located on Back Panel (B002).

- a. Train A Air Flow Low Alarm (PAR 25A-71/52).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (244A & 264A) or (244B & 264B), as indicated by:
 - a. Exhaust Fan operating status light (XL-264AC or 264BC), located on Back Panel (B002) is energized.
 - b. Supply Fan operating status light (XL-244AC or 244BC), located on Back Panel (B002) is energized.
 - c. AHU (204) Exhaust/Supply Air Flow Low Alarm (PAR 25A-71/52), located on Back Panel (B002), is deenergized.
2. Repair/replace Damper (MOD-095A or 095B) as described by section 6.2.3.2 of this SDD.

5.3.2.9.3 AHU 206 Supply Fan Discharge Damper (MOD-198A, 198B) Failure

Damper related to operating Supply Fan (249A or 249B) is open during normal operation. Damper related to standby Supply Fan is closed during normal operation. Malfunction of damper will cause shutdown of operating fans and start of redundant fans.

Design Features to Mitigate Effects: Redundant Supply Fans and Discharge Dampers (MOD-198A & 198B) are provided to allow continued operation of AHU 206 upon malfunction (shutdown) of one Supply Fan.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
198A	B002L	XL-198AA	XL-198AB
198A	B002	XL-198AC	XL-198AD
198B	B002	XL-198BC	XL-198BD
198B	B002L	XL-198BA	XL-198BB

1. Damper status indication, located on Back Panel (B002). Failure of Damper (MOD-198A) will cause indication (XL-198AD & XL-198BC) to be energized while failure of Damper (MOD-198B) will cause indication (XL-198AC & XL-198BD) to be energized.
2. Damper status indication, located on Local Panel (B002L). Failure of Damper (MOD-198A) will cause indication (XL-198AB & XL-198BA) to be energized, while failure of Damper (MOD-198B) will cause indication (XL-198AA and 198BB) to be energized.
3. Annunciation, located on Back Panel (B002).
 - a. Train A Air Flow Low Alarm (PAR 25A-71/52).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (249A & 267A) or (249B & 267B), as indicated by:
 - a. Exhaust Fan operating status light (XL-249AC or 249BC), located on Back Panel (B002) is energized.
 - b. Supply Fan operating status light (XL-267AC or 267BC), located on Back Panel (B002) is energized.

c. AHU (206) Supply Air Flow Low Alarm (PAR 25A-71/52), located on Back Panel (B002), is deenergized.

2. Repair/replace Damper (MOD-095A or 095B) as described by section 6.2.3.2 of this SDD.

5.3.2.9.4 AHU 204 Exhaust Fan Discharge Damper (MOD-200A, 200B) Failure

Damper related to operating Exhaust Fan is open during normal operation. Damper related to standby Exhaust Fan is closed during normal operation. Malfunction of damper will cause shutdown of operating fans and start of redundant fans.

Design Features to Mitigate Effects: Redundant Exhaust Fans and Discharge Dampers (MOD-200A & MOD-200B) are provided to allow continued operation of AHU 206 upon malfunction (shutdown) of one Exhaust Fan.

Indication:

<u>Damper</u>	<u>Panel</u>	<u>Open</u>	<u>Closed</u>
MOD-200A	B002L	XL-200AA	XL-200AB
MOD-200A	B002	XL-200AC	XL-200AD
MOD-200B	B002	XL-200BC	XL-200BD
MOD-200B	B002L	XL-200BA	XL-200BB

1. Damper status indication, located on Back Panel (B002). Failure of Daper (MOD-200A) will cause indication (XL-200AD & XL-200BC) to be energized, while failure of Damper (MOD-200B) will cause indication (XL-200AC & XL-200BD) to be energized.
2. Damper status indication, located on Local Panel (B002L). Failure of Damper (MOD-200A) will cause indication (XL-200AB & XL-200BA) to be energized, while failure of Damper (MOD-200B) will cause indication (XL-200AA & XL-200BB) to be energized.

3. Annunciation, located on Back Panel (B002).

a. Train A Air Flow Low Alarm (PAR 25A-73/52).

Recovery:

1. Verify start of redundant Supply & Exhaust Fans (249A & 267A) or (249B & 267B), as indicated by:

a. Exhaust Fan operating status light (XL-267AC or 267BC), located on Back Panel (B002) is energized.

b. Supply Fan operating status light (XL-249AC or 249BC), located on Back Panel (B002) is energized.

c. AHU (206) Exhaust/Supply Fair Flow Low Alarm (PAR 25A-73/52), located on Back Panel (B002), is deenergized.

2. Repair/replace Damper (MOD-200A or 200B) as described by section 6.2.3.2 of this SDD.

5.3.3 System 56 Panel Unit Coolers (237A, 237B, 237C) (AOI 25A-11)

5.3.3.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit coolers are supplied with 1E power and shall automatically shift to 1E (diesel) power supply following diesel sequencing (10 sec. time delay).

Indication:

1. Fan operating status lights, located on Back Panel (B002) and Local Panel (B002P or B002N).

<u>U.C.</u>	<u>Panel</u>	<u>Start</u>	<u>Stop</u>
237A	B002	XL-237AC	XL-237AD
	B002P	XL-237AA	XL-237AB
237B	B002	XL-237BC	XL-237BD
	B002N	XL-237BA	XL-237BB
237C	B002	XL-237CC	XL-237CD
	B002P	XL-237CA	XL-237CB

2. Unit Cooler Low Flow (FSL-211, 217 or 254) alarm (PAR 25A-106, 108 or 110), located on Local Panel (B002P or B002N).
3. Unit Cooler Low Flow alarm (PAR 25A-107, 109, 111), located on Back Panel (B002).

Recovery: No operation action is required to continue Unit Cooler (237A, 237B or 237C) operation following restoration of off-site AC Power by System 12.

1. Verify Unit Cooler start using indication (listed above) located on Back Panel (B002) or Local Panel (B002P or B002N).
2. Following restoration of off-site AC power, no operator action is required to continue Unit Cooler operation.

5.3.3.2 Operating Fan Failure

5.3.3.2.1 Fan 237A

Design Features to Mitigate Effects: Unit Cooler Supply Fans are provided with 1E power and low air flow alarms to alert operator.

Indication, located on Back Panel (B002) and Local Panel (B002N).

	<u>237A</u>	<u>PAR</u>
Air Flow Low	FSL-211	25A-106/107
Fan Status Lights	XL-237AB & XL-237AD	
Cell Temperature Logging	TE-235	

Recovery:

1. Place affected fan (237A) Control (HS-237AB) located on Back Panel (B002), in the STOP position.
2. Provide temporary/portable ventilation (System 45) if possible.
3. Repair/replace affected fan as described by section 6.2.3.8 of this SDD.

5.3.3.2.2 Fan 237B

Design Features to Mitigate Effects: Unit Cooler Supply Fans are provided with 1E power and low air flow alarms to alert operator.

Indication, located on Back Panel (B002) and Local Panel (B002P).

	<u>237B</u>	<u>PAR</u>
Air Flow Low	FSL-217	25A-108/109
Fan Status Lights	XL-237BB & XL-237BD	
Cell Temperature Logging	TE-236	

Recovery:

1. Place affected fan (237B) Control (HS-237BB), located on Back Panel (B002), in the "STOP" position.
2. Provide temporary/portable ventilation (System 45) if possible.
3. Repair/replace affected fan as described by section 6.2.3.8 of this SDD.

5.3.3.2.3 Fan 237C

Design Features to Mitigate Effects: Unit Cooler Supply Fans are provided with 1E power and low air flow alarms to alert operator.

Indication, located on Back Panel (B002) and Local Panel (B002N, B002P).

	<u>237C</u>	<u>PAR</u>
Air Flow Low	FSL-1101	25A-110/111
Fan Status Lights	XL-237CB & XL-237CD	-
Cell Temperature Logging	TE-237	

Recovery:

1. Place affected fan (237C) Control (HS-237CB), located on Back Panel (B002), in the "STOP" position.
2. Provide temporary/portable ventilation (System 45) if possible.
3. Repair/replace affected fan as described by section 6.2.3.8 of this SDD.

5.3.3.3 Filters

5.3.3.3.1 Throwaway Filter (237A) (High d/p)

Design Features to Mitigate Effects: Throwaway Filters are provided with d/p indication and alarm to alert operator prior to an excessive pressure drop across the filter.

Indication: Located on Back Panel (B002) and Local Panel (B002P).

	<u>237A</u>	<u>PAR</u>
1. Filter d/p Indication (local)	PDISH-207	
2. NI HVAC Trouble Alarm	PDISH-207	25A-22

Recovery:

1. Place affected Unit Cooler (237A) Control (HS-237AB), located on Back Panel (B002), in the "STOP" position.
2. Replace Throwaway Filter as described by section 6.3.8.2 of this SDD.

5.3.3.3.2 Throwaway Filter (237B) (High d/p)

Design Features to Mitigate Effects: Throwaway Filters are provided with d/p indication and alarm to alert operator prior to an excessive pressure drop across the filter.

Indication: Location on Back Panel (B002) and Local Panel (B002N).

	<u>237B</u>	<u>PAR</u>
1. Filter d/p Indication (local)	PDISH-213	-
2. NI HVAC Trouble Alarm	PDISH-213	25A-35

Recovery:

1. Place affected Unit Cooler (237B) Control (HS-237B), located on Back Panel (B002), in the "STOP" position.
2. Replace Throwaway Filter as described by section 6.3.8.2 of this SDD.

5.3.3.3.3 Throwaway Filter (237C) (High d/p)

Design Features to Mitigate Effects: Throwaway Filters are provided with d/p indication and alarm to alert operator prior to an excessive pressure drop across the filter.

Indication: Located on Back Panel (B002) and Local Panel (B002P).

	<u>237C</u>	<u>PAR</u>
1. Filter d/p Indication (local)	PDISH-219	-
2. NI HVAC Trouble Alarm	PDISH-219	25A-44

Recovery:

1. Place affected Unit Cooler (237C) Control (HS-237C), located on Back Panel (B002), in the "STOP" position.

2. Replace Throwaway Filter as described by section 6.3.8.2 of this SDD.

5.3.3.4 Excessive Fan Vibration

Design Features to Mitigate Effects: Unit Cooler Fans are provided with vibration alarms to alert operator to excessive motor vibration.

Indication:

1. Fan Vibration High alarm (PAR 25A-112, 114, 116) located on Local Panel (B002P, B002N).
2. Fan Vibration High alarm (PAR 25A-113, 115, 117), located on Back Panel (B002).

Recovery:

1. Place affected fan (237A, 237B or 237C) control (HS-237AB, 237BB or 237CB), located on Back Panel (B002), in the "STOP" position.
2. Repair/replace affected fan as described by section 6.2.3.8 of this SDD.

5.3.3.5 Air High Temperature

Design Features to Mitigate Effects: A temperature switch (High) located in Unit Cooler inlet will activate an alarm if a temperature above 145°F is sensed.

Indication:

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST. #</u>	<u>LOCATION</u>	<u>PAR</u>	
273A	High Temperature	TSH-073	26BDB042 26BDB012	TBD TBD	Hold 25000573

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST. #</u>	<u>LOCATION</u>	<u>PAR</u>	
273B	High Temperature	TSH-074	26BDB042	TBD	HOLD 25000573
			26BDB012	TBD	
273C	High Temperature	TSH-075	26BDB042	TBD	
			26BDB012		

Recovery: Determine source of excessive heat (probable fire) and take corrective action as described by SDD-26B (SOI 26-15).

5.3.4 Emergency Chilled Water Equipment Rooms Unit Coolers (223A or 223B) (AOI 25A-12)

Caution: Upon Unit Cooler (223A or 223B) failure, and Cell temperature in excess of that specified in Appendix J of SDD-21, ECW Chiller (23ECH001A or 23ECH04001B) EXW Chiller located in cell with malfunctioning U.C. should be shutdown as described by SOI 23-15.

5.3.4.1 Failure of Operating Fan

Design Features to Mitigate Effects: Unit Cooler is provided with a low air flow alarm to alert operator to fan failure.

Indication:

1. Unit discharge Air Flow Low alarm (PAR 25A-118, 120), located on Local Panel (B002Q or B002R) as sensed by FSL-109A or 109B.
2. Unit discharge Air Flow Low alarm (PAR 25A-119, 121), located on Back Panel (B002).
3. Fan operating status lights (XL-223AB or 223BB), located on Local Panel (B002Q or B002R) are energized.
4. Fan operating status light (XL-223AD or 223BD), located on Back Panel (B002) is energized.

Recovery:

1. Place affected Unit Cooler Supply Fan (223A or 223B) Control (HS-223AB or 223BB), located on Back Panel (B002), in the "STOP" position.
2. Repair/replace affected fan as described by section 6.2.3.3 of this SDD.

5.3.4.2 Air High Temperature

Design Feature to Mitigate Effects: A temperature switch (High) located in Unit Cooler inlet will activate an alarm if a temperature above 145°F is sensed.

Indication:

1. Alarm on Local and Control Room Panels as listed below:

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>	
223A	High temperature	TSH-071	26B08	TBD	Hold 25000573
			26B08042	TBD	
223B	High temperature	TSH-072	26B08	TBD	
			26B08042		

2. Indicators, located as listed below:

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>
223A	Temperature Indication	TI-107A	B002Q
223A	Temperature Logging	TE-23AA,AB	PDH&DS
223B	Temperature Indication	TI-107B	B002R
223B	Temperature Logging	TE-23BA,BB	PDH&DS

Recovery: Determine source of high air temperature (probable fire) and take appropriate action as described by SDD-26B (S01 26-15).

5.3.4.3 Excessive Vibration

Design Features to Mitigate Effects: Excessive Fan vibration is alarmed to alert operator to abnormal condition.

Indication:

1. U.C. Supply Fan (223A or 223B) vibration high alarm (PAR 25A-122, 124), located on Local Panel (B002Q or B002R).
2. U.C. Supply Fan (223A or 223B) vibration high alarm (PAR 25A-123, 125), located on Back Panel (B002).

Recovery:

1. Place affected U.C. Supply Fan (223A or 223B) control (HS-223AB or 223BB), located on Back Panel (B002), in the "STOP" position.
2. Repair/replace affected fan as described by section 6.2.3.3 of this SDD.

5.3.4.4 Throwaway Filter High d/p

Design Features to Mitigate Effects: Throwaway filter is provided with indication and d/p alarm to alert operator prior to an excessive pressure drop across the filter.

Indication:

1. High d/p Alarm on the following Local and Control Room Panels.

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
223A	d/p	PDISH-106A	B002	25-53
		PDISH-106A	B002Q	25-323
223B	d/p	PDISH-106B	B002	25-34
		PDISH-106B	B002R	25-231

2. Indications (Local)

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>
223A	Throwaway Filter d/p Indicator	PDISH-106A
223B	Throwaway Filter d/p Indicator	PDISH-106B

Recovery:

1. Place affected Unit Cooler control (HS-223AB or 223BB), located on Back Panel (B002), in the "STOP" position.
2. Replace throwaway filter as described by section 6.3.8.2 of this SDD.

5.3.4.5 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit Cooler Supply Fans (223A & 223B) are supplied by a safety related bus, and upon loss of off-site AC power, the Diesel Generator load sequence (following a 15 minute time delay) will automatically start Unit Cooler.

Indication: Unit Cooler operating status lights (XL-223AD, 223BD), located on Back Panel (B002).

Recovery: Following restoration of off-site AC power, no operator action is required to continue Unit Cooler operation.

5.3.5 Maintenance Bay A/C System (210) (AOI 25A-13)

5.3.5.1 Heating Coil Failure

Design Features to Mitigate Effects: Low temperature protection shall shutdown A/C Unit, increase chilled water flow to prevent coil freezing and alarm to alert operator to failure.

Indications:

1. Alarms, located on Back Panel (B002) and Local Panel (B002H).

	<u>INST.#</u>	<u>PAR</u>
a. Cooling Coil Entering Air Temperature Low	TSL-64	25A-227
b. Air Flow Low	FSL-67	25A-127

2. Indication, located on Back Panel (B002) and Local Panel (B002H).

a. A/C Unit inlet air temperature	TIC-62
-----------------------------------	--------

Recovery:

1. Place A/C Unit Supply Fan (210) Control (HS-210), located on Local Panel (B002H), in the "STOP" position.
2. Repair/replace heating coil as described by section 6.2.3.7 of this SDD.

5.3.5.2 High Inlet Air Temperature

Design Features to Mitigate Effects: A/C Unit is provided with a high temperature safety thermostat to shutdown A/C unit and alarm to alert the operator.

Indication:

1. Alarms located on Front Panel (26BDB024) and Local Panels (26BDB012 & B002H).

<u>Alarm</u>	<u>Inst.#</u>	<u>PAR</u>
a. A/C Unit 210 Supply Air Temperature High	TSH-065	25A-226
b. A/C Unit 210 Air Flow Low	FSL-067	25A-127

2. Indication, located on Local Panel (B002H).

<u>Indicator</u>	<u>Inst.#</u>
a. Inlet Air Temperature	TI-062
b. Supply Air Temperature	TI-065

Recovery:

1. Determine source of high air temperature (probable fire) and take corrective action as described by SDD-26B (SOI 26B-25).
2. Place A/C Unit (210) Control (HS-210), located on Local Panel (B002H), in the "STOP" position (if area is accessible).

5.3.5.3 Fan Failure

Design Features to Mitigate Effects: Failure of Supply Fan is alarmed to alert operator to malfunction.

Indication:

	<u>Panel</u>	<u>PAR</u>
1. Alarm		
a. Air Flow Low	B002H	25A-127
b. A/C Unit (210) Trouble	B002	25A-126

2. Indication

- | | |
|---|-------|
| a. Fan Operating status Light | B002H |
| b. Cell (261) Air Temperature (TIC-269) | Local |

Recovery:

1. Place Fan (210) control (HS-210), located on Local Panel (B002H), in the "STOP" position.
2. Repair/replace fan as described by section 6.2.3.7 of this SDD.

5.3.5.4 Roll Filter

5.3.5.4.1 High d/p

Design Features to Mitigate Effects: Roll Filter is provided with automatic and manual media advance and a high d/p (or trouble) alarm to alert operator to a malfunction.

Indication:

<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
High d/p Alarm	PDSHH-145	B002	25A-126
	PDSHH-145	B002H	25A-129
d/p Indicator	PDISH-063	Local	-

Recovery:

1. Manually advance filter media (if media runout permits) and observe PDISH-063 locally to verify d/p decreases to <0.5" W.G.

2. If unable to advance media, place A/C unit (210) Control (HS-210), located on Local Panel (B002H), in the "STOP" position.
3. Repair/replace Roll Filter media as described by section 6.3.8.1 of this SDD.

5.3.5.5 Filter Media Runout

Roll Filter is provided with alarms to alert operator prior to the end of filter media.

Indication:

1. Alarm

<u>TITLE</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
Trouble Runout Alarm	ZSL-148	B002	25A-126
	ZSL-148	B002H	25A-130

Recovery:

1. When conditions permit replace filter media as described by section 6.3.8.1 of this SDD.

5.3.6 Auxiliary Feed Pump Ventilation System (255, 256) (AOI 25A-14)

5.3.6.1 Air Flow Low or High Temperature

Design Features to Mitigate Effects: Ventilation system is provided with heating coil shutdown if a high temperature or low air flow condition exists. This will cause an individual or trouble alarm as indicated below.

Indication:

<u>UNIT</u>	<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>
255	FSL-230	B002J/B002	25A-131/132
	TE-132A	Cell 202A	PDH&DS (T100A)
256	FSL-229	B002K/B002	25A-133/134
	TE-106A	Cell 204A	PDH&DS (T106A)
	TE-105A	Cell 204B	PDH&DS (T105A)

Recovery:

1. Place Supply Fan (255 or 256) Control (HS-255 or 256), located on Local Panel (B002J or B002K) in the "STOP" position.
2. Determine source of malfunction (i.e. fan failure or heating coil failure) and repair/replace unit as described by section 6.2.3.6 of this SDD.

5.3.6.2 Throwaway Filter High d/p (207, 208)

Design Features to Mitigate Effects: Excessive throwaway filter pressure drop is indicated and alarmed to alert operator.

Indication

<u>UNIT</u>	<u>COMPONENT</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
207	Trouble High d/p Alarm	PDISH-250	B002	25A-12
		PDISH-250	B002K	25A-135
207	d/p Indicator	PDISH-250	Local	-
208	Trouble High d/p Alarm	PDISH-240	B002	25A-134
		PDISH-240	B002J	25A-136
208	d/p Indication	PDISH-240	Local	-

Recovery:

1. Place Supply Fan (255 or 256) Control (HS-255 or 256), located on Local Panel (B002J or B002K), in the "STOP" position.
2. Replace throwaway filter as described by section 6.3.8.2 of this SDD.

5.3.7 Auxiliary Feed Pump (Electric) U.C. (221A, 221B) (AOI 25A-15)

5.3.7.1 Supply Fan Failure

Design Features to Mitigate Effects: U.C.'s are provided with malfunction alarms to alert operator to unit failure.

Indication:

1. Alarm

	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
Unit 221A Discharge Air Flow Low	FSL-041A	B002	25A-138
Unit 221A Discharge Air Flow Low	FSL 041A	B002F	25A-137
Unit 221B Discharge Air Flow Low	FSL-041B	B002G	25A-139
Unit 221B Discharge Air Flow Low	FSL-041B	B002	25A-140

2. Indication

		<u>INDICATOR</u>
(221A) Fan Operating Status Light	B002F	-
Cell (204A) Temperature	Logging (T106A)	-
(221B) Fan Operating Status Light	B002G	-
Cell (204B) Temperature	Logging (T105A)	-

Recovery:

1. Place Supply Fan (221A or 221B) control (HS-221A or 221B), located on Local Panel (B002F or B002G), in the "STOP" position.
2. Repair/replace fan as described by section 6.2.3.11 of this SDD.

5.3.7.2 High Air Temperature

Design Features to Mitigate Effects: U.C. is provided with a high temperature safety thermostat alarm to alert operator.

Indication:

NOTE: Alarm, located on Back Panel (26BDB002) and Local Panel (26BDB013).

a. Unit Cooler (221)

	<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>	
U.C. supply air temperature High or Low	TSH-061	26BDB013	TBD	Hold 25000573
Cooling coil inlet temp indicator	TI-043A	B002F	25A-141	
Cell (204A) temp logging	T-106A	PDH&DS	-	

b. Unit Cooler (221B)

	<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>	
U.C. supply air temperature High or Low	TSH-062	25BDB013	TBD	Hold 25000573
Cooling coil inlet temp indicator	TI-043B	B002G	25A-143	
Cell (204B) temp logging	T-105A	PDH&DS	-	

Recovery:

1. Determine source of high air temperature (probable fire) and the corrective action as described by SDD-26B (SOI 26B-15).

2. Place U.C. (221A or 221B) Control (HS-221A or 221B), located on Local Panel (B002F or B002G), in the "STOP" position.

5.3.7.3 Excessive Fan Vibration

Design Features to Mitigate Effects: U.C. Fan is provided with an alarm to alert operator to excessive vibration.

Indication:

1. Alarm

<u>UNIT</u>	<u>TITLE</u>	<u>INST.</u>	<u>PAR</u>	<u>LOCATION</u>
221A	Vibration High	YSH-119A	25A-143	B002F
221B	Vibration High	YSH-119B	25A-144	B002G

Recovery:

1. Place U.C. (221A or 221B) Control (HS-221A or 221B), located on Local Panel (B002F or B002G), in the "STOP" position.
2. Repair/replace fan as described by section 6.2.3.11 of this SDD.

5.3.7.4 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit Cooler Supply Fans (221A & 221B) are supplied by a safety related bus, and upon loss of off-site AC power, the Diesel Generator load sequencer (following a 20 sec. time delay) will automatically start Unit Cooler.

Indication: Unit Cooler operating status lights, (XL-221AB or 221BB) & (XL-221AD or 221BD), located on Local Panel (B002F or B002G), and Back Panel (B002).

Recovery: Following restoration of off-site AC power, and time delay (20 sec.) both Unit Coolers (221A & 221B) will start.

5.3.7.5 Throwaway Filter High d/p

Design Features to Mitigate Effects: Throwaway Filter differential pressure is alarmed to alert operator of a high d/p across filter.

Indication:

<u>UNIT</u>		<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>
221A	Indicator	PDISH-39A	Local	-
	d/p alarm	PDISH-39A	B002F	25A-145
221B	Indicator	PDISH-39B	Local	-
	d/p alarm	PDISH-39B	B002G	25A-146

Recovery:

1. Place Supply Fan (221A or 221B) Control (HS-221A or 221B), located on Local Panel (B002F or B002G), in the "STOP" position.
2. Replace Throwaway Filter as described by section 6.3.8.2 of this SDD.

5.3.8 Auxiliary Feed Pump (Turbine) U.C. (222A, 222B) (AOI 25A-16)

5.3.8.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit Cooler is supplied with 1E power and will be automatically supplied from 1E (diesel) power supply following diesel sequencing.

Indication:

1. Energized Indication

<u>FAN</u>	<u>INDICATOR</u>	<u>LOCATION</u>
222A	XL-222AA	B002D
	XL-222AC	B002
222B	XL-222BA	B002E
	XL-222BC	B002

2. Alarm

<u>UNIT</u>		<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>
222A	Air Flow Low	FSL-041A	B002D	25A-147
	Unit 222A Trouble	FSL-041A	B002	25A-148
222B	Air Flow Low	FSL-041B	B002E	25A-149
	Unit 222B Trouble	FSL-041B	B002	25A-150

Recovery:

No operator action is required to continue Unit Cooler (222A, 222B) operation following restoration of off-site AC power.

1. Verify Unit Cooler restart using indication (listed above), located on Back Panel (B002) or local Panel (B002D or B002E).

5.3.8.2 Loss of Normal Chilled Water

Design Features to Mitigate Effects: Unit Cooler (222A or 222B) is automatically supplied by Emergency Chilled Water upon loss of Normal Chilled Water System.

Indication:

NOTE: There will be little temperature change (as indicated by TI-040A or 040B) due to chilled water supply shift. Refer to SDD-23 (SOI 23-13) for indications related to NCW System Failure.

Recovery:

No operator action is required to continue U.C. operation following loss of NCW System.

5.3.8.3 Failure of Operating Fan

Design Features to Mitigate Effects: Redundant Unit Cooler (222A or 222B) will automatically start following failure of operating Unit Cooler.

Indication:

1. Indication

<u>FAN</u>	<u>STOP</u>	<u>LOCATION</u>
222A	XL-222AB	B002D
	XL-222AD	B002
222B	XL-222BB	B002E
	XL-222BD	B002

1. Alarm

<u>UNIT</u>		<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>
222A	Air Flow Low	FSL-20A	B002D	25A-147
	Trouble	FSL-20A	B002	25A-148
222B	Air Flow Low	FSL-20B	B002E	25A-149
	Trouble	FSL-20B	B002	25A-150

Recovery:

1. Verify operation of redundant Unit Cooler (222A or 222B) as indicated by fan operating status light (listed above), located on Back Panel (B002).
2. Place malfunctioning fan (222A or 222B) control (HS-222AB or 222BB), located on Back Panel (B002), in the "STOP" position.
3. Repair/replace Fan as described by section 6.2.3.5 of this SDD.

5.3.8.4 Throwaway Filter High d/p

Design Features to Mitigate Effects: Unit Cooler is provided with indication and an alarm to alert the operator of an excess pressure drop across the Throwaway Filter.

1. Indication

<u>UNIT</u>		<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>
222A	Indicator	PDISH-16A	local	-
	d/p High or Low	PDISH-16A	B002D	15A-151
	Trouble	PDISH-16A	B002	25A-148
222B	Indicator	PDISH-16B	local	-
	d/p High or Low	PDISH-16B	B002E	25A-152
	Trouble	PDISH-16B	B002	25A-150

Recovery:

1. Shift Unit Cooler (222A or 222B) operation as described by Section 4.3.3.12.3 of this SDD.
2. Place affected Unit Cooler (222A or 222B) control (HS-222AB or 222BB), located on Back Panel (B002), in the "STOP" position.

3. Replace Throwaway Filter as described by section 6.3.8.2 of this SDD.

5.3.8.5 High Inlet Air Temperature

Design Features to Mitigate Effects: Unit Cooler is provided with an alarm to alert the operator of an excessive air inlet temperature.

Indication:

1. Alarms

<u>UNIT</u>		<u>INST.</u>	<u>LOCATION</u>	<u>PAR</u>	
222A	Supply Air Temp	26BDTSH-057	B002D	25A-153	
	High or Low				
	U.C. 222A Temp	26BDTSH-057	26BD8013	TBD	Hold 25000573 B
	U.C. 222A Temp	26BDTSH-057	26BD8042	TBD	
222B	Supply Air Temp	26BDTSH-058	B002E	25A-154	
	U.C. 222B Temp	26BDTSH-058	26BD8013	TBD	
	U.C. 222B Temp	26BDTSH-058	26BD8042	TBD	

2. Indication

<u>UNIT</u>	<u>INST.</u>	<u>LOCATION</u>
222A	TI-111A	local
222B	TI-111B	local
Cell 202A	TE-132A/132B	PDH&DS (T100A)

Recovery:

- Shift Unit Cooler (222A or 222B) operation as described by Section 4.3.3.12.3 of this SDD.

2. Determine source of excessive heat (probable fire) and take corrective action as described by SDD-26B (SOI 26-15).
3. Place Unit Cooler (222A or 222B) control (HS-222AB or 222BB), located on Back Panel (B002), in the "STOP" position.

5.3.8.6 Excessive Fan Vibration

Design Features to Mitigate Effects: Unit Cooler Supply Fan is provided with an excessive vibration alarm to alert operator of malfunction.

Indication:

1. Alarm

	<u>U.C.</u>	<u>INST.#</u>	<u>LOCATION</u>	<u>PAR</u>
a.	222A	YSH-117A	B002	25A-156
		YSH-117A	B002D	25A-155
b.	222B	YSH-117B	B002	25A-158
		YSH-117B	B002E	25A-157

Recovery:

1. Place redundant U.C. (222A or 222B) Control (HS-222AB or 222BB), located on Back Panel (B002) in the "START" position.
2. Verify start of U.C. as indicated by no air flow low alarm (PAR 25A-148 & 150), located on Back Panel (B002).
3. Place affected U.C. (222A or 222B) Control (HS-222AB or 222BB), located on Back Panel (B002), in the "STOP" position.

4. Repair/replace fan as described by section 6.2.3.5 of this SDD.

5.3.8.7 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Unit Cooler Supply Fan (222A & 222B) are supplied by a safety related bus, and upon loss of off-site AC power, the Diesel Generator load sequencer (following a 20 sec. time delay) will automatically start Unit Cooler.

Indication: Unit Cooler operating status lights (XL-222AC & 222BC), located on Local Panel (B002D or B002E) and Back Panel (B002) energized.

Recovery: Following restoration of off-site AC power, both Unit Coolers (222A & 222B) will continue to operate without operator action. One Unit cooler (222A or 222B) may be shutdown (at operator's discretion) as described by section 4.3.4.5 of this SDD.

5.3.9 Primary Na Tank Unit Cooler (220) (AOI 25A-36)

5.3.9.1 Fan Failure

Design Features to Mitigate Effects: Unit Cooler (220) is provided with an alarm to alert operator to the malfunction of Supply Fan.

Indication:

1. Fan Operating status light (XL-220B), located on Local Panel (B002S) is energized.
2. Unit Cooler (220) discharge air flow low alarm (PAR 25A-318) located on Local Panel (B002S) and (PAR 25A-385) located on Back Panel (B002).

Recovery:

1. Place U.C. (220) Control (HS-220), located on Local Panel (B002S) in the "STOP" position.
2. Repair U.C. (220) Supply Fan as described by MOP 25A-19.
3. Following completion of repair, place U.C. (220) in service as described by section 4.3.2.4 of this SDD.

5.4 CONTROL BUILDING

Equipment and instrument numbers are prefixed by 25ACA.

Panel numbers are prefixed by 25NI (local) and 25AA (Back).

5.4.1 Control Room AC System (410A, 410B) (AOI 25A-17)

5.4.1.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: AC System is supplied with 1E power and will be automatically supplied from 1E (diesel) power supply following diesel sequencing time delay of 10 sec.

Indication:

1. Energized fan operating status lights.

<u>FAN</u>	<u>INDICATION</u>	<u>PANEL</u>
410A	XL-410AC	B002
	XL-410AA	B003F
451A	XL-451AC	B002
	XL-551AA	B003F

5.3.10 SGB - Loops 1, 2, 3, Aux. Bay Air Handling Units (201, 202, 203),
IB-AHU (204, 206) Operation during TMBDB (EOI 25A-14)

The Air Handling Units (201, 202, 203, 204, and 206) operate continuously during normal plant operation. During a TMBDB scenario prior to venting of containment the following components should be shutdown.

<u>Component</u>		<u>Section</u>
Loop 1 AHU	201	4.3.4.1
Loop 1 Supply Fan	241A & 241B	4.3.4.1
Loop 1 Exhaust Fan	261A & 261B	4.3.4.1
Supply Fan	255	4.3.4.6
Loop 2 AHU	202	4.3.4.1
Loop 2 Supply Fan	242A & 242B	4.3.4.1
Loop 2 Exhaust Fan	262A & 262B	4.3.4.1
Supply Fan	256	4.3.4.6
Loop 3 AHU	203	4.3.4.1
Loop 3 Supply Fan	243A & 243B	4.3.4.1
Loop 3 Exhaust Fan	263A & 263B	4.3.4.1
IB AHU	204 & 206	4.3.4.2
IB Supply Fans	244A & 244B	4.3.4.2
	249A & 249B	
IB Exhaust Fans	264A & 264B	4.3.4.2
	267A & 267B	

<u>FAN</u>	<u>INDICATION</u>	<u>PANEL</u>
410B	XL-410BC	B002
	XL-410BA	B003G
451B	XL-451BC	B002
	XL-451BA	B003G

2. AC Unit Air Flow

<u>UNIT</u>	<u>INDICATION</u>	<u>PANEL</u>
410A	FI-60A	B003F
410B	FI-60B	B003G

3. Alarms

<u>UNIT</u>	<u>INSTRUMENTATION</u>	<u>PANEL</u>	<u>PAR</u>
410A Air Flow Low	FSL-59A	B003F	25A-159
Trouble	FSL-59A	B002	25A-160
410B Air Flow Low	FSL-59B	B003G	25A-161
Trouble	FSL-59B	B002	25A-162

Recovery:

No operator action is required to continue system operation following restoration of off-site AC power.

5.4.1.2 Loss of Normal Chilled Water

Design Features to Mitigate Effects: AC Unit cooling coil shall be automatically supplied by the Emergency Chilled Water system following loss of the Normal Chilled Water system supply.

Indication: Refer to System 23 (SOI 23-9) for Emergency Chiller operating status indication, located on Main Panel (90CSB016).

Recovery: No operator action (related to system 25A) is required. Refer to SDD-23 (SOI 23-14) for restart of NCW System.

5.4.1.3 Fan Failure

Design Features to Mitigate Effects: Control Room is provided with redundant Supply and Return Fans (410A, 451 & 410B, 451B) which shall automatically start upon failure of operating Supply or Return fan (as sensed by FSL-53 or 58).

Indication:

1. Alarm:

	<u>AC UNIT</u>		<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
a.	410A	Air Flow Low	FSL-059A	B002	25A-159
		Trouble	FSL-059A	B003F	25A-160
b.	410B	Air Flow Low	FSL-059B	B002	25A-161
		Trouble	FSL-059B	B003G	25A-162

2. Indication:

	<u>AC UNIT</u>	<u>INST.#</u>	<u>PANEL</u>
a.	410A	FI-60AA	B003F
		FR-60AB	B002
b.	410B	FI-60BB	B003G
		FR-60BB	B002

Recovery:

1. Verify start of redundant AC Unit (410A or 410B) as indicated by instrumentation (listed above).
2. Place affected AC Unit (410A or 410B) control (HS-410AB or 410BB), located on Back Panel (B002), in the "STOP" position.
3. Repair/replace fan as described by section 6.2.4.1 of this SDD.

5.4.1.4 Fan Excessive Vibration

Design Features to Mitigate Effects: AC Unit Supply and Return Fans are provided with excessive vibration alarm to alert operator to malfunction.

Indication:

1. Vibration High Alarm

a. AC Unit 410A

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
410A	YSH-89A	B002	25A-164
		B003F	25A-163
451A	YSH-91A	B002	25A-166
		B003F	25A-165

b. AC Unit 410B

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
410B	YSH-89B	B002B	25A-168
		B003G	25A-167

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
451B	YSH-91B	B002	25A-170
		B003G	25A-169

Recovery:

1. Place redundant AC Unit (410A or 410B) Control (HS-410AB or 410BB), located on Back Panel (B002), in the "START" position.
2. Verify AC Unit start as indicated by:

<u>INDICATOR</u>	<u>PANEL</u>
a. Fan Operating Status Light	B002
b. Air Flow Recorder (FR-60A or 60B)	B002

3. Place affected AC Unit Control (HS-410AB or 410BB), located on Back Panel (B002), in the "STOP" position.
4. Repair/replace fan as described by section 6.2.4.1 of this SDD.

5.4.1.5 High Radiation and Control Room Isolation (EOI 25A-6)

Design Features to Mitigate Effects: Control Room HVAC is provided with redundant class 1E power supply bus as well as isolation/recirculating mode. In addition a filter unit is provided to assure Control Room habitability during conditions of smoke, toxic gas or radiation.

Indication: Indication related to air intake system has isolated (#3 or #4 below).

1. Energized fan operating status lights

	<u>FAN</u>	<u>PANEL</u>	<u>STATUS</u>	<u>INDICATOR</u>
a.	410A	B002/B003F	Start	XL-410AC/410AA
b.	451A	B002/B003F	Start	XL-451AC/451AA
c.	471A	B002/B003F	Start	XL-471AC/471AA
d.	410B	B002/B003G	Start	XL-410BC/410BA
e.	451B	B002/B003G	Start	XL-451BC/451BA
f.	471B	B002/B003G	Start	XL-471BC/471BA

2. Energized valve position status indicator light

	<u>VALVE</u>	<u>PANELS</u>	<u>STATUS</u>	<u>INDICATOR</u>
a.	MOV-064A	B002/90CSB016	Close	XL-064AB/064AD
b.	MOV-064B	B002/90CSB016	Close	XL-064BB/064BD
c.	AOV-122A	B002/90CSB016	Close	XL-122AB/122AD
d.	AOV-122B	B002/90CSB016	Close	XL-122BB/122BD
e.	AOV-123A	B002/90CSB016	Open	XL-123AA/123AC
f.	AOV-723B	B002/90CSB016	Open	XL-123BA/123BC

3. Main Outside Air Intake

	<u>INST.#</u>	<u>PANEL</u>	<u>INDICATION</u>
a. Radiation Monitor	RE-040A&40B	96	-
b. Smoke Detector	AE-207A,207B	26	-
c. Toxic Gas Detector	AE-102A,102B	-	-
	202A,202B	-	-
	203A,203B	-	-
d. Isolation Valve Status	Close		
MOV-047A	-	90CSB016	XL-047AD
MOV-047B	-	90CSB016	XL-047BD

4. Remote Air Intake

	<u>INST.#</u>	<u>PANEL</u>
a. Radiation Monitor	96PMRE-041A&041B	96PMB041A&041B
b. Smoke Detector	26BAE-208A&208B	26BDB013
c. Toxic Gas Detector	AE-204A,204B 205A,205B 206A,206B	B002
d. Isolation Valve Status	Close	-
MOV-104A,104B		90CSB016

CAUTION: If Main intake is clear and radiation is detected by monitor (RE-014A,014B) isolation valve MOV-104A,104B must be closed manually by placing control (HS-104BB&104AB), located on Main Panel (90CSB016), in the "CLOSE" position.

Recovery:

1. Verify both Control Room HVAC trains (A&B) are operating (following auto start) as indicated (listed above) on Main Panel (90CSB016) and Back Panel (B002).
2. Shutdown one HVAC Train (A or B) by placing the following controls, located on Main Panel (90CSB016), in the "STOP" position.

CAUTION: Only one train is to be shutdown.

AC Unit/Filter Trains	<u>A</u>	<u>HS#</u>	<u>B</u>	<u>HS#</u>
a. Filter Fan	441A	441AB	441B	441BB
b. Supply Fan	410A	410AB	410B	410BB

NOTE: Return Fans (451A or 451B) shall stop following shutdown of related supply fan.

3. Verify operation/shutdown of filter trains (A&B) using indication (listed above).
4. Place shutdown filter train (A or B) controls, located on Main Panel (90CSB016), in the "AUTO" position.

AC Unit/Filter Trains	<u>A</u>	<u>HS#</u>	<u>B</u>	<u>HS#</u>
a. Supply Fan	410A	410AB	410B	410BB
b. Filter Fan	441A	441AB	441B	441BB

NOTE: Verify related Return Fan (451A or 451B) control, located on Main Panel (90CSB016), in the "AUTO" position.

5. Following verification that outside air is within acceptable limits, as determined by Health Physics, return Control Room HVAC to normal operation as described by section 4.4.5.3 of this SDD.

5.4.1.6 Damper Failure

5.4.1.6.1 Main Air Intake Isolation Valves (MOV-047A, 047B) Failure

Isolation Valves (MOV-047A & 047B) are provided to isolate the Control Room Main Air Intake. Failure of either valve will not effect CR HVAC operation. Outside air will be provided from the normally open Remote Air Intake.

Design Features to Mitigate Effects. Control Room Outside Air is supplied from two locations, the main air intake and the remote air intake.

The remote air intake will provide outside air in the event of a malfunction of the main air intake.

Indication:

<u>VALVE</u>	<u>PANEL</u>	<u>OPEN</u>	<u>CLOSED</u>
MOV-047A	B003F	XL-047AA	XL-047AB
MOV-047A	B002	XL-047AC	XL-047AD
MOV-047B	B003G	XL-047BA	XL-047BB
MOV-047B	B002	XL-047BC	XL-047BD

1. Valve status indications, located on Back Panel (B002). Failure of valve (MOV-047A) will cause indication (XL-047AD & XL-047BC) to be energized, while failure of (MOV-047B) will cause indication (XL-047AC & XL-047BD) to be energized.
2. Valve status indications, located on Local Panel (B003F or B003G). Failure of valve (MOV-047A) will cause indication (XL-047AB & XL-047BA) to be energized, while failure of valve (MOV-047B) will cause indication (XL-047AA & XL-047BB) to be energized.

Recovery:

1. Verify CR AC Unit (410A or 410B) air flow is within range specified by Section 3 (Table 3-4) of this SDD, as indicated by Recorder (FR-60AB or 60BB), located on Back Panel (B002).
2. Repair/replace isolation valve as described by Section 6.2.4.1 of this SDD.

5.4.1.6.2 Remote Air Intake Isolation Valves (MOV-104A, 104B) Failure

Isolation Valves (MOV-104A & 104B) are provided to isolate the Control Room Remote Air Intake. Failure of either valve will not effect CR HVAC operation. Outside air will be provided from the normally open Main Air Intake.

Design Features to Mitigate Effects: Control Room Outside Air is supplied from two locations, the main air intake and the remote air intake. The

main air intake will provide outside air in the event of a malfunction of the remote air intake.

Indication:

<u>VALVE</u>	<u>PANEL</u>	<u>OPEN</u>	<u>CLOSED</u>
MOV-104A	B003F	XL-104AA	XL-104AB
MOV-104A	B002	XL-104AC	XL-104AD
MOV-104B	B003G	XL-104BA	XL-104BB
MOV-104B	B002	XL-104BC	XL-104BD

1. Valve status indications, located on Back Panel (B002). Failure of Valve (MOV-104A) will cause indication (XL-104AD & XL-104BC) to be energized, while failure of valve (MOV-104B) will cause indication (XL-104AC & XL-104BD) to be energized.
2. Valve status indications, located on Local Panel (B003F or B003G). Failure of Valve (MOV-104A) will cause indication (XL-104AB & XL-104BA) to be energized, while failure of Valve (MOV-104B) will cause indication (XL-104AA & XL-104BB) to be energized.

Recovery:

1. Verify CR AC Unit (410A or 410B) air flow is within range specified by Section 3 (Table 3-4) of this SDD, as indicated by Recorder (FR60AB or 60BB, located on Back Panel (B002).
2. Repair/replace Isolation valve as described by Section 6.2.4.1 of this SDD.

5.4.1.6.3 Control Room, HVAC Exhaust Isolation Valve (AOV-064A, 064B) Failure

Valves (AOV-064A or 064B) are provided to isolate Exhaust Air from the control room. Isolation Valves (064A & 064B) close on High Radiation Level as detected by 96PMRE-40A & 40B or 96PMRE-41A & 41B.

Design Features to Mitigate Effects: Valve status indication is provided on the Main Panel, Back Panel and Local Panel. In addition manual operation capability is provided for Isolation Valves (064A & 064B) on Local Panel (B003F) and Back Panel (B002).

Indication:

1. Valve Status Indication, located on Main Panel (90CSB016). Failure of Valve (AOV-064A) will cause indication (XL-064AF & XL-064BE) to be energized, while failure of valve (AOV-064B) will cause indication (XL-064AE & XL-064BF) to be energized.
2. Valve status indication, located on Back Panel (B002). Failure of Valve (AOV-064A) will cause indication (XL-064AD & XL-064BC) to be energized, while failure of valve (AOV-064B) will cause indication (XL-064AC & XL-064BD) to be energized.

<u>VALVE</u>	<u>PANEL</u>	<u>OPEN</u>	<u>CLOSED</u>
AOV-064A	90CSB016	XL-064AE	XL-064AF
AOV-064A	B002	XL-064AC	XL-064AD
AOV-064A	B003F	XL-064AA	XL-064AB
AOV-064B	90CSB016	XL-064BE	XL-064BF
AOV-064B	B002	XL-064BC	XL-064BD
AOV-064B	B003G	XL-064BA	XL-064BB

3. Valve status indication, located on Local Panel (B003F or B003G). Failure of Valve (AOV-064A) will cause indication (XL-064AB & 064BA) to be energized, while failure of valve (AOV-064B) will cause indication (XL-064AA & XL-064BB) to be energized.

Recovery:

1. Verify System 96 signal not present.
2. Place Valve (AOV-064A or 064B) Control (HS-064AB or 064BB), located on Back Panel (B002), in the "OPEN" position.

3. Should indication (listed above) show valve remains closed, manually open malfunctioning valve (AOV-064A or 064B).
4. Repair/replace valve as described by Section 6.2.4.1 of this SDD.

5.4.1.6.4 CR AC Unit Supply Fan Vortex Damper (PMD-056AA, 056BA)
Failure

Damper is provided to maintain proper positive pressure in the Control Room and cells.

Design Features to Mitigate Effects: Redundant AC Units including Supply Fans are provided to allow HVAC operation with one AC Unit (410A or 410B) out of service.

Indication:

1. Differential Pressure Indicator (PDIC-056A), located on Local Panel (B003F) or (PDIC-056B), located on Local Panel (B003G).
2. Control Room Differential Pressure annunciation (PAR 25A-390/392), located on Back Panel (B002).

Recovery:

1. Shift operating Control Room AC Unit (410A or 410B) as described by Section 4.4.3.12.2 of this SDD.

NOTE: This will shift operating Return Fan (451A or 451B).

2. Repair/replace malfunctioning Supply Fan (damper) as described by Section 6.2.4.1 of this SDD.

5.4.1.6.5 CR AC Unit Supply Fan Discharge Damper (MOD-057A, 057B)
Failure

Damper is provided to allow isolation of AC Unit (410A or 410B) during operation of redundant unit.

Design Features to Mitigate Effects: Redundant AC Units including Supply Fans are provided to allow HVAC operation with one AC Unit (410A or 410B) out of service.

Indication:

1. Differential Pressure Indicator (PDIC-056A or 056B), located on Local Panel (B003F or B003G).
2. Control Room Differential Pressure annunciation (PAR 25A-390/392), located on Back Panel (B002).

Recovery:

1. Shift operating Control Room AC Unit (410A or 410B) as described by Section 4.4.3.12.2 of this SDD.

NOTE: This will shift operating Return Fan (451A or 451B)

2. Repair/replace malfunctioning Supply Fan (damper) as described by Section 6.2.4.1 of this SDD.

5.4.1.6.6 Control Room Return Fan Vortex Damper (PMD-056AB, 056BB)
Failure

Damper is provided to maintain proper positive pressure in the Control Room and cells.

Design Features to Mitigate Effects: Redundant AC Units and Return Fans (451A & 451B) are provided to allow HVAC operation with one Return Fan out of service.

Indication:

1. Differential Pressure Indicator (PDIC-056A), located on Local Panel (B003F or B003G).

2. Control Room Differential Pressure annunciation (PAR 25A-390/392), located on Back Panel (B002).

Recovery:

1. Shift operating Control Room AC Unit (410A or 410B) as described by Section 4.4.3.12.2 of this SDD.

NOTE: This will shift operating Return Fan (451A or 451B).

2. Repair/replace malfunctioning Return Fan (damper) as described by Section 6.2.4.1 of this SDD.

5.4.2 Electric Reheat Coil (480-486) (AOI 25A-38)

5.4.2.1 Failure of Operating Fan

Design Features to Mitigate Effects: Reheat coil is provided with low air flow and high temperature safety shutdowns that shall stop the Reheat Coil to prevent damage to reheat coil.

Indication:

1. Alarm:

- a. CR Reheat coil TROUBLE alarm PAR 25A-178, located on Back Panel (B002).

b. REHEAT COIL

		<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
480	Air Flow Low	FSL-157	B003F	25A-171
481	Air Flow Low	FSL-155	B003F	25A-172
482	Air Flow Low	FSL-156	B003F	25A-173
483	Air Flow Low	FSL-159	B003F	25A-174
484	Air Flow Low	FSL-158	B003F	25A-175
485	Air Flow Low	FSL-154	B003F	25A-176
486	Air Flow Low	FSL-153	B003F	25A-177

2. Indication: local (in cell indicated)

<u>REHEAT COIL</u>	<u>INST.#</u>	<u>CELL</u>
480,491,482	TIC-161,162 T109A	431 431 (Logging)
483	TIC-147	432
484	TIC-148	433A,433B
485	TIC-145	423
486	TIC-146	422

Recovery:

Repair/replace reheat coil as described by section 6.2.4.2 of this SDD.

5.4.3 Battery Room Exhaust Fan (461-464) (AOI 25A-20)

5.4.3.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Battery Room Exhaust Fans are supplied with 1E power and will be automatically supplied from 1E (diesel) power bus following diesel sequencing (20 sec. time delay).

Indication:

1. Fan operating status light (located on Panel as indicated below).
2. Air Flow Low Alarm

<u>EXHAUST FAN</u>	<u>INST.#</u>	<u>STATUS</u>		
		<u>LIGHT</u>	<u>PANEL</u>	<u>PAR</u>
461	FSL-116	XL-461D	B002	25A-180
		XL-461B	B003D	25A-179

<u>EXHAUST FAN</u>	<u>INST.#</u>	<u>STATUS LIGHT</u>	<u>PANEL</u>	<u>PAR</u>
462	FSL-121	XL-462D	B002	25A-182
		XL-462B	B003E	25A-181
463	FSL-119	XL-463D	B002	25A-184
		XL-463B	B003E	25A-183
464	FSL-120	XL-464D	B002	25A-186
		XL-464B	B003D	25A-185

Recovery:

Following restoration of off-site AC power, no operator action is required to continue Exhaust fan operation.

5.4.3.2 Exhaust Fan Failure

Design Features to Mitigate Effects: Exhaust Fans are provided with failure alarm to alert operator to malfunction.

Indication: Located on panel indicated below.

1. Fan operating status light is energized (as listed below).

2. Air Flow Low Alarm

<u>EXHAUST FAN</u>	<u>INST.#</u>	<u>STATUS LIGHT</u>	<u>PANEL</u>	<u>PAR</u>
461	FSL-116	XL-461D	B002	25A-180
		XL-461B	B003D	25A-179
462	FSL-121	XL-462D	B002	25A-182
		XL-462B	B003E	25A-181
463	FSL-119	XL-463D	B002	25A-184
		XL-463B	B003E	25A-183

<u>EXHAUST FAN</u>	<u>INST.#</u>	<u>STATUS</u> <u>LIGHT</u>	<u>PANEL</u>	<u>PAR</u>
464	FSL-120	XL-464D	B002	25A-186
		XL-464B	B003D	25A-185

Recovery:

1. Place affected Exhaust Fan (461, 462, 463 or 464) control (HS-461B, 462B, 463B or 464B), located on Back Panel (B002), in the "STOP" position.
2. If Battery is being charged, shutdown charging operation as described by SDD-12 (SOI 12-27 or 31).
3. Provide temporary ventilation (SDD-45) and test cell (451-454, 459-463) atmosphere to insure hydrogen level does not exceed limit specified by section 3.0 (TBD) of this SDD.
4. Repair/replace fan as described by section 6.2.4.4 of this SDD.

HOLD
25-
000570

B

5.4.4 Deleted

5.4.5 Switchgear "A & B" AC System (411, 412) (AOI 25A-21)

5.4.5.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: AC Unit is supplied with 1E power and will be automatically supplied from 1E (diesel) bus supply following diesel sequencing (1 minute time delay).

Indication:

1. Energized operating status indication.

<u>AC UNIT</u>	<u>PANEL</u>	<u>START</u>	<u>STOP</u>
411	B002	XL-411C	XL-411D
	B003D	XL-411A	XL-411B
412	B002	XL-412C	XL-412D
	B003E	XL-412A	XL-412B

2. Alarms

<u>UNIT</u>		<u>INST.</u>	<u>PANEL</u>	<u>PAR</u>
411	Supply Air Flow Low	FSL-14	B002	25A-187
		FSL-14	B003D	25A-188
	Return Air Flow Low	FSL-16	B002	25A-189
		FSL-16	B003D	25A-190
412	Supply Air Flow Low	FSL-133	B002	25A-191
		FSL-133	B003E	25A-192
	Return Air Flow Low	FSL-136	B002	25A-193
		FSL-136	B003E	25A-194

Recovery:

No operator action is required to continue AC Unit operation following restoration of off-site AC power.

5.4.5.2 Loss of Normal Chilled Water

Design Features to Mitigate Effects: AC Unit cooling coil are automatically supplied by the Emergency Chilled Water System following loss of Normal Chilled Water System supply.

Indication: Refer to System 23 (SOI 23-9) for Emergency Chiller operation status indication, located on Main Panel (90CSB016).

Recovery: No operator action (related to System 25A) is required. Refer to SDD-23 (SOI 23-14) for restart of NCW System.

5.4.6 MG Set & Swgr. AC System (400)(AOI 25A-37)

5.4.6.1 Fans (440A,440B,450A,450B) Failure

Design Features to Mitigate Effects: Air Handling System (400) is provided with alarms to alert operator of a malfunction.

Indication:

	<u>START</u>	<u>STOP</u>
a. Supply Fan 440A	XL-440AA	440AB
b. Supply Fan 440B	XL-440BA	440BB
c. Exhaust Fan 450A	XL-450AA	450AB
d. Exhaust Fan 450B	XL-450BA	450BB

1. Fan operating status lights, located on Local Panel (B003A) are energized.

- a) If Supply Fan (440A) malfunctions indications (XL-440AB, XL-440BA, XL-450AB & XL-450BA) will be energized.
- b) If Supply Fan (440B) malfunctions indication (XL-440AA, XL-440BB, XL-450AA & XL-450BB) will be energized.
- c) If Exhaust Fan (450A) malfunctions indication (XL-440AA, XL-440BB, XL-450AB & XL-450BA) will be energized.
- d) If Exhaust Fan (450B) malfunctions indication (XL-440AA, XL-440BB, XL-450AA & XL-450BB) will be energized.

2. Supply Air Flow Low alarm (PAR 25A-364).

3. Return Air Flow Low alarm (PAR 25A-365).

Recovery:

1. Place malfunctioning fan and related fan (440A & 450A) or (440B & 450B) Control, located on Local Panel (B003A), in the "STOP" position.

NOTE: Exhaust Fan (450A or 450B) will stop when related Supply Fan (440A or 440B) is shutdown.

2. Verify Supply & Exhaust fan (440A & 450A) or (440B & 450B) operating status lights on Local Panel (B003A).
3. Repair malfunctioning Fan as described by Section 6.2.4.5 of this SDD.
4. Following completion of repairs place AC System in service as described by Section 4.4.2.5 of this SDD.

5.4.6.2 Supply/Return Fan Discharge Damper (A0D-030A,030B,022A,022B)
Failure

Design Features to Mitigate Effects: AC System 400 is provided with two 50% capacity Supply and Return Fans. Upon malfunction of one Supply Fan (440A or 440B) (and shutdown of related Exhaust Fan 450A or 450B) HVAC may continue to operate at a reduced level until failed unit is returned to service. In addition annunciation is provided to alert operator of a malfunction.

Indications:

	<u>OPEN</u>	<u>CLOSED</u>
A0D-030A	XL-030AA	XL-030AB
A0D-030B	XL-030BA	XL-030BB
A0D-022A	XL-022AA	XL-022AB
A0D-022B	XL-022BA	XL-022BB

1. Damper status Indication, located on Local Panel (B003A) are energized.

- a) If Damper (AOD-030A) malfunctions, indication (XL-030AB, XL-030BA, XL-022AB & XL-022BA) will be energized.
- b) If Damper (AOD-030B) malfunctions, indications (XL-030AA, XL-030BB, XL-022AA & XL-022BB) will be energized.
- c) If Damper (AOD-022A) malfunctions, indications (XL-030AB, XL-030BA, XL-022AB & XL-022BA) will be energized.
- d) If Damper (AOD-022B) malfunctions, indications (XL-030AA, XL-030BB, XL-022AA & XL-022BB) will be energized.

2. Annunciation:

	<u>PANEL</u>	<u>PAR</u>
a. Supply Air Flow Low	B003A	25A-364
b. Return Air Flow Low	B003A	25A-365

Recovery: Damper failure will cause low air flow and should be treated as a fan failure.

1. Place malfunctioning Supply Fan and Related Exhaust Fan (440A & 450A) or (440B & 450B) control, located on Local Panel (B003A), in the "STOP" position.

NOTE: Exhaust Fan (450A or 450B) will stop when related Supply Fan (440A or 440B) is shutdown.

		INDICATION		
<u>FAN</u>		<u>HS</u>	<u>START</u>	<u>STOP</u>
Supply	440A	440A	XL-440AA	XL-440AB
Supply	440B	440B	XL-440BA	XL-440BB
Return	450A	450A	XL-450AA	XL-450AB
Return	450B	450B	XL-450BA	XL-450BB

2. Verify remaining Supply & Exhaust Fan (440A & 450A) or (440B & 450B) operating status lights (as listed below) and located on Local Panel (B003A) are energized.
 - a) If Supply and Exhaust Fan (440A & 450A) are shutdown, indication (XL-440AB, XL-440BA, XL-450AB & XL-450BA) will be energized.
 - b) If Supply and Exhaust Fan (440B & 450B) are shutdown, indication (XL-440AA, XL-440BB, XL-450AA & XL-450BB) will be energized.
3. Repair malfunctioning damper (A0D-030A, 030B, 022A or 022B) as described by Section 6.2.4.5 of this SDD.

5.4.7 MG Set Unit Coolers (421-424)(AOI 25A-39)

Unit Coolers (421-424) serve the MG Sets listed below:

<u>U.C.</u>	<u>CELL</u>	<u>MG SET</u>
421	470	56PRK202A
422	470	56INK202A
423	471	56PRK202B
424	471	56INK202B

5.4.7.1 Supply Fan Failure

Design Features to Mitigate Effects: Units are provided such that one U.C. (421 or 422) or (423 or 424) may be out of service with minimal effect on MG Sets served. In addition an alarm is provided to alert operator to U.C. malfunction.

Indication:

<u>U.C.</u>	<u>INDICATION</u>	
	<u>START</u>	<u>STOP</u>
421	XL-421A	XL-421B
422	XL-422A	XL-422B
423	XL-423A	XL-423B
424	XL-424A	XL-424B

1. Energized operating status lights, located on Local Panel (B003B).
 - a) Failure of Unit Cooler (421), will cause indication (XL-421B, XL-422A, XL-423A & XL-424A) to be energized.
 - b) Failure of Unit Cooler (422), will cause indication (XL-421A, XL-422B, XL-423A & XL-424A) to be energized.
 - c) Failure of Unit Cooler (423), will cause indication (XL-421A, XL-422A, XL-423B & XL-424A) to be energized.
 - d) Failure of Unit Cooler (424), will cause indication (XL-421A, XL-422A, XL-423A & XL-424B) to be energized.
2. Alarms, located on Back Panel (B002) and Local Panel (B003B).

<u>TITLE</u>	<u>PANEL</u>	<u>PAR</u>
Unit Coolers 421, 422, 423, 424 Trouble	B002	25A-388
U.C. 421 Air Flow Low	B003B	25A-367
U.C. 422 Air Flow Low	B003B	25A-368
U.C. 423 Air Flow Low	B003B	25A-369
U.C. 424 Air Flow Low	B003B	25A-370

Recovery:

1. Verify malfunctioning U.C. related damper position as indicated on Local Panel (B003B).

<u>U.C.</u>	<u>DAMPER</u>	<u>STATUS</u>	<u>INDICATION</u>
421	AOD-035	Open	XL-035A
422	AOD-039	Open	XL-039A
423	AOD-042	Open	XL-042A
424	AOD-046	Open	XL-046A

2. Monitor cell (470 & 471) temperature to insure range is within that specified in Section 3 (Table 3-4) of this SDD.
3. Repair U.C. as described by MOP 25A-31.
4. Following completion of maintenance place U.C. in service as described by Section 4.4.2.6 of this SDD.

5.4.7.2 Cooling Coil Failure

Design Features to Mitigate Effects: One U.C. (421 or 422) or (423 or 424) is capable of sufficient cooling to permit continued operation of related System 56 components.

Indication:

<u>U.C.</u>	<u>INDICATOR</u>	<u>LOCATION</u>
421	TI-033	Local
422	TI-037	Local
423	TI-041	Local
424	TI-044	Local

Recovery:

1. When U.C. Cooling Coil leaving air temperature exceeds range specified in Section 3 (Table 3-4) of this SDD, repair U.C. as described by MOP 25A-31.
2. Following completion of repair, place U.C. in service as described by Section 4.4.2.6 of this SDD.

5.4.8 Control Room Filter System (AOI 25A-40)

5.4.8.1 Control Room Filter Unit (471A,471B) Failure

Control Room Filter Units (471A & 471B) are provided to maintain control room habitability during off normal conditions.

Design Features to Mitigate Effects: Redundant Filter Units are provided to allow continuation of CR HVAC operation following a malfunction. A malfunction of one Unit (471A or 471B) will shift operation to the standby Filter Unit and related A/C System.

Indication:

1. Radiation Indicator (96PMRI 042B), located on Main Panel (90CSB016).
2. The following alarms, located on Back Panel (B002) and Local Panel (B003F or B003G).

	<u>TITLE</u>	<u>PANEL</u>	<u>PAR</u>
a.	Unit 471A		
	Bag Filter Differential Pressure High	B002	25A-393
		B003F	25A-394
	HEPA Filter Differential Pressure High	B002	25A-395
		B003F	25A-396
	Adsorbent Filter Differential Pressure High	B002	25A-397
		B003F	25A-398
	HEPA Filter Differential Pressure High	B002	25A-399
		B003F	25A-400
b.	Unit 471B		
	Bag Filter Differential Pressure High	B002	25A-401
		B003G	25A-402
	HEPA Filter Differential Pressure High	B002	25A-403
		B003G	25A-404
	Adsorbent Filter Differential Pressure High	B002	25A-405
		B003G	25A-406
	HEPA Filter Differential Pressure High	B002	25A-407
		B003G	25A-408

3. Filter Unit (471A or 471B) Differential Pressure indicator.

	<u>INST.</u>	<u>PANEL</u>
a. Unit 471A	PDI-068AB	B002
	PDI-068AA	B003F
b. Unit 471B	PDI-068BB	B002
	PDI-068BA	B003G

Recovery: No operator action is required to continue Filter Unit operation as malfunction will start redundant CR Filter Unit and Supply Fan (471A & 441A) or (471B & 441B).

1. Verify start of standby Filter Unit and Supply Fan (471A & 441A) or (471B & 441B), using indication listed above.
2. Shutdown malfunctioned Filter Unit as described by Section 4.4.4.3 of this SDD.
3. Repair CR Filter Unit (471A or 471B) as described by Section 6.2.4.3 of this SDD.

5.4.8.2 Control Room Filter Unit Supply Fan (441A, 441B) Failure

Control Room Filter Units and Supply Fans (471A & 441A) & (471B or 441B) are provided to maintain Control Room habitability during off normal conditions.

Design Features to Mitigate Effects: Redundant Filter Units and Supply Fans are provided to allow continuation of CR HVAC operation following a malfunction. A malfunction of the Supply Fan (441A or 441B) will cause a shift to the standby Filter Unit and Supply Fan (471A & 441A) or (471B & 441B) and related AC unit.

Indication:

<u>SUPPLY</u>	<u>PANEL</u>	<u>START</u>	<u>STOP</u>
441A	B002	XL-441AC	XL-441AD
	B003F	XL-441AA	XL-441AB
441B	B002	XL-441BC	XL-441BD
	B003G	XL-441BA	XL-441BB

1. Supply Fan operating status lights are energized:

- a) Failure of Supply Fan (441A), will cause indication (XL-441AD, XL-441AB, XL-441BC & XL-441BA) to be energized.
- b) Failure of Supply Fan (441B), will cause indication (XL-441AC, XL-441AA, XL-441BD & XL-441BB) to be energized.

2. Filter Unit air flow indication.

<u>UNIT</u>	<u>INST.</u>	<u>PANEL</u>
471A	FR-072A	B002
	FIC-072A	B003F
471B	FR-072B	B002
	FIC-072B	B003G

3. Annunciators.

	<u>PANEL</u>	<u>PAR</u>
Filter Unit 471A Air Flow Low	B002	25A-409
	B003F	25A-410
Filter Unit 471B Air Flow Low	B002	25A-411
	B003G	25A-412

Recovery: No operator action is required to continue Filter Unit operation because malfunction will start redundant CR Filter Unit and Supply Fan (471A & 441A) or (471B & 441B).

- 1. Verify start of standby Filter Unit and Supply Fan (471A & 441A) or (471B & 441B), using indication listed above.
- 2. Shutdown malfunctioned Supply Fan as described by section 4.4.4.3 of this SDD.
- 3. Repair CR Filter Unit Supply Fan (441A or 441B) as described by section 6.2.4.3 of this SDD.

5.4.8.3 Damper Failure

5.4.8.3.1 CR Filter Unit Supply Fan Discharge Damper (MOD-076A,076B)

Control Room Supply Fan Discharge Dampers (MOD-076A & 076B) are provided to isolate related Filter Unit Supply Fan (441A or 441B) when Filter Unit (471A or 471B) is not operating. Failure of this damper will cause a loss of air flow from the operating Control Room Filter Unit Supply Fan.

Design Features to Mitigate Effects: Redundant Clean-up Filter Trains (A&B) are provided to allow continuation of CR HVAC operation following a malfunction of a component of one train (A or B).

Indication:

<u>DAMPER</u>	<u>PANEL</u>	<u>OPEN</u>	<u>CLOSED</u>
MOD-076A	B002	XL-076AC	XL-076AD
	B003F	XL-076AA	XL-076AB
MOD-076B	B002	XL-076BC	XL-076BD
	B003G	XL-076BA	XL-076BB

1. Energized damper status lights.

- a) Failure of Damper (MOD-076A), will cause indication (XL-076AD, XL-076AB, XL-076BC & XL-076BA) to be energized.
- b) Failure of Damper (MOD-076B), will cause indication (XL-076AC, XL-076AA, XL-076BD & XL-076BB) to be energized.

2. CR Filter Unit air flow indication.

<u>UNIT</u>	<u>INST.</u>	<u>PANEL</u>
471A	FR-072A	B002
	FIC-072A	B003F
471B	FR-072B	B002
	FIC-072B	B003G

3. Annunciators

	<u>PANEL</u>	<u>PAR</u>
Filter Unit 471A Air Flow Low	B002	25A-409
	B003F	25A-410
Filter Unit 471B Air Flow Low	B002	25A-411
	B003G	25A-412

Recovery: No operator action is required to continue Filter Unit operation as malfunction will start redundant CR Filter Unit and Supply Fan (471A & 441A) or (471B & 441B).

1. Verify start of standby Filter Unit and Supply Fan (471B & 441B), using indication listed above.
2. Shutdown malfunctioning Supply Fan as described by section 4.4.4.3 of this SDD.
3. Repair CR Filter Unit Damper (MOD-076A or 076B) as described by section 6.2.4.3 of this SDD.

5.4.9 Airborne Radioactivity in Outside Environment (EOI 25A-13)

Design Features to Mitigate Effects: To avoid the possibility of inclusion of radioactive particulate matter in the inlet air, radioactivity monitors (SDD-96) are located in the supply air ductwork of the Control Room AC system.

Indication:

<u>Inst.#</u>	<u>Panel</u>
1. RX040A	96PMB040A
2. RX041A	96PMB041A
3. #1 or 2 Above	96AAB001A&1B (Console)

Recovery:

Automatically the Control Room AC System shifts to a recirculating mode. The Remote or Main outside Air Intake is automatically isolated by System 25A to provide makeup air with the lowest contamination level.

1. Verify outside air duct isolation valves (AOV-122A & 122B) "CLOSE" indication, located on Main Panel (90CSB016).
2. Verify Outside Filter Air Valves (AOV-123A & 123B) "OPEN", as indicated on Main Panel (90CSB016).
3. Verify exhaust air isolation valves "CLOSE" indication, (AOV-64A&64B) located on Main Panel (90CSB016).
4. Verify (one set) outside air intake isolation valves "CLOSE" indication, located on Main Panel (90CSB016).

Air Intake

Main

Remote

Valves

MOV-047A & 047B

MOV-104A & 104B

5. Verify start of Control Room Filter Unit (471A or 471B) as indicated by the following (Panel B003F).
 1. Filter Unit d/p indication PDI-068A or 068B.
 2. Filter Unit Air flow FIC-072A or 072B.
6. Following determination of safe air supply, return control room AC system to normal as described by section 4.4.5.1 of this SDD.

NOTE: The changeout of radioactive HEPA filters are required, refer to section 6.2.6 of this SDD.

5.5 DIESEL GENERATOR BUILDING

Equipment and instrument numbers are prefixed by 25ADA.

Panel numbers are prefixed by 25NI (local) and 25AA (Back).

5.5.1 Diesel Generator Rooms Emergency Supply Fan (341A, 341B, 342A, 342B) (AOI 25A-22)

5.5.1.1 Operating Fan Failure

Design Features to Mitigate Effects: Fans are provided with failure alarm to alert operator to malfunction.

Indication:

1. Annunciation:

a. Air Flow Low

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
341A	FSL-004A	B002	25A-195
		B004C	25A-196
341B	FSL-004B	B002	25A-197
		B004C	25A-198
342A	FSL-011A	B002	25A-199
		B004D	25A-200
342B	FSL-011B	B002	25A-201
		B004D	25A-202

B

2. Indication

<u>FAN</u>	<u>START</u>	<u>STOP</u>	<u>PANEL</u>
341A	XL-341AC	XL-341AD	B002
	XL-341AA	XL-341AB	B004C
341B	XL-341BC	XL-341BD	B002
	XL-341BA	XL-341BB	B004C
342A	XL-342AC	XL-342AD	B002
	XL-342AA	XL-342AB	B004D
342B	XL-342BC	XL-342BD	B002
	XL-342BA	XL-342BB	B004D

- a) Failure of Fan (341A), will cause indication (XL-341AD, XL-341AB, XL-341BC, XL-341BA, XL-342AC, XL-342AA, XL-342BA & XL-342BC) to be energized.
- b) Failure of Fan (341B), will cause indication (XL-341AC, XL-341AA, XL-341BD, XL-341BB, XL-342AC, XL-342AA, XL-342BC & XL-342BA) to be energized.
- c) Failure of fan (342A), will cause indication (XL-341AC, XL-341AA, XL-341BC, XL-341BA, XL-342AD, XL-342AB, XL-342BC & XL-342BA) to be energized.
- d) Failure of Fan (342B), will cause indication (XL-341AC, XL-341AA, XL-341BC, XL-341BA, XL-342AC, XL-342AA, XL-342BD & XL-342BB) to be energized.

Recovery:

1. Place affected Fan (341A, 341B, 342A, 342B) Control (HS-341AB, 341BB, 342AB or 342BB), located on Back Panel (B002), in the "STOP" position.
2. Repair/replace malfunctioning fan as described by section 6.2.5.1 of this SDD.

5.5.1.2 Excessive Fan Vibration

Design Features to Mitigate Effects: Fans are provided with an excessive vibration alarm to alert operator.

Indication:

1. Excessive Vibration Alarm

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
341A	YSH-28A	B002	25A-203
		B004C	25A-204
341B	YSH-28B	B002	25A-205
		B004C	25A-206
342A	YSH-29A	B002	25A-207
		B004D	25A-208
342B	YSH-29B	B002	25A-209
		B004D	25A-210

Recovery:

1. Place affected Fan (341A, 341B, 342A or 342B) control (HS-341AB, 341BB, 342AB or 342BB), located on Back Panel (B002), in the "STOP" position.
2. Repair/replace malfunctioning fan as described by section 6.2.5.1 of this SDD.

5.5.1.3 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Supply Fans are supplied by a safety related bus, and upon loss of off-site AC power, the Diesel Generator load sequence (following a 20 sec. time delay) will automatically start Supply Fans.

Indication: Fan operating status lights listed in section 5.5.1.1 of this SDD, located on local panel (B004C or B004D) and Back Panel (B002).

Recovery: Fans operate only during Diesel Generator operation. Following restoration of off-site AC power, no operator action is required to continue Supply Fan operation, fans shall continue to operate until Diesel Generator is shutdown.

5.5.1.4 Damper (MOD-002A,002B,010A,010B) Failure

Dampers are provided for isolation of related fan during maintenance.

Design Features to Mitigate Effects: Two Emergency Supply Fans and discharge dampers are provided in each Emergency Generator Cell (511, 512). Upon failure of supply air flow, the related Diesel Generator operation will continue. Dampers are provided with the capability of being opened manually.

Indication: Damper failure will cause a low air flow and related Supply Fan shutdown.

1 Annunciation:

<u>FAN</u>	<u>MOP</u>	<u>FSL</u>	<u>PANEL</u>	<u>PAR</u>
341A	002A	004A	B002	25A-195
		004A	B004C	25A-196
341B	002B	004B	B002	25A-197
		004B	B004C	25A-198
342A	010A	011A	B002	25A-199
		011A	B004D	25A-200
342B	010B	011B	B002	25A-201
		011B	B004D	25A-202

2. Damper status indication:

<u>MOD</u>	<u>FAN</u>	<u>PANEL</u>	<u>OPEN</u>	<u>CLOSED</u>
002A	341A	B002	XL-002AC	XL-002AD
		B004C	XL-002AA	XL-002AB
002B	341B	B002	XL-002BC	XL-002BD
		B004C	XL-002BA	XL-002BB
010A	342A	B002	XL-010AC	XL-010AD
		B004D	XL-010AA	XL-010AB
010B	342B	B002	XL-010BC	XL-010BD
		B004D	XL-010BA	XL-010BB

- a) Failure of Damper (MOD-002A), will cause indication (XL-002AD, XL-002AB, XL-002BC, XL-002BA, XL-010AC, XL-010AA, XL-010BC & XL-010BA) to be energized.
- b) Failure of Damper (MOD-002B), will cause indication (XL-002AC, XL-002AA, XL-002BD, XL-002BB, XL-010AC, XL-010AA, XL-010BC & XL-010BA) to be energized.
- c) Failure of Damper (MOD-010A), will cause indication (XL-002AC, XL-002AA, XL-002BC, XL-002BA, XL-010AD, XL-010AB, XL-010BC & XL-010BA) to be energized.
- d) Failure of Damper (MOD-010B), will cause indication (XL-002AC, XL-002AA, XL-002BC, XL-002BA, XL-010AC, XL-010AA, XL-010BD & XL-010BB) to be energized.

Recovery:

1. Place related Emergency Supply Fan Control, located on the Back Panel (B002), in the "STOP" position.

<u>DAMPER</u>	<u>FAN</u>	<u>HS</u>
002A	341A	341AB
002B	341B	341BB
010A	342A	342AB
010B	342B	342BB

2. Repair/replace malfunctioned damper as described by section 6.2.5.1 of this SDD.

5.5.2 Day Tank Cell Exhaust Fan (343,344) (AOI 25A-33)

5.5.2.1 Loss of Off-Site AC Power

Design Features to Mitigate Effects: Exhaust fans are supplied with 1E power and will be automatically supplied from 1E (diesel) bus supply following diesel sequencing (20 sec. time delay).

Indication:

<u>FAN</u>	<u>START</u>	<u>STOP</u>	<u>PANEL</u>
343	XL-343C	XL-343D	B002
	XL-343A	XL-343B	B004C
344	XL-344C	XL-344D	B002
	XL-344A	XL-344B	B004C

1. Operating status lights.

- a) Failure of Fan (343), will cause indication (XL-343D, XL-343B, XL-344C, XL-344A) to be energized.
- b) Failure of Fan (344), will cause indication (XL-343C, XL-343A, XL-344D & XL-344B) to be energized.

2. Alarms

<u>FAN</u>		<u>INST.</u>	<u>PANEL</u>	<u>PAR</u>
343	Air Flow Low	FSL-64	B002	25A-216
		FSL-64	B004C	25A-215
344	Air Flow Low	FSL-65	B002	25A-218
		FSL-65	B004D	25A-217

B

Recovery: No operator action is required to continue fan operation following restoration of off-site AC power.

5.5.2.2 Excessive Fan Vibration

Design Features to Mitigate Effects: Exhaust Fans are provided with excessive vibration alarm to alert operator of fan malfunction.

Indication:

1. Fan Vibration High Alarm

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
343	YSH-24	B002	25A-211
		B004C	25A-212
344	YSH-26	B002	25A-213
		B004D	25A-214

Recovery:

1. Place affected Fan (343 or 344) Control (HS-343B or 344B), located on Back Panel (B002), in the "STOP" position.
2. Provide temporary ventilation (System 45) to prevent fume buildup in affected cell (514 or 515).
3. Repair/replace fan as described by section 6.2.5.5 of this SDD.

5.5.3 H&V Unit (331,332) (AOI 25A-24)

5.5.3.1 Supply Fan Failure

Design Features to Mitigate Effects: H&V Unit is provided with a malfunction alarm to alert operator to a failure.

Indication:

1. Alarm

a. Air Flow Low

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
331	FSL-64	B002	25A-216
		B004A	25A-215
332	FSL-65	B002	25A-218
		B004B	25A-217

2. Operating status lights; located on Local Panel (B004A & B004B).

<u>FAN</u>	<u>START</u>	<u>STOP</u>	<u>PANEL</u>
331	XL-331A	XL-331B	B004A
332	XL-332A	XL-332B	B004B

- a) Failure of Fan (331), will cause indication (XL-131B & XL-132A) to be energized.
- b) Failure of Fan (332), will cause indication (XL-131A & XL-132B) to be energized.

Recovery:

- 1. Place affected Fan (331 or 332) control (HS-331 or 332), located on Local Panel (B004A or B004B), in the "STOP" position.
- 2. Repair/replace affected fan as described by section 6.2.5.2 of this SDD.

5.5.3.2 Heating Coil Failure

NOTE: Heating coil is energized only when H&V Unit is in the WINTER mode (outside air temperature < 50°F).

Design Features to Mitigate Effects: H&V Unit is provided with a low temperature shutdown and an alarm to alert operator to a low temperature at the heating coil outlet.

Indication:

- 1. Alarm
 - a. Air Flow Low

<u>FAN</u>	<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
331	FSL-034	B002	25A-219
		B004A	25A-220
332	FSL-035	B002	25A-221
		B004B	25A-222

2. Indication

<u>UNIT</u>		<u>START</u>	<u>STOP</u>	<u>PANEL</u>
331	Operating Status	XL-331C	XL-331D	B002
	Operating Status	XL-331A	XL-331B	B004A
	Temperature	TIC-4		B004A
332	Operating Status	XL-332C	XL-332D	B002
	Operating Status	XL-332A	XL-332B	B004B
	Temperature	TIC-12		B004B

- a) Failure of Unit Cooler (331), will cause indication (XL-331D, XL-331B, XL-332C & XL-332A) to be energized.
- b) Failure of Unit Cooler (332), will cause indication (XL-331C, XL-331A, XL-332D & XL-332B) to be energized.

Recovery:

1. Determine source of heating coil malfunction and repair, as described by SDD-75A.
2. Restart H&V Unit (331 or 332) as described by section 4.5.2.2 of this SDD.

5.5.4 MG Set Unit Cooler (321, 322)(AOI 25A-34)

5.5.4.1 Fan Failure

Design Features to Mitigate Effects: U.C. is provided with malfunction alarm to alert operator to fan failure. In addition air flow bypass is provided from the MG set to the cell.

Indication:

1. Annunciation

<u>U.C.</u>		<u>INST.#</u>	<u>PANEL</u>	<u>PAR</u>
321	Air Flow Low	FSL-036	B004E	25A-223
322	Air Flow Low	FSL-037	B004E	25A-224
321/322		Trouble	B002	25A-225

2. Indication; located on Local Panel (B004E)

1. Operating status light.

<u>U.C.</u>	<u>START</u>	<u>STOP</u>	<u>PANEL</u>
321	XL-321A	XL-321B	B004E
322	XL-322A	XL-322B	B004E

- a) Failure of Fan (321), will cause indication (XL-321B & XL-322A) to be energized.
- b) Failure of Fan (322), will cause indication (XL-321A & XL-322B) to be energized.

2. Temperature indicator.

<u>UNIT</u>	<u>INST.#</u>	<u>LOCATION</u>
321	TI-017,018	Local
322	TI-021,022	Local

3. Cell temperature indicator

<u>UNIT</u>	<u>CELL</u>	<u>INST.#</u>
321	542	TI-020
322	543	TI-038

Recovery:

1. Place affected U.C. (321 or 322) Control (HS-321 or 322), located on Local Panel (B004E), in the "STOP" position.
2. Verify operation of operating MG Set (56PRK202C or 56INK202C) as described by SDD-51 (SOI 51A-2 or 51B-6).
3. Repair/replace fan as described by section 6.2.5.3 of this SDD.

5.5.4.2 Cooling Coil Failure

Design Features to Mitigate Effects: Unit Coolers are provided with cooling coil and cell temperature indication.

Indication located locally and on Local Panel (B004E).

<u>U.C.</u>	<u>INST.#</u>
331	TI-017/018,020
332	TI-021/022,038

Recovery:

1. Verify operation of operating MG Set (56PRK202C or 56INK202C) as described by SDD-51 (SOI 51A-2 or 51B-6).
2. Following start of redundant MG set (56PRK202C or 56INK202C) and U.C. (321,322); place affected Unit cooler control (HS-321 or 322), located on Local Panel (B004E), in the "STOP" position.

3. Repair/replace unit as described by section 6.2.5.3 of this SDD.

5.6 System 25A Generic Casualties

5.6.1 Casualties Not Applicable to System 25A

5.6.1.1 Abnormal Chemistry

Due to the nature of System 25A equipment, abnormal chemistry is not applicable to System 25A.

5.6.1.2 Flooding

Due to the location of the plant with respect to area flood zones and the location of System 25A equipment with respect to possible plant sources of flooding, it has been determined that any flooding than can reasonably be expected to occur, will have no effect on System 25A operation due to their placement within the NI Buildings.

5.6.2 Casualties Leading to Catastrophic Failure of System 25A or its Components

5.6.2.1 Occurrence of Smoke or Fire (EOI 25A-7)

System 25A itself incorporates no features to extinguish fires. However, should a fire occur, System 26B fire (smoke) detectors will provide indication of the casualty.

5.6.2.1.1 RCB

1. Occurrence of Smoke in RCB

Design Features to Mitigate Effects:

Upon sensing smoke, some System 25A components will shutdown, preventing the spread of smoke throughout the RCB.

	<u>AE</u>	<u>LOCATION</u>
a. RCB Supply Fans 240A & 240B	010	RSB
b. RCB Exhaust Fans 165A & 165B	009	RSB
c. Below Operating Floor Unit Cooler 010	001	105I
Return Fan 050	002	105I
d. Below Operating Floor Unit cooler 011	003	105K
Return Fan 051	004	105K
e. Above Operating Floor Unit Cooler		
	020A 011	161A
	020B 012	161A
	020C 013	161A
f. HAA Unit Cooler	024 027	152

Indication:

1. Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>TITLE</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-19	Response to Common Fire Alarm from RCB, SGB-IB and SGB-AB alarm.

Recovery Procedure

1. The operators will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repairs/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.1.2 of this SDD.

2. Occurrence of Fire in RCB

Design Features to Mitigate Effects:

Upon sensing high temperature at the air inlet of the following components, the unit will shutdown to prevent spread of fire in RCB.

	<u>TSH</u>		<u>LOCATION</u>
a. Annulus Filter Unit	182A	008	RSB-395
b. Annulus Filter Unit	182B	007	RSB-398
c. EI&C Cubicle Unit Cooler	021	015	165
	022	016	163
	023	017	167
	053	014	125
d. LCCV Cell Unit Cooler			

Indications:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>TITLE</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-19	Response to Common Fire Alarm from RCB, SGB-IB and SGB-AB Alarm.

Recovery Procedure

1. The operators will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repairs/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.

3. If possible, reenergize available portions of System 25A in accordance with startup procedures in Section 4.1.2 of this SDD.

5.6.2.1.2 RSB

1. Occurrence of Smoke

Design Features to Mitigate Effects:

1. Smoke venting capability is provided for areas containing safety-related equipment, and the stairwells will be pressurized during a fire accident.
2. The Smoke Vent Fan (25AGA165) shall be started manually, as described by SOI 26B-13, to provide venting from the areas containing safety related equipment.
3. Upon sensing smoke the following units will shutdown, preventing the spread of smoke throughout the RSB HVAC System.

	<u>RSB</u>	<u>EIN</u>	<u>AE</u>	<u>Location</u>
a.	RSB Supply Fans	140A&140B	021	365
b.	RSB Exhaust Fans	160A&160B	018	
c.	RAPS & CAPS Cells Exhaust Fans	162A&162B	029	365

	<u>RSB-RWA</u>	<u>EIN</u>	<u>AE</u>
a.	RSB-RWA Exhaust Fans	161A&161B	030
b.	RSB-RWA Supply Fans	141A&141B	026&032
c.	RWA Exhaust Filter Unit	171	031

Indication:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-15	Response to Fire Detected in RWB Alarm
26B-16	Response to Manual Fire Alarm Station Operation in RWB Alarm
26B-17	Response to Fire Detected in RWB HVAC System Alarm
26B-18	Response to Water Flowing in RWB Standpipe System Alarm
26B-20	Response to Common Fire Alarm from RSB, DGB and CB alarm.

Recovery Procedure

1. The operators will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repairs/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.2.2 of this SDD.

2. Occurrence of Fire

Design Features to Mitigate Effects:

1. In the event of a fire in the building, a signal from SDD-26B detectors will start the Stairwell Pressurization Fans (25AGA166-169) to prevent the smoke from entering the stairwells.
2. Upon sensing high temperature at the air inlet of the following components, the unit will shutdown to prevent spread of fire in RSB.

	<u>EIN</u>	<u>TSH</u>	<u>LOCATION</u>
a. Refueling Communication Center AC Unit	103	135	328
b. ABHX Cell U.C.	104A	019	327
c. ABHX Cell U.C.	104B	020	326

Indication:

<u>RSB</u>	<u>EIN</u>	<u>TI</u>	<u>LOCATION</u>
a. Annulus Filter Cell U.C.	146	023	395
b. Annulus Filter Cell U.C.	132	022	398
c. Electrical Equipment Cell U.C.	137	127	305E
d. Electrical Equipment Cell U.C.	138	128	305F
e. Containment Clean-up Pump Cell U.C.	139A	129	305I
f. Containment Clean-up Pump Cell U.C.	139B	130	305G
g. Containment Clean-up Pipe Chase U.C.	145	131	349
h. Containment Clean-up Pipe Chase U.C.	143	132	348
i. Containment Clean-up Filter Cell U.C.	134	025	347
j. Containment Clean-up Filter Cell U.C.	133	024	391
k. Containment Clean-up Scrubber Cell U.C.	142A	133	359
l. Containment Clean-up Scrubber Cell U.C.	142B	134	359
m. RAPS & CAPS Unit Cooler	131	028	365

3. Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm.
26B-15	Response to Fire Detected in RWB Alarm.
26B-16	Response to Manual Fire Alarm Station Operation in RWA Alarm.
26B-17	Response to Fire Detected in RWB HVAC System Alarm.
26B-18	Response to Water Flowing in RWB Standpipe System Alarm.
26B-20	Response to Common Fire Alarm From RSB, DGB AND CB Alarm.

Recovery Procedure

1. The operators will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repairs/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.2.2 of this SDD.

5.6.2.1.3 SGB

1. Occurrence of Smoke

Design Features to Mitigate Effects:

1. Smoke venting capability is provided for areas containing safety related equipment and the stairwells will be pressurized during a fire accident.

2. Smoke Vent Fan (266) shall be started manually to provide smoke venting from the area containing safety related equipment.
3. Upon sensing smoke the following units will shutdown, preventing the spread of smoke throughout the SGB.

	<u>EIN</u>	<u>AE</u>	<u>LOCATION</u>
a. Loop 1 Supply Fans	241A&241B	055	244
b. Loop 1 Exhaust Fans	261A&261B	056	244
c. Loop 2 Supply Fans	242A&242B	059	245
d. Loop 2 Exhaust Fans	262A&262B	060	245
e. Loop 3 Supply Fans	243A&243B	057	246
f. Loop 3 Exhaust Fans	263A&263B	064	246
g. IB Supply Fans	249A&249B	066	271
h. IB Exhaust Fans	267A&267B	067	271
i. IB Supply Fans	244A&244B	068	262
j. IB Exhaust Fans	264A&264B	069	262

Indication:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm.
26B-19	Response to Common Fire Alarm from RCB, SGB-IB and SGB-AB Alarm.
26B-22	Response to Fire Detected in SGB-MB Alarm.
26B-23	Response to Manual Fire Alarm Station Operated in SGB-MB Alarm.

Recovery Procedure

1. The operators will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repairs/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.3.2 of this SDD.

2. Occurrence of Fire

Design Features to Mitigate Effects:

1. In the event of fire in buildings, a signal from System 26B detectors will start Stairwell Pressurization Fans (25AGA264A, 264B, 247A, 247B, 248A, 248B) to prevent the smoke from entering the stairwells.
2. Unit Coolers (25AGA237A, 237B, 237C) are provided, one for each System 56 panel Cell (272A, 272B, 272C). Unit coolers will maintain the Upset Design Conditions in these cells in the event of fire in the SGB-IB buildings.

	<u>EIN</u>	<u>TSH</u>	<u>LOCATION</u>
a. Auxiliary Feed Pump U.C.	222A	057	202
b. Auxiliary Feed Pump U.C.	222B	058	202
c. Auxiliary Feed Pump U.C.	221A	061	204A
d. Auxiliary Feed Pump U.C.	221B	062	204B
e. Maintenance Bay A/C Unit	210	065	261
f. Primary Na Tank Cell U.C.	220	070	211
g. Emergency Chiller U.C.	223A	071	216
h. Emergency Chiller U.C.	223B	072	217
i. System 56 Panel U.C.	237A	073	272A
j. System 56 Panel U.C.	237B	074	272B
k. System 56 Panel U.C.	237C	075	272C

Indication:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm.
26B-19	Response to Common Fire Alarm from RCB, SGB-IB and SGB-AB Alarm.
26B-22	Response to Fire Detected in SGB-MB Alarm.
26B-23	Response to Manual Fire Alarm Station Operated in SGB-MB Alarm.

Recovery Procedure:

1. The operator will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on Local and Control Room Panels.
2. Shutdown and isolate damaged equipment for repair/replacement in accordance with the applicable procedure in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.3.2 of this SDD.

5.6.2.1.4 CB

1. Occurrence of Fire

Design Features to Mitigate Effects:

1. Control Building HVAC System is designed to permit purging of the control room after a fire.

2. Upon sensing high temperature at the air inlet of the following components, the unit will shutdown to prevent spread of fire in CB.

	<u>EIN</u>	<u>TSH</u>	<u>LOCATION</u>
a. Battery Room (452&463) Exhaust Fan	461	081	412
b. Battery Room (453&459) Exhaust Fan	452	078	413
c. Battery Room (451&454) Exhaust Fan	463	079	413
d. Battery Room (458&460) Exhaust Fan	464	080	412

Indication:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-20	Response to Common Fire Alarm from RSB, DGB and CB Alarm

Recovery Procedure:

1. The operator will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repair/replacement in accordance with the applicable procedure in section 4 and 6 of this SDD.

3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.4.2 of this SDD.

2. Occurrence of Smoke

Design Features to Mitigate Effects:

1. Smoke venting capability is provided for areas containing safety related equipment, and the stairwells will be pressurized during a fire accident.
2. A Smoke Vent Fan (25ACA466) and a smoke vent chase is provided to vent smoke from cell 413 at elevation 863'3", cell 412 at elevation 847'3", the Upper Cable Spreading Room at elevation 831', and the Lower Cable Spreading Room at elevation 794' (only one cell may be vented at a time).
3. Systems 26B signal will start Stairwell Pressurization Fan (25ACA442) and pressurize the stairwell, to prevent smoke from entering the stairwell.
4. Upon sensing smoke the following units will shutdown, preventing the spread of smoke through out the CB HVAC System.

	<u>EIN</u>	<u>AE</u>	<u>LOCATION</u>
a. Control Room AC Unit	410A	043	410A
b. Control Room AC Unit	451A	047	410A
Return Fan			
c. Control Room AC Unit	410B	044	411A
d. Control Room AC Unit	451B	048	411A
Return Fan			
e. MG Set & Swgr. Supply Fan	440A&440B	033	412
f. MG Set & Swgr. Return Fan	450A&450B	034	413
g. MG Set U.C.	421	035	470
h. MG Set U.C.	422	036	470
i. MG Set U.C.	423	037	471
j. MG Set U.C.	424	038	471

k. Swgr. AC Unit	411	039	413
l. Swgr. AC Unit Return Fan	452	041	413
m. Swgr. AC Unit	412	040	412
n. Swgr. AC Unit Return Fan	453	042	412

Indication:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-20	Response to Common Fire Alarm from RSB, DGB and CB Alarm

Recovery Procedure:

1. The operator will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indicators on local and control room panels.
2. Shutdown and isolate damaged equipment for repair/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in sections 4.4.2 of this SDD.

5.6.2.1.5 DGB

1. Occurrence of Smoke

Design Features to Mitigate Effects:

1. Smoke venting capability is provided for areas containing safety related equipment.
2. Smoke Vent Fan (25ADA360) and a smoke vent chase is provided to vent smoke from Cells 521 & 522 at elevation 794' (only one cell may be vented at a time).

Indication:

1. Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-20	Response to Common Fire Alarm from RSB, DGB and CB Alarm

Recovery Procedure:

1. The operator will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indicators on local or control room panels.
2. Shutdown and isolate damaged equipment for repair/replacement in accordance with the applicable procedure in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.5.2 of this SDD.

2. Occurrence of Fire

Design Features to Mitigate Effects.

1. Upon sensing smoke the following units will shutdown, preventing the spread of smoke throughout the DGB HVAC System.

	<u>EIN</u>	<u>AE</u>	<u>LOCATION</u>
a. MG Set U.C.	321	054	542
b. MG Set U.C.	322	053	543

2. Upon sensing high temperature at the air outlet of the following components, the fans will shutdown to prevent spread of fire in the DGB.

	<u>EIN</u>	<u>TSH</u>	<u>LOCATION</u>
a. Day Tank Cell (514) Exhaust Fan	343	077	511
b. Day Tank Cell (515) Exhaust Fan	344	078	512
c. H&V Unit	331	053	511
d. H&V Unit	332	054	512

Indication:

Refer to one or more of the following System 26B PAR's.

<u>PAR</u>	<u>Title</u>
26B-14	Response to Fire in Nuclear Island Alarm
26B-20	Response to Common Fire Alarm from RSB, DGB and CB Alarm

Recovery Procedure:

1. The operator will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indicators on local or control room panel.
2. Shutdown and isolate damaged equipment for repair/replacement in accordance with the applicable procedure in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with startup procedures in section 4.5.2 of this SDD.

5.6.2.2 Effects of Natural Elements (EOI 25A-8)

- Seismic
- Tornado Missiles (external)
- High Winds

All NI HVAC System components are located in tornado hardened, Seismic Category I buildings except those components which are in the RSB Radwaste building and the SGB Maintenance bay.

All NI HVAC System components are protected from wind, snow and rain by placement within the NI buildings.

5.6.2.2.1 RCB

System 25A components are Seismic Class I and are contained in a Tornado Hardened structure. They are therefore not subject to failure if either of these events occur.

5.6.2.2.2 RSB, SGB, CB & DGB

Components are Seismic Class III and contained in non-Tornado Hardened structures. They are therefore subject to complete failure in the case of a seismic event, however System 25A components are subject to failure caused by external missiles.

Recovery Procedure

1. The operators will have to determine which equipment is capable of being safely operated. This may be done by visual inspection and use of indications on local and control room panels.
2. Shutdown and isolate damaged equipment for repairs/replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize available portions of System 25A in accordance with applicable startup procedures in section 4.1.2, 4.2.2, 4.3.2, 4.4.2 or 4.5.2 of this SDD.

5.6.3 Miscellaneous Casualties (EOI 25A-9)

The following casualties may or may not have an adverse effect on System 25A operation depending on the location and the severity of the casualty:

- Missiles (internal)
- Jet Impingement

5.6.3.1 Design Features to Mitigate Effects

1. RCB (TBD)

- a. Internal Missiles

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- b. Jet Impingement

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2. RSB (TBD)

- a. Internal Missiles

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- b. Jet Impingement

3. SGB (TBD)

4. CB (TBD)

a. Internal Missiles

b. Jet Impingement

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5. DGB (TBD)

a. Internal Missiles

b. Jet Impingement

5.6.3.2 Recovery Procedures

1. Recovery from Missiles or Jet Impingement will entail visual inspection of those components effected by the casualty.
2. Shutdown and isolate damaged equipment for repair and/or replacement in accordance with the applicable procedures in sections 4 and 6 of this SDD.
3. If possible, reenergize System 25A components in accordance with start-up procedures in section 4 of this SDD.

5.6.4 Plant or Support System Casualties

The following are casualties to System 25A caused by Plant/Support System malfunctions.

5.6.4.1 Loss of Instrument Air (AOI 25A-35)

Design Features to Mitigate Effects:

Loss of instrument air will cause System 25A air operated dampers to assume the fail position. In addition, dampers are provided with the capability of being positioned manually, however pneumatic instruments will not function.

Indications:

1. System 22 indications as described in SDD-22 (AOI 22-1).
2. System 25A damper indication as listed below.

<u>Damper</u>	<u>Fail</u> <u>Position</u>	<u>Indication</u>	<u>Panel</u>
RCB			
AOV-046A RCB Supply Isolation	Closed	99ESCVZ1004B	90CSB016
AOV-046B RCB Supply Isolation	Closed	99ESCV21003B	90CSR016
AOV-046C RCB Supply Isolation	Closed	99ESCVZ1021B	90CSB016
AOV-047A RCB Exhaust Isolation	Closed	99ESCV21002B	90CSB016
AOV-047B RCB Exhaust Isolation	Closed	99ESCV21001B	90CSR016
AOV-047C RCB Exhaust Isolation	Closed	99ESCV21022B	90CSB016
AOD-095 Operating Floor Discharge	Closed	XL-095B	B001C
AOD-096 Operating Floor Discharge	Closed	XL-096B	B001C
AOD-097 Operating Floor Discharge	Closed	XL-097B	B001C
AOD-098 Operating Floor Discharge	Closed	XL-098B	B001C
RSB			
AOD-069A U.C. 020A Discharge	Closed	XL-069AB	B001C
AOD-069B U.C. 020B Discharge	Closed	XL-069BB	B001C
AOD-069C U.C. 020C Discharge	Closed	XL-069CB	B001C
AOD-017A Annulus Discharge	Closed	XL-017AB	B001G
AOD-017A Annulus Discharge	Closed	XL-017AD	B002
AOD-017B Annulus Discharge	Closed	XL-017BB	B001H
AOD-017B Annulus Discharge	Closed	XL-017BD	B002
AOD-018A Annulus Discharge	Open	XL-018AA	B001G
AOD-018A Annulus Discharge	Open	XL-018AC	B002
AOD-018B Annulus Discharge	Open	XL-018BA	B001G
AOD-018B Annulus Discharge	Open	XL-018BC	B002
AOD-037 AHU 200 Outside Air Supply	Closed	XL-037B	B001A
AOD-043A RCB Supply Fan 240A Discharge	Closed	XL-043AD	B002
AOD-043A RCB Supply Fan 240A Discharge	Closed	XL-043AB	B001A
AOD-043B RCB Supply Fan 240B Discharge	Closed	XL-043BD	B002

B

<u>Damper</u>	<u>Fail</u> <u>Position</u>	<u>Indication</u>	<u>Panel</u>
AOD-043B RCB Supply Fan 240B Discharge	Closed	XL-043BB	B001A
AOD-078A RCB Exhaust Fan 165A Discharge	Closed	XL-078AD	B002
AOD-078A RCB Exhaust Fan 165A Discharge	Closed	XL-078AB	B001A
AOD-078B RCB Exhaust Fan 165B Discharge	Closed	XL-078BD	B002
AOD-078B RCB Exhaust Fan 165B Discharge	Closed	XL-078BB	B001A
RSB			
AOD-026 RAPS & CAPS Exhaust Air Damper	Closed	XL-026B	B005Q
AOD-090A RAPS & CAPS Exhaust Fan 162A Discharge	Closed	XL-090AB	B005Q
AOD-090B RAPS & CAPS Exhaust Fan 162B Discharge	Closed	XL-090BB	B005Q
AOD-020A Filter Isolation	Open	XL-020AA	B001G
AOD-020B Filter Isolation	Open	XL-020BA	B001G
AOD-171 AC Unit 103 Outside Air Supply	Closed	XL-171B	B005A
AOD-009A RSB Supply Fan 140A Discharge	Closed	XL-009AB	B005D
AOD-009B RSB Supply Fan 140B Discharge	Closed	XL-009BB	B005D
AOD-10 AHU 100 Outside Air Supply	Closed	XL-010D	B002
AOD-10 AHU 100 Outside Air Supply	Closed	XL-010B	B001D
AOD-025A RSB Exhaust Fan 160A Discharge	Closed	XL-025AB	B005D
AOD-032A Cell 336 Supply Isolation	Closed	XL-032AD	B002
AOD-032A Cell 336 Supply Isolation	Closed	XL-032AB	B002E
AOD-032B Cell 336 Supply Isolation	Closed	XL-032BD	B002

<u>Damper</u>	<u>Fail</u>	<u>Position</u>	<u>Indication</u>	<u>Panel</u>
AOD-032B Cell 336 Supply Isolation	Closed		XL-032BB	B005F
AOD-033A Cell 336 Exhaust Isolation	Closed		XL-033AD	B002
AOD-033A Cell 336 Exhaust Isolation	Closed		XL-033AB	B005E
AOD-033B Cell 336 Exhaust Isolation	Closed		XL-033BD	B002
AOD-033B Cell 336 Exhaust Isolation	Closed		XL-033BB	B005F
AOD-262A Cell 310 Supply Isolation	Closed		XL-262AD	B002
AOD-262A Cell 310 Supply Isolation	Closed		XL-262AB	B005E
AOD-262B Cell 310 Supply Isolation	Closed		XL-262BD	B002
AOD-262B Cell 310 Supply Isolation	Closed		XL-262BB	B005F
AOD-263A Cells 328,324,308A&325 Supply Isolation	Closed		XL-263AD	B002
AOD-263A Cells 328,324,308A&325 Supply Isolation	Closed		XL-263AB	B005E
AOD-263B Cells 328,324,308A&325 Supply Isolation	Closed		XL-263BD	B002
AOD-263B Cells 328,324,308A&325 Supply Isolation	Closed		XL-263BB	B005F
AOD-264A Cells 308A&313 Supply Isolation	Closed		XL-264AD	B002
AOD-264A Cells 308A&313 Supply Isolation	Closed		XL-264AB	B005E
AOD-264B Cells 308A&313 Supply Isolation	Closed		XL-264BD	B002
AOD-264B Cells 308A&313 Supply Isolation	Closed		XL-264BB	B005F
AOD-265A Cell 308A Exhaust Isolation	Closed		XL-265AD	B002
AOD-265A Cell 308A Exhaust Isolation	Closed		XL-265AB	B005E
AOD-265B Cell 308A Exhaust Isolation	Closed		XL-265BD	B002
AOD-265B Cell 308A Exhaust Isolation	Closed		XL-265BB	B005F
AOD-050 AHU-101 Outside Air Inlet	Closed		XL-050B	B006
AOD-058A RSB-RWA Supply Fan 141A Discharge	Closed		XL-058AB	B006
AOD-058B RSB-RWA Supply Fan 141B Discharge	Closed		XL-058BB	B006

B

<u>Damper</u>	<u>Fail</u> <u>Position</u>	<u>Indication</u>	<u>Panel</u>
AOD-065A RWA Exhaust Isolation	Closed	XL-065AB	B006
AOD-065B RWA Filter Unit 171 Inlet	Open	XL-065BA	B006
AOD-069A RSB-RWA Exhaust Fan 161A Discharge	Closed	XL-069AB	B006
AOD-069B RSB-RWA Exhaust Fan 161B Discharge	Closed	XL-069BB	B006
CB			
AOD-064A CR Exhaust Isolation	Closed	XL-064AF	90CSB016
AOD-064A CR Exhaust Isolation	Closed	XL-064AD	B002
AOD-064A CR Exhaust Isolation	Closed	XL-064AB	B003F
AOD-064B CR Exhaust Isolation	Closed	XL-064BF	90CSB016
AOD-064B CR Exhaust Isolation	Closed	XL-064BD	B002
AOD-064B CR Exhaust Isolation	Closed	XL-064BB	B003G
AOD-122A AC Unit 410A & 410B Inlet Isolation	Closed	XL-122AD	B002
AOD-122A AC Unit 410A & 410B Inlet Isolation	Closed	XL-122AB	B003F
AOD-122B AC Unit 410A & 410B Inlet Isolation	Closed	XL-122BD	B002
AOD-122B AC Unit 410A & 410B Inlet Isolation	Closed	XL-122BB	B003G
AOD-123A Filter Unit 471A & 471B Inlet Isolation	Open	XL-123AC	B002
AOD-123A Filter Unit 471A & 471B Inlet Isolation	Open	XL-123AA	B003F
AOD-123B Filter Unit 471A & 471B Inlet Isolation	Open	XL-123BC	B002
AOD-123B Filter Unit 471A & 471B Inlet Isolation	Open	XL-123BA	B003G
AOD-022A Return Fan 450A Discharge	Closed	XL-022AB	B003A
AOD-022B Return Fan 450B Discharge	Closed	XL-022BB	B003
AOD-168 Kitchen and Toilet Exhaust Isolation	Closed	XL-168D	B002

<u>Damper</u>		<u>Fail</u>	<u>Indication</u>	<u>Panel</u>
		<u>Position</u>		
AOD-168	Kitchen and Toilet Exhaust Isolation	Closed	XL-168B	B003F
AOD-169	Kitchen and Toilet Exhaust Isolation	Closed	XL-169D	B002
AOD-169	Kitchen and Toilet Exhaust Isolation	Closed	XL-169B	B003G
AOD-030A	Supply Fan 440A Discharge	Closed	XL-030AB	B003A
AOD-030B	Supply Fan 440B Discharge	Closed	XL-030BB	B003A

DGB

AOD-019	U.C. 321 Return Air	Open	XL-019A	B004E
AOD-023	U.C. 322 Return Air	Open	XL-023A	B004E

Recovery:

1. Verify restoration of Instrument Air (System 22) as described by SDD-22 (AOI-22-1).
2. Recover System 25A dampers as described by the appropriate portion of Section 5 (listed below) of this SDD.

<u>Dampers</u>	<u>Section</u>
AOD-043A	5.1.1.3.4
AOD-043B	5.1.1.3.4
AOD-078A	5.1.1.3.4
AOD-078B	5.1.1.3.4
PAD-112A	5.1.1.3.4
PAD-112B	5.1.1.3.4
AOD-009A	5.2.2.3.1
AOD-009B	5.2.2.3.1
AOD-025A	5.2.2.3.2
AOD-025B	5.2.2.3.2
AOD-032A	5.2.2.3.5

<u>Dampers</u>	<u>Section</u>
AOD-032B	5.2.2.3.5
AOD-262A	5.2.2.3.4
AOD-262B	5.2.2.3.4
AOD-264A	5.2.2.3.3
AOD-264B	5.2.2.3.3
AOD-058A	5.2.8.7.1
AOD-058B	5.2.8.7.1
AOD-069A	5.2.8.7.2
AOD-069B	5.2.8.7.2
AOD-030A	5.4.6.2
AOD-030B	5.4.6.2

B

5.6.4.2 Loss of Power (non 1E)(AOI 25A-42)

Design Features to Mitigate Effects:

System 25A components not provided with Class 1E power supply are subject to loss of power. Indication: (both start/open and stop/closed) status lights are deenergized. After power is restored components must be manually restarted as described by section 4 of this SDD, following shut-down due to loss of power.

<u>Component</u>	<u>Indication</u>	<u>Panel</u>	<u>Section</u>
	TBD		
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Recovery: TBD

5.6.5 Reactor Scram

Scram of the reactor will have no effect on System 25A operation or components. System 25A will continue to operate as described by sections 2 and 4 of this SDD.

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25A-13 U.C. 023 Discharge Air Flow Low (local)	
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25A-17 HAA U.C. 024 Trouble (local)	
25A-18 LCCV Cell U.C. 053 Trouble (local)	
25A-19 U.C. 020A Trouble (local)	
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25A-26 Filter Fan 173A Discharge Air Flow Low (local)	
25A-27 Annulus Differential Pressure Low (BP)	
25A-28 Annulus Differential Pressure Low (local)	

* All PAR's are TBD

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D

6.0 MAINTENANCE

The Control Room operator's permission must be obtained prior to initiating any activity that would or could affect a safety related system as recommended by Regulatory Guide 1.47.

6.1 Maintenance Approach

6.1.1 General Maintenance

All maintenance precautions listed in Section 3 of this SDD must be closely observed.

All efforts shall be made to minimize exposure to personnel during maintenance activities (routine or otherwise) in radiation, high radiation and exclusion areas.

Work areas where potential contamination exists shall be inspected by a qualified health physicist and only personnel experienced in maintenance and repair in radiation areas shall be permitted to do the work.

All appropriate work permits shall be obtained prior to commencing work. Before performing maintenance on any component, the proper local power disconnects shall be tagged and locked open.

For preventive maintenance or corrective maintenance which does not require immediate attention, advantageous use of prevailing weather conditions should be made to minimize the effects of component outages.

Maintenance of components within a unit (or system) should be completed during a single shutdown.

The HVAC system design will consider maintenance activities in the following order of preference:

- adjust or repair in place
- replace component with a spare - repair and requalify the disabled unit
- remove component, repair and replace

CAUTION: Upon completion of any maintenance which violates system boundaries, an inspection (to verify integrity) must be performed prior to closeout of area.

6.1.2 TMBDB Features Maintenance and Testing Bases

To assure the TMBDB features will be fully functional and available on demand during normal reactor operation, testing should be periodically performed to demonstrate that the TMBDB systems/components satisfy the required functional levels. Maintenance on the TMBDB features should be performed based on this testing and the necessary preventive maintenance program.

Since full functional testing of some of the TMBDB features could defeat engineered safety features, e.g., containment isolation and annulus filtration, the testing of these features should be performed when the plant conditions result in the smallest risk of an accidental radiation release to the environment. During this functional testing, the following plant conditions could affect the risk of an accidental radiation release:

1. Primary sodium and cover gas radioactivity levels,
2. Maintenance in normally inerted RCB cells containing System 51, 81 and 85 components, e.g., deinerting Cell 102A,

3. Refueling activities,
4. Maintenance in RCB cells containing radioactive System 82 (RAPs) components, and,
5. Maintenance in RCB cells containing radioactive System 85 components.

To minimize the risk of an accidental radiation release, minimize the impact on availability, and achieve a full functional test, the periodic testing of these TMBDB features should be performed during refueling or other reactor shutdown after the radioactive cover gas has been processed/decayed, while the refueling hatch is closed, inerted cells have not been deinerted for maintenance, and maintenance is not being performed on the System 81, 82 (RAPS) and System 85 components containing radioactivity in the RCB.

During the TMBDB functional tests, maintenance should not be performed on the systems/components in the RCB containing radioactive material that, if accidentally released to containment and subsequently to the environment, could exceed site boundary dose limits.

Maintenance of the TMBDB features should be performed based on the results of the shutdown testing program and vendor specifications. Every effort should be made to schedule the preventive maintenance during reactor shutdown, however, if maintenance of the TMBDB features is required during reactor operation, one TMBDB train must be continuously available.

TMBDB Systems/Components Testing and Maintenance

The TMBDB features can be separated into two categories, i.e., the specific TMBDB systems/components and the design basis systems/components that have been augmented for TMBDB.

Specific TMBDB Features

After construction, a preservice functional test of all the specific, active TMBDB systems/components should be performed using diesel power.

During plant operation the specific TMBDB features should be tested approximately once a year during a refueling shutdown. A full functional test of each train of the specific TMBDB features using normal power could be performed during preparation for refueling at 16 to 24 hours after shutdown. The risk of an accidental radiation release during this testing period would be minimized because the reactor cover gas has been processed, the refueling hatch has not been opened, the primary boundary has not been penetrated for refueling, there is no maintenance on RCB components containing significant radioactivity, and the primary sodium radioactivity levels prevent de-inerting inerted cells for maintenance. The features tested would be the vent/purge system controls and components, the cleanup systems controls and components, and the annulus cooling system controls and components. Since this testing will require opening the vent and purge valves, specific attention should be given to assuring these valves are closed after completion of the test.

The TMBDB instrumentation should be tested and calibrated as required.

After each functional test, access to TMBDB equipment, or any TMBDB panel activity, the status of the TMBDB components should be checked to verify the proper status.

6.2 Corrective Maintenance

6.2.1 Reactor Containment Building

Equipment and instrument numbers are prefixed by 25AR.

6.2.1.1 Outside Air Supply System (200)

The Outside Air Handling Unit (200) with two redundant Supply Fans (240A & 240B) provide conditioned outside air to the operating floor as well as normal atmosphere areas below the operating floor. Air Handling Unit (200) is provided with cooling coils, heating coils, a roll filter and a bag filter. Redundant Exhaust Fans (165A & 165B) are provided for removal of air supplied to the RCB.

6.2.1.1.1 Supply Fans (240A, 240B)

Supply fans are redundant and one may be taken out of service for maintenance without effect on system operation.

1. Shift Operating Supply Fan (if necessary) as described by Section 4.1.3.10.1 of this SDD.
2. Perform required maintenance in accordance with MOP 25A-40.

3. When appropriate, retest requirements (TBD) are complete, place supply fan in standby; place fan control (HS-240A or 240B), located on Local Panel (B001A), in the "AUTO" position. Hold 25000572

6.2.1.1.2 Exhaust Fan (165A or 165B)

Exhaust fans are redundant and one may be taken out of service for maintenance without affecting system operation.

1. Shift exhaust fan operation (if necessary) as described by Section 4.1.3.10.1 of this SDD.
2. Perform required maintenance in accordance with MOP 25A-41.
3. When appropriate retest requirements (TBD) are complete, place exhaust fan in standby; place fan control (HS-165A or 165B), located on local panel (B001A), in the "AUTO" position. Hold 25000572

B

6.2.1.1.3 Air Handling Unit (200)

Air handling unit is not redundant and system operation must be interrupted to perform maintenance requiring violation of system boundaries.

1. Roll Filter
 - a. Shutdown AHU (200) as described by Section 4.1.4.1 of this SDD.
 - b. Repair advance mechanism or replace filter media as described by MOP 25A-60 or Section 6.3.8.1 of this SDD.

- c. Following completion of maintenance and appropriate retest (TBD) | HOLD
place AHU (200) in service as described by Section 4.1.2.1 of this | 25000572
SDD.

2. Bag Filter

- a. Shutdown AHU (200) as described by Section 4.1.4.1 of this SDD.
- b. Replace filter bag(s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD) | HOLD
place AHU (200) in service as described by Section 4.1.2.1 of this | 25000572
SDD.

3. Heating/Cooling Coil

- a. Shutdown AHU (200) as described by Section 4.1.4.1 of this SDD.
- b. Remove/repair heating/cooling coil as described by MOP 25A-54.
- c. Following completion of maintenance and appropriate retest (TBD) | HOLD
place AHU (200) in service as described by Section 4.1.2.1 of this | 25000572
SDD.

6.2.1.1.4 Dampers

For repair/replacement of dampers, refer to MOP 25A-53.

6.2.1.2 Above Operating Floor Unit Cooler (020A, 020B, 020C)

Three unit coolers are provided to supplement the cooling capacity of Outside Air Handling Unit (200). One of these units may be shutdown for maintenance.

1. Shutdown U.C. (020A, 020B or 020C) as described by Section 4.1.4.2 of this SDD.
2. Repair/replace component as described by the appropriate section/MOP listed below.

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-43
b.	Cooling Coil	-	25A-43
c.	Throwaway Filter	6.3.8.2	25A-43
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TRD), place U.C. in service as described by Section 4.1.2.2 of this SDD. HOLD
25000572

6.2.1.3 EI&C Cubicle Unit Cooler (021, 022, 023)

Unit Coolers (0021, 022, 023) are provided to cool the safety related equipment located in cells (163, 165, 167) and supplement the Operating Floor Unit Coolers (020A, 020B, 020C). One EI&C Cubicle Unit Cooler (021, 022 or 023) may be taken out of service for maintenance. Unit cooler must be taken out of service to perform maintenance on unit.

1. Shutdown U.C. as described by Section 4.1.4.6 of this SDD.

2. Repair/replace component as described by the appropriate section/MOP listed below.

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-42
b.	Cooling Coil	-	25A-42
c.	Throwaway Filter	6.3.8.2	25A-42
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD) place U.C. in service as described by Section 4.1.2.6 of this SDD. HOLD
25000572

6.2.1.4 LCCV Cell Unit Cooler (053)

Unit Cooler is provided to cool the LCCV Cell (125), LCCV Cell Unit Cooler (053) must be taken out of service to perform most maintenance.

1. Shutdown U.C. (053) as described by Section 4.1.4.3 of this SDD.
2. Perform required maintenance as described by the appropriate section/MOP listed below.

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-44
b.	Cooling Coil	-	25A-54
c.	Throwaway Filter	6.3.8.2	25A-44
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.1.2.3 of this SDD. HOLD
25000572

6.2.1.5 Below Operating Floor A/C System (010,011)

Units (010 & 011) are provided to cool and vent the normal atmosphere areas below the operating floor. Return Fans (050 & 051) operate in conjunction with A/C Units (010 & 011) and must be shutdown when related A/C unit is taken out of service. One A/C Unit and related Return Fan (010 & 050 or 011 & 051) may be taken out of service for maintenance. Unit must be shutdown to perform most maintenance.

1. Shutdown A/C unit and related Return Fan (010 & 050 or 011 & 051) as described by Section 4.1.4.7 of this SDD.
2. Repair/replace component as described by the appropriate section/MOP listed below.

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-45
b.	Cooling Coil	-	25A-45
c.	Throwaway Filter	6.3.8.2	25A-45
d.	Return Fan	-	25A-46
e.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBN), place A/C Unit (010 or 011) and Return Fan (050 or 051) in service as described by Section 4.1.2.7 of this SDD.

HOLD
25000572

6.2.1.6 Dome Recirculating Fan (052A, 052B)

Dome recirculating fans are provided to prevent stagnation of air near the top of the containment dome. Fan must be taken out of service to perform most maintenance.

1. Shutdown Recirculating Fan (052A or 052B) as described by Section 4.1.4.9 of this SDD.
2. Repair/replace fan (052A or 052B) as described by MOP 25A-47.
3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.1.2.9 of this SDD.

HOLD
25000572

6.2.1.7 Annulus Pressure Maintenance Fan (172A, 172B)/Filter Unit (182A, 182B)

Annulus Pressure Maintenance Fan (172A or 172B) operates in conjunction with the Annulus Filter Unit (182A or 182B). Maintenance should be performed on both units. One Annulus Filter System may be taken out of service for maintenance.

1. Shift Annulus Filter Train (A or B) operation (if necessary) as described by Section 4.1.3.10.2 of this SDD. Otherwise shutdown standby annulus pressure maintenance fan and filter unit as described by Section 4.1.4.10 of this SDD.

2. Perform maintenance as described by MOP 25A-49, 50 or 53.

3. Following completion of maintenance and appropriate retest (TBD), place filter train in service as described by Section 4.1.2.10 of this SDD.

HOLD
25000572

6.2.1.8 Annulus Filter Fan (173A, 173B)

Annulus Filter Fan (when required to operate) operates in conjunction with its related Annulus Filter Train (A or B). Only one train may be taken out of service for maintenance. Maintenance of Annulus Filter Fan (173A or 173B) should be in conjunction with related filter train components.

1. Shift Annulus Filter Train (A or B) operation (if necessary) as described by Section 4.1.3.10.2 of this SDD. Otherwise shutdown Annulus Filter Fan (173A or 173B) as described by Section 4.1.4.10 of this SDD.
2. Perform maintenance as described by MOP 25A-50 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place filter fan in service as described by Section 4.1.2.10 of this SDD. HOLD
25000572

6.2.1.9 Annulus Cooling Fan (174A-174F)

Annulus Cooling Fans (174A, C&E or 174 B,D&F) are required to operate following TMBDB. Annulus cooling fans are in standby and must not be taken out of service such that both sets (174A,C,E or 174B,D,F) are inoperable. Maintenance should be done on (3) fans (A,C&E or B,D&F) of system.

1. Shutdown Annulus Cooling Fans (174A,C,E or 174B,D,F) as described by Section 4.1.4.11 of this SDD.
2. Perform required maintenance as described by MOP 25A-51 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place Fans (174A,C,E or 174B,D,F) in service, as described by Section 4.1.2.11 of this SDD. HOLD
25000572

6.2.1.10 Containment Cleanup Scrubber Exhaust Fan (175A, 175B)

Scrubber Exhaust Fans (175A & 175B) are required to operate following TMBDB. Scrubber exhaust fans are in standby and should be maintained in conjunction with remainder of Containment Cleanup Train (A or B).

1. Shutdown exhaust fan as described by Section 4.1.7.8.2 of this SDD.
2. Perform required maintenance as described by MOP 25A-52 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place Fan (175A or 175B) in service as described by Section 4.1.3.9 of this SDD. HOLD
25000572

6.2.1.11 HAA Unit Cooler (024)

Unit cooler is provided to cool the head access area cell (151). Unit Cooler should not be taken out of service during reactor operation.

1. Shutdown U.C. (024) as described by Section 4.1.4.4 of this SDD.
2. Perform maintenance as described by the appropriate section/MOP listed below.

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-48
b.	Cooling Coil	-	25A-54
c.	Throwaway Filter	6.3.8.2	25A-48

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.1.3.4 of this SDD. HOLD
25000572

6.2.1.12 RCB Portable Filter/Fan (070) (TBD)

HOLD
25000144

6.2.1.13 Inerted Cells Booster Fans (061, 062) (TBD)

6.2.1.14 Annulus Filter Cell U.C. (132, 146)

Unit Coolers recirculate and cool the air in cells (398 and 395) that house the Annulus Filter Units. Unit Coolers should be taken out of service and maintained in conjunction with their related Filter Trains (A or B). Unit Cooler operation must be interrupted to perform maintenance requiring violation of Unit Cooler boundaries.

1. Shutdown Unit Cooler (132 or 146) as described by Section 4.1.4.10 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply Fan	-	25A-7
b. Cooling Coil	-	25A-54
c. Throwaway Filter	6.3.8.2	25A-7

3. Following completion and appropriate retest, place Unit Cooler (132 or 146) in service as described by Section 4.1.2.10 of this SDD.

6.2.1.15 Containment Isolation Valves (AOV 046A-C, AOV047A-C, MOV19A-D, MOV106A-D)

1. Shutdown the RCB Outside Air System per Section 4.1.4.1 (SOI 25A-30) of this SDD.
2. Close the CI valve (listed below) by placing its control switch in the "CLOSE" position. Verify its closed status light on the panel listed below.

<u>CI Valve</u>	<u>Control Switch</u>	<u>Control Switch and Status Indication Location</u>
<u>Valve</u>	<u>HS</u>	<u>Location</u>
AOV-046A	99ESHVHS-154	MCP (90CSB016)
AOV-046B	99ESHVHS-120	MCP (90CSB016)
AOV-046C	99ESHVHS-122	MCP (90CSB016)
AOV-047A	99ESHVHS-156	MCP (90CSB016)
AOV-047B	99ESHVHS-124	MCP (90CSB016)
AOV-047C	99ESHVHS-126	MCP (90CSB016)
MOV-19A-D	HS 19A-D	BP (B002)
MOV-106A-D	HS 106A-D	BP (B002)

3. Verify the dampers AOD 043A, AOD 043B, AOD 078A, AOD 078B are closed as indicated by their closed status lights on Local Panel (B001A).

4. Close the isolation valves (TBD) for the containment purge valves (MOV 19A-D) and containment vent valves (MOV 106A-D).

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5. Perform maintenance on the CI valve per MOP 25A-72.

6. Open the isolation valves (TBD) for the containment purge valves (MOV 19A-D) and containment vent valves (MOV 106A-D).

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7. Open the CI valve (listed in step 2 above) by placing its control switch in "OPEN" position. Verify its "OPEN" light indications. (See step 2 above for switch and light locations).

8. Restart the RCB Outside Air System per Section 4.1.2.1 (SOI 25A-2) of this SDD.

6.2.2 Reactor Service Building

Equipment and instrument numbers are prefixed by 25AS.

CAUTION: During maintenance involving the RSB-RWA, where the possibility of airborne contamination exists, the RWA Filter Unit is to be placed in operation as described in Section 4.2.2.12.

6.2.2.1 Fuel Handling Area A/C System (100)

Fuel handling area A/C system consists of two supply fans, two exhaust fans and an AHU consisting of a roll filter, bag filter, heating coil and a cooling coil.

6.2.2.1.1 Supply Fan (140A & 140B)

FHA Supply Fans (140A & 140B) are not redundant, however (if necessary) one may be taken out of service for maintenance.

NOTE: FHA A/C System should not be operated with only one supply and exhaust fan unless conditions require the shutdown of supply (exhaust fan unless conditions require the shutdown of supply (exhaust) fan.

1. Place Supply Fan (140A or 140B) Control (HS-140AB or 140BB) in the "STOP" position.
2. Perform required maintenance as described in MOP 25A-1.
3. Following completion of maintenance and appropriate retest (TBD), place supply and exhaust fans in service as described by Section 4.2.2.1 of this SDD.

Hold
25000572

6.2.2.1.2 Exhaust Fan (160A, 160B)

FHA Exhaust Fans (160A and 160B) are not redundant, however, (if necessary) one may be taken out of service for maintenance. Exhaust Fan (160A or 160B) is interlocked to the related Supply Fan (140A or 140B) and should be maintained in conjunction with the related Supply Fan.

NOTE: FHA A/C System should not be operated with only one supply and exhaust fan unless conditions require the shutdown of exhaust (supply) fan.

1. Shutdown Supply Fan (140A or 140B) as described by Section 4.2.4.1 of this SDD.

2. Perform required maintenance as described by MOP 25A-1.
3. Following completion of maintenance and appropriate retest (TBD), place supply and exhaust fan in service as described by Section 4.2.2.1 of this SDD. Hold 25000572

6.2.2.1.3 Air Handling Unit (100)

Air Handling Unit (100) is not redundant and system operation must be interrupted to perform maintenance requiring violation of system boundaries.

1. Roll Filter

- a. Shutdown AHU (100) as described by Section 4.2.4.1 of this SDD.
- b. Replace filter media as described by MOP 25A-55 or Section 6.3.8.1 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (100) in service as described by Section 4.2.2.1 of this SDD. Hold 25000572

2. Bag Filter

- a. Shutdown AHU (100) as described by Section 4.2.4.1 of this SDD.
- b. Replace filter bag(s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU(100) in service as described by Section 4.2.2.1 of this SDD. Hold 25000572

- b. Replace filter bag(s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU(100) in service as described by Section 4.2.2.1 of this SDD. Hold 25000572

3. Heating/Cooling Coil

- a. Shutdown AHU (100) as described by Section 4.2.4.1 of this SDD.
- b. Perform required maintenance as described by MOP 25A-54.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (100) in service as described by Section 4.2.2.1 of this SDD. Hold 25000572

6.2.2.1.4 Dampers

Refer to MOP 25A-53 for repair/replacement of dampers.

6.2.2.2 RAPS and CAPS Unit Cooler (131)

Unit Cooler (131) draws air from and provides cooling to cells 365, 366 and 371. These cells are potentially contaminated and precautions listed in Section 3.0 (TBD) must be observed. Unit Cooler (131) must be taken out of service to perform most maintenance. Hold 25000570

- 1. Shutdown U.C. (131) as described by Section 4.2.4.2 of this SDD.

2. Perform component maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply Fan	-	25A-2
b. Cooling coil	-	25A-54
c. Throwaway filter	6.3.8.2	25A-2

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.2.2.3 of this SDD. ' HOLD
25000572

6.2.2.3 RAPS and CAPS Cell Exhaust Fan (162A, 162B)

Redundant Exhaust Fans (162A and 162B) are provided to maintain RAPS and CAPS cells (317, 320, 365, 366, 369, 370, 371, 375-379, 380, 381 and 397) at a negative pressure.

One Exhaust Fan (162A or 162B) may be shutdown for maintenance. These cells are potentially contaminated and precautions described by Section 3.0 (TBD) must be observed. HOLD
25000570

1. Shift operating Exhaust Fan (162A or 162B) (if necessary) as described by Section 4.2.3.15.1 of this SDD. Otherwise shutdown standby Exhaust Fan (162A or 162B) as described by Section 4.2.4.3 of this SDD.
2. Perform required maintenance as described by MOP 25A-3 or 53.

3. Following completion of maintenance and appropriate retest (TBD), place exhaust fan in service as described by Section 4.2.2.2 of this SDD. HOLD
25000572

6.2.2.4 Refueling Communication Center A/C System (103)

A/C Unit (103) provides cooling to the RSB Refueling Communication Center (cell 311). System operation must be interrupted to perform most maintenance.

1. Shutdown A/C Unit (103) as described by Section 4.2.4.4 of this SDD.
2. Perform required maintenance as described by the appropriate section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-4
b. Cooling coil	-	25A-54
c. Roll filter	6.3.8.1	25A-55
d. Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place A/C Unit (103) in service as described by Section 4.2.2.4 of this SDD. HOLD
25000572

6.2.2.5 ABHX Cell Unit Cooler (104A, 104B)

Unit Coolers are provided to cool ABHX Cells (352A and 353A). One unit cooler may be taken out of service for maintenance. System operation must be interrupted to perform most maintenance.

1. Shutdown Unit Cooler (104A or 104B) as described by Section 4.2.4.5 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-5
b. Cooling coil	-	25A-54
c. Throwaway filter	6.3.8.2	25A-5
d. Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place Unit Cooler (104A or 104B) in service as described by Section 4.2.2.5 of this SDD. HOLD
25000572

6.2.2.6 ABHX Unit Heater (191)

Unit Heater (191) is provided to Cell 332. Unit heater is not redundant and cell heating must be interrupted to perform most maintenance.

1. Shutdown unit heater as described by Section 4.2.4.6 of this SDD.
2. Perform required maintenance as described by MOP 25A-6.

3. Following completion of required maintenance and appropriate retest (TBD), place Unit Heater (191) in service as described by Section 4.2.2.6 of this SDD. HOLD
25000572

6.2.2.7 RSB Clean-up Filter Train (A&B)

6.2.2.7.1 RSB Clean-up Filter Cell Unit Coolers (133, 134)

Unit Coolers (133 and 134) cool the related component cells (391 and 347). Unit coolers should be taken out of service and maintained in conjunction with their related filter trains. Unit Cooler operation must be interrupted to perform maintenance requiring violation of unit cooler boundaries.

1. Shutdown Unit Coolers (133 or 134) as described by Section 4.2.4.7 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-7
b. Cooling coil	-	25A-54
c. Throwaway filter	6.3.8.2	25A-7

3. Following completion of maintenance and appropriate retest (TBD), place Unit Cooler (133 or 134) in service as described by Section 4.2.2.7 of this SDD. HOLD
25000572

6.2.2.7.2 RSB Clean-up Filter Unit (184A, 184B) (TBD)

HOLD
25000144

6.2.2.7.3 Dampers (TBD)

6.2.2.8 Stairwell Pressurization Fan (166, 167, 168, 169)

Stairwell pressurization fans are not redundant and may prevent use of stairwell as a fire exit when taken out of service for maintenance.

1. Shutdown fan as described by Section 4.2.4.8 of this SDD.
2. Perform required maintenance as described by MOP 25A-8 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.2.2.8 of this SDD.

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6.2.2.9 Smoke Vent Fan (165)

Smoke vent fan is not redundant and will prevent venting of smoke from the RSB Cells (305H, 347, 359, 391, 395 and 398) following a fire when taken out of service for maintenance.

1. Refer to SDD-26B (SOI 26-13) for shutdown and start of Fan (165).
2. Perform required maintenance as described by MOP 25A-9 or 53.

3. Upon completion of maintenance and appropriate retest (TBD) place fan in service.

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25000572

6.2.2.10 Inerted Cell Booster Fan (144)

Booster Fan (144) is not redundant, refer to SDD-82 (SOI 82-13) for effects caused by maintenance shutdown of Booster Fan (144).

1. Shutdown Fan (144) as described by Section 4.2.4.10 of this SDD.
2. Perform required maintenance as described by MOP 25A-10 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place Fan (144) in service as described by Section 4.2.2.2.3 of this SDD. Hold
25000572

6.2.2.11 RSB Annulus Filter Cell Unit Cooler (132, 146)

Unit coolers (132 and 146) cool related components located in Cells (398 and 395). Unit coolers should be taken out of service and maintained in conjunction with the related filter train. System operation must be interrupted to perform maintenance requiring violation of unit cooler boundaries.

1. Shutdown Unit Cooler (132 or 146) as described by Section 4.2.4.11 of this SDD.
2. Perform required maintenance as described by the appropriate section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-11
b. Cooling coil	-	25A-54
c. Throwaway filter	6.3.8.2	25A-11
d. Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place Unit Cooler (133 or 134) in service as described by Section 4.2.2.10 of this SDD. HOLD
25000572

6.2.2.12 RSB Portable Filter/Fan Unit (172)

Unit is mounted on a cart and is not normally in use. Unit must be taken out of service to perform most maintenance. Refer to MOP 25A-61 for maintenance.

6.2.2.13 RWA A/C Sytem (101)

RWA A/C System is comprised of two Supply Fans (141A and 141B), two Exhaust Fans (161A and 161B) and an AHU (101) consisting of a roll filter, bag filter, heating coil and a cooling coil.

6.2.2.13.1 Supply Fan (141A,141B)

RWA Supply Fans (141A and 141B) are not redundant, however (if necessary) one may be taken out of service for maintenance.

NOTE: RWA A/C System should not be operated with only one supply and exhaust fan unless conditions require the shutdown of supply (exhaust) fan.

1. Shutdown Supply Fan (141A or 141B) as described by Section 4.2.4.13 of this SDD.
2. Perform required maintenance as described by MOP 25A-13.

3. Following completion of maintenance and appropriate retest (TBD), place supply and exhaust fans in service as described by Section 4.2.2.12.1 of this SDD. HOLD
125000572

6.2.2.13.2 Exhaust Fan (161A, 161B)

RWA Exhaust Fans (161A and 161B) are not redundant, however (if necessary) one may be taken out of service for maintenance. Exhaust fans (161A or 161B) are interlocked with the related supply fans (141A, 141B) and should be maintained in conjunction with the related supply fan.

1. Shutdown Exhaust and Supply Fans (161A and 141A or 161B and 141B) as described by Section 4.2.4.13.1 of this SDD.
2. Perform required maintenance as described by MOP 25A-13.
3. Following completion of maintenance and appropriate retest (TBD), place exhaust and supply fan in service as described by Section 4.2.2.12.1 of this SDD. HOLD
25000572

6.2.2.13.3 Air Handling Unit (101)

Air Handling Unit (101) is not redundant and system operation must be interrupted to perform maintenance requiring violation of system boundaries.

NOTE: RWA A/C System (101) should not be operated with only one supply and exhaust fan unless conditions require shutdown of exhaust (supply) fan.

1. Roll Filter

- a. Shutdown AHU (101) as described by Section 4.2.4.13.1 of this SDD.
- b. Replace filter media as described by MOP 25A-13 or Section 6.3.8.1 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (101) in service as described by Section 4.2.2.12.1 of this SDD. HOLD
25000572

2. Bag Filter

- a. Shutdown AHU (101) as described by Section 4.2.4.13.1 of this SDD.
- b. Replace filter bag (s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU in service as described by Section 4.2.2.12.1 of this SDD. HOLD
25000572

3. Heating/Cooling Coil

- a. Shutdown AHU (101) as described by Section 4.2.4.13.1 of this SDD.
- b. Perform required maintenance as described by MOP 25A-54.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (101) in service as described by Section 4.2.2.12.1 of this SDD. HOLD
25000572

6.2.2.13.4 Dampers

Repair/replace dampers as described by MOP 25A-53.

6.2.2.14 RWA Exhaust Filter Unit (171)

This unit is to be in operation when the possibility of airborne contamination exists in the RSB-RWA. Refer to Caution in Section 6.2.2 of this SDD, before use of this procedure.

Unit (171) must be taken out of service to perform most maintenance.

1. Bag Filter

- a. Shutdown Filter Unit (171) as described by Section 4.2.4.13.2 of this SDD.
- b. If Filter Unit (171) has been contaminated refer to Section 6.2.6 of this SDD for filter removal procedure and cleanup.

CAUTION: All appropriate radiological precautions as described in section 3.0 (TBD) of this SDD, must be observed (i.e., personnel protection, duct and unit clean up, etc).

Hold
25000570

- c. If Filter Unit (171) has not been contaminated replace filter bag (s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.

- d. Following completion of maintenance, system cleanup (if necessary) and appropriate retest (TBD) place Filter Unit (171) in service as described by Section 4.2.2.12.3 of this SDD. HOLD
25000572

2. HEPA Filter

- a. Shutdown Filter Unit (171) as described by Section 4.2.4.13.2 of this SDD.
- b. If Filter Unit (171) has been contaminated refer to Section 6.3.8.4 of this SDD, for filter media removal procedure.

CAUTION: All appropriate radiological precautions must be observed (i.e., personnel protection, duct and unit clean up, etc.).

- c. If Filter Unit (171) has not been contaminated replace HEPA filter as described by Section 6.3.8.4 of this SDD, and MOP 25A-27.
- d. Following completion of maintenance, system clean up (if necessary) and appropriate retest (TBD) place Filter Unit (171) in service as described by Section 4.2.2.12.3 of this SDD. HOLD
25000572

3. Damper

Repair/replace damper as described by MOP 25A-53.

6.2.2.15 RWA Unit Heater (135, 136, 193, 194)

Unit heaters serve the cells listed below and must be shut down to perform most maintenance, causing a loss of heating of the related cell.

<u>Unit Heater</u>	<u>Cell</u>
135	640
136	644B
193	660
194	660

- a. Shutdown Unit Heater (135, 136, 193 or 194) as described by Section 4.2.4.13.3 of this SDD.
- b. Perform required maintenance as described by MOP 25A-15.
- c. Following completion of maintenance and appropriate retest (TBD) place unit heater in service as described by Section 4.2.2.12.2 of this SDD.

HOLD
25000572

6.2.2.16 Electrical Equipment Cell Unit Cooler (137, 138)

Unit Coolers are provided to maintain the cleanliness of the supply air, and cool the Electrical Equipment Cells (305E and 305F). Unit Coolers should be taken out of service and maintained in conjunction with related cell components. Unit Cooler operation must be interrupted to perform maintenance requiring violation of cooler boundaries.

1. Shutdown U.C. (137 or 138) as described by Section 4.1.4 of this SDD.
2. Repair/replace component as described by the appropriate section/MOP listed below:

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-6
b.	Cooling Coil	-	25A-54
c.	Throwaway Filter	6.3.8.2	25A-63
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.1.2 of this SDD. HOLD
25000572

6.2.2.17 Containment Clean-up Pump Cell Unit Cooler (139A, 139B)

Unit Coolers are provided to cool and maintain the cleanliness of supply air for Cells (305G and 305I). Unit Cooler should be taken out of service and maintained in conjunction with the related cell components. Unit Cooler operation must be interrupted to perform maintenance requiring violation of cooler boundaries.

1. Shutdown U.C. (139A or 139B) as described by Section 4.1.4.12 of this SDD.
2. Repair/replace component as described by the appropriate section/MOP listed below:

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-64
b.	Cooling Coil	-	25A-54
c.	Throwaway Filter	6.3.8.2	25A-64
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.1.2.12 of this SDD. HOLD
25000572

6.2.2.18 Containment Clean-up Scrubber Cell Unit Cooler (142A, 142B)

Redundant Unit Coolers are provided to cool and maintain the cleanliness of supply air of Cell (359). Cell cooling will not be interrupted during maintenance on Unit Cooler (142A or 142B).

1. Shutdown U.C. (142A or 142B) operation as described by Section 4.1.3.10 of this SDD.
2. Repair/replace component as described by the appropriate section/MOP listed below:

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-65
b.	Cooling Coil	-	25A-54
c.	Throwaway Filter	6.3.8.2	25A-65
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.1.3.10 of this SDD.

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25000572

6.2.2.19 Containment Clean-up Pipe Chase Unit Cooler (143, 145)

Unit Coolers provide cooling and maintain the cleanliness of supply air in Cells (348 and 349). Unit Cooler should be taken out of service and maintained in conjunction with related cell components. Unit Cooler operation must be interrupted to perform maintenance requiring violation of cooler boundaries.

1. Shutdown U.C. (143, 145) as described by Section 4.1.4.12 of this SDD.
2. Repair/replace component as described by the appropriate section/MOP listed below:

	<u>Component</u>	<u>Section</u>	<u>MOP</u>
a.	Supply Fan	-	25A-66
b.	Cooling Coil	-	25A-54
c.	Throwaway Filter	6.3.8.2	25A-66
d.	Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.1.2.12 of this SDD.

HOLD
25000572

6.2.3 Steam Generator Building

Equipment and instrument numbers are prefixed by 25AGA.

6.2.3.1 Steam Generator Loop 1, 2 & 3, Auxiliary Bay A/C System (201, 202, 203)

A/C Systems (201, 202 or 203) must be taken out of service to perform most maintenance. Shutdown of A/C System shall effect the following areas.

<u>System</u>	<u>Cells</u>
201	207, 221, 224, 227, 231, 241, 244, 251, 281
202	208, 222, 225, 228, 242, 245, 248, 282
203	206, 209, 223, 226, 230, 232, 243, 246, 250, 252, 283

1. Supply fan (241A or 241B; 242A or 242B; 243A or 243B)

Supply fans are redundant and system shutdown is not required to perform maintenance requiring fan shutdown.

- a. Shift operating supply fan (if necessary) as described by Section 4.3.3.12.4, 5 or 6 of this SDD.
- b. Shutdown fan as described by Section 4.3.4.2, 3 or 4 of this SDD.
- c. Perform required maintenance as described by MOP 25A-16.
- d. Following completion of maintenance and appropriate retest (TBD) place supply fan in service as described by Section 4.3.2.1 of this SDD.

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2. Exhaust fan (261A or 261B; 262A or 262B; 263A or 263B)

Exhaust fans are redundant and system shutdown is not required to perform maintenance requiring fan shutdown.

- a. Shift operating supply and exhaust fan (if necessary) as described by Section 4.3.3.12.4, 5 or 6 of this SDD.
- b. Shutdown standby fan as described by Section 4.3.4.1, 2, 3 or 4 of this SDD.
- c. Perform required maintenance as described by MOP 25A-16.

- d. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.3.2.1 of this SDD. HOLD
25000572

3. Roll Filter

- a. Shutdown AHU (201, 202 or 203) as described by Section 4.3.4.1, 2, 3 or 4 of this SDD.
- b. Repair filter media advance or replace filter media as described by MOP 25A-55.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (201, 202 or 203) in service as described by Section 4.3.2.1 of this SDD. HOLD
25000572

4. Bag filter

- a. Shutdown AHU (201, 202 or 203) as described by Section 4.3.4.1, 2, 3 or 4 of this SDD.
- b. Replace filter bag (s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU in service as described by Section 4.3.2.1 of this SDD. HOLD
25000572

5. Cooling Coil

- a. Shutdown AHU (201, 202 or 203) as described by Section 4.3.4.1, 2, 3 or 4 of this SDD.

- b. Perform required maintenance as described by MOP 25A-54.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (201, 202 or 203) in service as described by Section 4.3.2.1 of this SDD. HOLD
25000572

5. Damper

Repair/replace damper as described by MOP 25A-53.

6.2.3.2 Intermediate Bay System (204, 206)

HVAC Systems (204 & 206) consist of two Supply Fans (244A&B; 249A&B), two Exhaust Fans (264A&B; 267A&B) and two AHU (204, 206) consisting of a roll filter, bag filter, heating coil, cooling coil and an air flow by pass damper.

6.2.3.2.1 Supply Fan (244A, 244B; 249A, 249B)

Supply fans are redundant and one may be taken out of service for maintenance without effect on system operation.

NOTE: This will shutdown related Exhaust Fan (264A, 264B; 267A, 267B), and maintenance should be performed on unit at this time.

1. Shift operating supply fan (if necessary) as described by Section 4.3.3.12.1 or 4.3.3.12.2 of this SDD.
2. Shutdown standby supply fan, to be taken out of service as described by Section 4.3.4.2 of this SDD.

3. Perform required maintenance as described by MOP 25A-17.
4. Following completion of maintenance and appropriate retest (TBD) place supply and exhaust fans in service as described by Section 4.3.2.2 of this SDD. HOLD
25000572

6.2.3.2.2 Exhaust Fan (264A, 264B; 267A, 267B)

Exhaust fans are redundant and one may be taken out of service for maintenance without effect on system operation.

NOTE: Exhaust fan is interlocked with related supply fan and will shut-down when related supply fan is taken out of service.

1. Shift operating Supply and Exhaust Fans (244A & 264A or 244B & 264B or 249A & 267A or 249B & 267B) if necessary, as described by Section 4.3.3.12.1 or 4.3.3.12.2 of this SDD.
2. Shutdown standby supply and exhaust fan, to be taken out of service, as described by Section 4.3.4.2 of this SDD.
3. Perform required maintenance as described by MOP 25A-17.
4. Following completion of maintenance and appropriate retest (TBD) place supply and exhaust fans in service as described by Section 4.3.2.2 of this SDD. HOLD
25000572

6.2.3.2.3 Air Handling Unit (204, 206)

Air handling unit (204 or 206) is not redundant and system operation must be interrupted to perform maintenance requiring violation of system boundaries. Shutdown of AHU will effect HVAC to the following cells.

<u>AHU</u>	<u>Cell</u>
204	210, 211, 211A, 216, 217, 247, 262, 263,
206	249, 253, 264, 271, 272A-C, 273

1. Roll Filter

- a. Shutdown AHU (204 or 206) as described by Section 4.3.4.2 of this SDD.
- b. Repair unit or replace filter media as described by MOP 25A-17 or 55.
- c. Following completion of maintenance and appropriate retest (TBD) HOLD
25000572 place AHU (204 or 206) in service as described by Section 4.3.2.2 of this SDD.

2. Bag Filter

- a. Shutdown AHU (204 or 206) as described by Section 4.3.4.2 of this SDD.
- b. Replace filter bag (s) as described by MOP 25A-56 and Section 6.3.8.3 of this SDD.
- c. Following completion of maintenance and appropriate retest (TBD) HOLD
25000572 place AHU (204 or 206) in service as described by Section 4.3.2.2 of this SDD.

3. Heating/Cooling Coil

- a. Shutdown AHU (204 or 206) as described by Section 4.3.4.2 of this SDD.
- b. Remove/repair heating/cooling coil as described by MOP 25A-54.
- c. Following completion of maintenance and appropriate retest (TBD), place AHU (204 or 206) in service as described by Section 4.3.2.2 of this SDD.

HOLD
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6.2.3.2.4 Damper

Repair/replace damper as described by MOP 25A-53.

6.2.3.3 Emergency Chilled Water Equipment Rooms U.C. (223A, 223B)

Unit Coolers (223A & 223B) are automatically started when the related ECW Chiller (23ECA001A or B) is started. Unit coolers are not redundant and must be taken out of service for most maintenance, therefore maintenance should be carried out on a U.C. at same time as E.C.W. Chiller.

1. Shutdown U.C. (223A or 223B) as described by Section 4.3.4.3 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply Fan	-	25A-18
b. Cooling Coil	-	25A-18/54
c. Throwaway Filter	6.3.8.3	25A-18

3. Following completion of maintenance and appropriate retest (TBD), place U.C. (223A or 223B) in service as described by Section 4.3.2.3 of this SDD. HOLD
25000572

6.2.3.4 Primary Sodium Storage Tank U.C. (220)

Unit cooler must be taken out of service to perform most maintenance, cooling shall be affected in cell 211.

1. Shutdown U.C. (220) as described by Section 4.3.4.4 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-19
b. Cooling coil	-	25A-19/54
c. Throwaway filter	6.3.8.3	25A-19

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.3.2.4 of this SDD. HOLD
25000572

6.2.3.5 Aux Feed Pump Turbine U.C. (222A, 222B)

Unit coolers (222A & 222B) are redundant and provide cooling for cells 202 and 202A. One U.C. may be taken out of service for maintenance without affecting system operation.

1. Shift operating U.C. (222A or 222B) if necessary, as described by Section 4.3.3.12.3 of this SDD.
2. Shutdown standby U.C. as described by Section 4.3.4.5 of this SDD.
3. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-20
b. Cooling coil	-	25A-20/54
c. Throwaway filter	6.3.8.3	25A-20

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.3.2.6 of this SDD. HOLD
25000572

6.2.3.6 Aux. Feed Pump Ventilation System (255, 256)

Ventilation Systems (255 & 256) provide outside air to aux feed pump cells. Systems are not redundant and if taken out of service shall effect the following cells.

<u>System</u>	<u>Cell</u>
255	202
256	204, 204A, 204B, 215

1. Shutdown Ventilating System (255 or 256) as described by Section 4.3.4.6 of this SDD.
2. Perform required maintenance as described by the appropriate section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-21
b. Heating coil	-	25A-21
c. Throwaway filter	6.3.8.2	25A-21
d. Damper	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place Ventilation System (255 or 256) in service as described by Section 4.3.2.7 of this SDD.

Hold
25000572

6.2.3.7 Maintenance Bay A/C Unit (210)

A/C Unit (210) provides cooling/heating to cells 235 & 261. Unit must be taken out of service to perform most maintenance.

1. Shutdown A/C Unit (210) as described by Section 4.3.4.7 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-22
b. Roil filter	6.3.8.1	25A-22/55
c. Heating/cooling coil	-	25A-22/54
d. Damper	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place A/C Unit (210) in service as described by Section 4.3.2.8 of this SDD.

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6.2.3.8 System 56 Panel U.C. (237A, 237B, 237C)

Unit Coolers (237A, 237B & 237C) operate only during fire accident. Unit cooler must be taken out of service to perform most maintenance and will interrupt service to the following cells:

<u>U.C.</u>	<u>Cell</u>
237A	272A
237B	272B
237C	272C

1. Shutdown U.C. as described by Section 4.3.4.8 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-23
b. Cooling coil	-	25A-23/54
c. Throwaway filter	6.3.8.2	25A-23

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.3.2.9 of this SDD.

HOLD
250005

6.2.3.9 Stairwell Pressurization Fan (246A, 246B, 247A, 247B, 248A, 248B)

Stairwell pressurization fans are not redundant and may prevent use of stairwell as a fire exit (201, 212, 214, 213, 205, 233) when taken out of service for maintenance.

1. Shutdown fan as described by Section 4.3.4.9 of this SDD.
2. Perform required maintenance as described by MOP 25A-24 or 53.

3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.3.2.10 of this SDD.

HOLD
250005

6.2.3.10 Smoke Vent Fan (266)

Smoke Vent Fan (266) is not redundant and will prevent venting of smoke following a fire, from the SGB-IB, (Cells 216, 217, 247, 262, 271) when taken out of service for maintenance.

1. Refer to SDD-26B (SOI 26B-13) for shutdown of Smoke Vent Fan (266).
2. Perform required maintenance as described by MOP 25A-25 or 53.
3. Upon completion of maintenance and appropriate retest (TBD), place Fan in service. HOLD
25000572

6.2.3.11 Aux. Feed Pump (Electric) U.C. (221A, 221B)

Unit coolers are not redundant and cooling will be affected in cell (204A or 204B) when U.C. is taken out of service for maintenance.

1. Shutdown U.C. as described by Section 4.3.4.5 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-21
b. Cooling coil	-	25A-21/54
c. Throwaway filter	6.3.8.3	25A-21

3. Following completion of maintenance and appropriate retest (TBD), place U.C. (221A or 221B) in service as described by Section 4.3.2.5 of this SDD. HOLD
25000572

6.2.4 Control Building

6.2.4.1 Control Room A/C System

6.2.4.1.1 A/C System (410A, 410B)

Control Room A/C System (410A & 410B) consists of a Return Fan (451A, 451B) and an AHU (410A, 410B) consisting of a Supply Fan, Roll Filter, Bag Filter and a Cooling Coil.

Redundant AHU Supply Fans (410A, 410B) are provided to ventilate and cool cells (refer to P&ID NV-530). One unit may be shutdown for maintenance.

NOTE: Shutdown of AHU will shutdown related Return Fan (451A or 451B).

1. Shift operating AHU (410A or 410B and Filter Unit 471A or 471B) if necessary, as described by Section 4.4.3.12.1 of this SDD.
2. Shutdown AHU as described by Section 4.4.4.1 of this SDD.
3. Perform required maintenance as described by the appropriate Section/MOP listed below.

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-28
b. Roll filter	6.3.8.1	25A-55
c. Bag filter	6.3.8.3	25A-56
d. Cooling coil	-	25A-54
e. Damper	-	25A-53

4. Following completion of maintenance and appropriate retest (TBD), place AHU (410A or 410B) in service as described by Section 4.4.2.1 of this SDD. HOLD
2500057

6.2.4.1.2 Dampers and Isolation Valves (TBD) HOLD
25000144

6.2.4.2 Electric Reheat Coils (480-486)

Electric reheat coils are not redundant and if taken out of service, will cause a reduced temperature in the cells serviced (as listed below). If maintenance requires violation of system boundary, cell ventilation will also be affected.

<u>Reheat Coil</u>	<u>Cell</u>
480	431
481	431
482	431
483	432
484	433A&B, 434-436, 439-442, 448
485	421, 421A, 423
486	420, 422, 425-427, 429, 437, 437A, 450

1. Shutdown reheat coil as described by Section 4.4.4.2 of this SDD.
2. Perform required maintenance as described by MOP 25A-27.

3. Following completion of maintenance and appropriate retest (TBD), place reheat coil in service as described by Section 4.4.2.2 of this SDD. Hold 25000572

6.2.4.3 Control Room Supply Fans (441A, 441B) and Filter Units (471A, 471B) and Dampers (MOD-076A, 076B)

Filter Units (471A & 471B) and Supply Fans (441A and 441B) operate in an emergency, along with their related A/C Unit (410A or 410B). Maintenance on this unit should be performed in conjunction with Section 6.2.4.2.

Shutdown of filter unit or supply fan could effect Control Room habitability (refer to LCO provided in Section 3.0 (TBD) of this SDD). Hold 25000570

1. Filter Unit (471A & 471B) consists of a bag filter, (2) HEPA filters and an active filter.

a. If necessary, shift operating CR Air Handling Unit Return Fan and Filter Train (410A, 441A, 451A & 471A or 410B, 441B, 451B & 471B) as described by Section 4.4.3.12.1.

b. Shutdown AHU and Filter Train (A or B) as described by Sections 4.4.4.1 and 4.4.4.3 of this SDD.

c. Perform required maintenance as described by MOP 25A-28 or 53.

d. Following completion of maintenance and appropriate retest (TBD), place AHU and Filter Train (A or B) in service as described by Sections 4.4.2.1 and 4.4.2.3 of this SDD. Hold 25000572

6.2.4.4 Battery Room Exhaust Fan (461-464)

Battery room exhaust fans are not redundant. When fan (461, 462, 463 or 464) is taken out of service, all precautions of Section 3.0 (TBD) must be observed to prevent Hydrogen buildup or other hazardous conditions. Hold 25000570

1. Shutdown fan as described by Section 4.4.4.4 of this SDD.
2. Perform required maintenance as described by MOP 25A-29 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place ^{Hold} Fan (461, 462, 463 or 464) in service as described by Section 4.4.2.4 of this SDD. 25000572

6.2.4.5 MG Set Switchgear A/C System (400)

HVAC System (400) consists of two Supply Fans (440A & 440B), two Return Fans (450A & 450B) and an AHU (400) consisting of a roll filter, bag filter and a cooling coil. Supply and Return Fans (440A & 450A or 440B & 450B) are not redundant. When a supply/return fan is taken out of service, ventilation shall be reduced to cells (284, 446, 455-457, 470-472, 473A & B, 513, 530-534, 540-543).

1. Shutdown Supply/Return Fan (440A/450A or 440B/450B) or A/C System (400) as described by Section 4.4.4.5 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below:

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-30
b. Return fan	-	25A-30
c. Roll filter	6.3.8.1	25A-55
d. Bag filter	6.3.8.3	25A-56
e. Cooling coil	-	25A-54
f. Dampers	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place component in service as described by Section 4.4.2.5 of this SDD. HOLD
25000572

6.2.4.6 MG Set Unit Cooler (421-424)

Unit Coolers (421-424) operate automatically when the related MG Set (System 56) is started. Unit coolers are not redundant and should be taken out of service along with the related MG set (System 56).

1. Shutdown Unit Cooler (421, 422, 423 or 424) as described by Section 4.4.4.6 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below:

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-31
b. Cooling coil	-	25A-54
c. Throwaway filter	6.3.8.2	-

3. Following completion of maintenance and appropriate retest (TBD), place Unit Cooler (421, 422, 423 or 424), in service as described in Section 4.4.2.6 of this SDD. HOLD
25000572

6.2.4.7 Switchgear A/C System (411, 412)

A/C System consists of a Return Fan (452, 453) and an A/C Unit (411, 412) consisting of a supply fan, roll filter, bag filter and a cooling coil. A/C Units (411, 412) are not redundant and when taken out of service for maintenance, ventilation to the following cells will be effected:

<u>A/C Unit</u>	<u>Cell</u>
411	413, 444, 445, 451, 453, 454, 459, 466, 467 DGB Cells - 521, 522, 526
412	412, 445, 452, 458, 460, 463, 466, 467 DGB Cells - 523, 525, 527

1. Shutdown A/C System (411, 412) as described by Section 4.4.4.7 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below:

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-32
b. Return fan	-	25A-32
c. Roll filter	6.3.8.1	25A-55
d. Bag filter	6.3.8.3	25A-56
e. Cooling coil	-	25A-54
f. Damper	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place A/C System (411 or 412) in service as described by Section 4.4.2.7 of this SDD. HOLD
25000572

6.2.4.8 Smoke Vent Fan (466)

Smoke Vent Fan (466) is not redundant and shutdown will prevent venting of smoke from cells (412, 413, 444, 445), following a fire.

1. Refer to SDD-26B (SOI 26B-13) for shutdown of Smoke Vent Fan (466).

2. Perform required maintenance as described by MOP 25A-33 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place Smoke Vent Fan in service as described by SDD-26 (SOI 26-13). HOLD
25000572

6.2.4.9 Stairwell Pressurization Fan (442)

Stairwell Pressurization Fan is not redundant and may prevent use of stairwell during a fire (414) when taken out of service.

1. Shutdown fan as described by Section 4.4.4.9 of this SDD.
2. Perform required maintenance as described by MOP 25A-34 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.4.2.9 of this SDD. HOLD
25000572

6.2.4.10 Toilet Exhaust Fan (465)

When toilet exhaust fan is taken out of service for maintenance exhaust ventilation for cell (420, 425, 426, 434, 435, 439, 437 & 437A) will be interrupted.

1. Shutdown fan as described by Section 4.4.4.10 of this SDD.
2. Perform required maintenance as described by MOP 25A-58 or 53.
3. Following completion of maintenance and appropriate retest, (TBD) place fan in service as described by Section 4.4.2.10 of this SDD. HOLD
25000572

6.2.4.11 Kitchen Exhaust Fan (467)

When Kitchen Exhaust Fan (467) is taken out of service for maintenance, exhaust ventilation from cell (421A, 427) will be interrupted.

1. Shutdown fan as described by Section 4.4.4.11 of this SDD.
2. Perform required maintenance as described by MOP 25A-59 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.4.2.11 of this SDD.

HOLD
25000572

6.2.5 Diesel Generator Building

6.2.5.1 Diesel Generator Room Emergency Supply Fan (341A, 341B, 342A, 342B) and Dampers (MOP-002A, 002B, 010A, 010B)

Fans (341A & 341B or 342A & 342B) operate when the related Emergency Diesel starts. Supply fans are not redundant and if taken out of service will reduce the heat removal capacity of the cell when diesel is in operation. Dampers operate automatically when related fan is started, therefore maintenance should be performed at the same time as the related Diesel Generator.

1. Shutdown fan as described by Section 4.5.4.1 of this SDD.
2. Perform required (Fan or damper) maintenance as described by MOP 25A-35 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.5.2.1 of this SDD.

HOLD
25000572

6.2.5.2 Diesel Generator Room H&V Unit (331,332)

H&V Units (331 & 332) are not redundant and ventilation to Cell (511 or 512) will be interrupted if H&V Unit (331 or 332) is taken out of service. H&V Unit consist of a supply fan, heating coil and a throwaway filter.

1. Shutdown H&V unit as described by Section 4.5.4.2 of this SDD.
2. Perform required maintenance as described by the appropriate Section/MOP listed below:

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-36
b. Heating coil	-	25A-36
c. Throwaway filter	6.3.8.2	-
d. Damper	-	25A-53

3. Following completion of maintenance and appropriate retest (TBD), place AHU (331 or 332) in service as described by Section 4.5.2.2 of this SDD.

HOLD
25000572

6.2.5.3 MG Set Unit Cooler (321, 322)

Unit Coolers (321 & 322) consist of a supply fan, cooling coil and a throwaway filter. Coolers (321 & 322) are not redundant and ventilation must be interrupted to perform most maintenance, therefore maintenance should be performed in conjunction with related MG Set.

1. Shutdown U.C. as described by Section 4.5.4.3 of this SDD.

2. Perform required maintenance as described by the appropriate Section/MOP listed below:

<u>Component</u>	<u>Section</u>	<u>MOP</u>
a. Supply fan	-	25A-37
b. Cooling coil	-	25A-54
c. Throwaway filter	6.3.8.2	25A-37

3. Following completion of maintenance and appropriate retest (TBD), place U.C. in service as described by Section 4.5.2.3 of this SDD. HOLD
25000572

6.2.5.4 Smoke Vent Fan (360)

Smoke Vent Fan (360) is not redundant and will prevent venting of smoke, following a fire, from Cells (521 & 522) when taken out of service for maintenance.

1. Refer to SDD-26B (SOI 26-13) for shutdown of Fan (360).
2. Perform required maintenance as described by MOP 25A-38 or 53.
3. Following appropriate retest (TBD) place Fan (360) in service as described in SDD-26 (SOI 26-13). HOLD
25000572

6.2.5.5 Day Tank Cell Exhaust Fan (343, 344)

Day Tank Cell Exhaust Fan (343 & 344) are not redundant, ventilation of Cells (514 or 515) (526 or 527) will be interrupted when fan is taken out of service. Precautions described by Section 3.0 (TBD) must be observed while fan (343 or 344) is out of service. HOLD
25000570

1. Shutdown fan as described by Section 4.5.4.5 of this SDD.
2. Perform required maintenance as described by MOP 25A-39 or 53.
3. Following completion of maintenance and appropriate retest (TBD), place fan in service as described by Section 4.5.2.5 of this SDD. Hold 25000572

6.2.6 HVAC System Cleanup Following Contamination (TBD)

6.2.6.1 Reactor Containment Building (TBD)

6.2.6.2 Radwaste Building (TBD)

6.2.6.3 Reactor Service Building (TBD)

Hold
25000144

6.3 Preventive Maintenance

Maintenance of the system includes the d/p gages, roll filters, and filters. In addition to the following, consult the Manufacturer's O&M Manual for recommended maintenance.

NOTE: Operation of redundant components (where possible) is to be shifted weekly to equalize operating times. For procedure, refer to normal operating sections of this SDD.

6.3.1 HVAC Component Maintenance

6.3.1.1 Filters

Maintenance of filters consists of checks on d/p drop across the filters, replacement of the filters at a predetermined pressure drop value and periodic efficiency tests as identified in section 3.0 (TBD) of this SDD. Hold 25000570

NOTE: If any welding repairs are necessary on, within, or adjacent to the ducts, housing, or mounting frames, the filters and adsorbers must be removed from the housing during such repairs. The repairs must be completed prior to periodic testing, filter inspection, and in-place testing. The use of silicone sealants or any other temporary patching material on filters, housings, mounting frames, or ducts should not be allowed.

- a. Throwaway - These filters should be replaced (refer to section 6.3.8.2) when the pressure drop across them reaches value as specified in section 3.0 (Table 3-1, 3-2, 3-3, 3-4 or 3-5) of this SDD.
- b. Bag Filters - These filters should be replaced (refer to section 6.3.8.3) when the pressure drop across them exceeds value as specified in Section 3 of this SDD.
- c. HEPA Filters - When the pressure drop exceeds value as specified in Section 3.0 of this SDD, they should be replaced as described by section 6.3.8.4 of this SDD.

Periodic efficiencies should be determined using the cold generated DOP efficiency test. Consult approved test procedure for details on this test.

- d. Adsorbent Filters - Periodic efficiency tests should be conducted on these cells. Replacement should be made when the required efficiency is not met. Consult approved manufacturer test procedure for details of this test.

B

- e. Roll Filter - For maximum efficiency, media should be allowed to accumulate dirt until a pressure drop of 0.5" w.g. is reached. Replenish as described by section 6.3.8.1 of this SDD.

6.3.1.2 Procedure

1. Verify the redundant H&V unit is operable or that the area served by the system allows for shutdown of H&V equipment.
2. Start the redundant unit (where applicable) and verify that the system has returned to satisfactory operating conditions.
3. De-energize the H&V equipment containing the component to be maintained.
4. Isolate the component by closing valves, dampers, etc. as specified in the appropriate portion of section 6.2 of this SDD.
5. De-energize and tag the switch of the connected electrical equipment of component to be maintained.

6.3.2 Deleted

6.3.3 Deleted

6.3.4 Deleted

6.3.5 Deleted

6.3.6 Dampers

6.3.6.1 Automatic

All automatic dampers should be checked for freedom of movement and lubricated at bearing points.

1. Check blades in the closed position to insure they close tightly, adjust linkage to close any open blades.
2. Observe operators through an operating cycle to check for defects.

6.3.6.2 Manual

Under most conditions, these dampers are fixed at the time of initial adjustment and will not require attention.

6.3.6.2.1 Outside air and return air dampers should be maintained in accordance with the procedures for the units they serve.

6.3.6.2.2 Air Handling Unit Supply Fan inlet and outlet dampers should be maintained in conjunction with their associated components, except that if the duct integrity will be compromised (damper removed) the air handling unit is shutdown.

6.3.6.3 Fire Dampers (TBD)

Hold
25000144

6.3.6.4 Operators (TBD)

6.3.7 HVAC Ducts - Check duct system for general overall condition. Tighten loose connections and supports as needed. Clean components as required by MOP's to maintain good condition.

6.3.8 Air Filters - Check drive motor on filter for proper operation. For dry filters, replace dirty filters.

If pressure drop across filter indicates filter is dirty, clean or replace as needed. Repair, adjust, clean or replace as required to maintain good operating condition.

6.3.8.1 Changeout of "ROLL" Filters

The following units contain Roll Filters:

25ARA200
25ASA 100, 101, 103
25ACA400, 410A, 410B, 411, 412
25AGA201-204, 206, 210

6.3.8.1.1 Initial Conditions

Either a "Roll Filter Media Runout or High d/p" local alarm is present or preventive maintenance schedules require changeout of "Roll Filter" media.

6.3.8.1.2 Procedure (TBD)

Hold
25000144

6.3.8.2 Change Out of Throwaway Filters

The following units contain throwaway filters

25ARA010, 011, 020A, 020B, 020C, 021, 022, 023, 024, 053, 070

25ASA104A, 104B, 131-134, 137, 138, 139A&B, 142A&B, 143, 145, 146, 172

25ACA421-424

25ADA321, 322, 331, 332

25AGA207, 208, 220, 221A&B, 222A&B, 223A&B, 237A-C

PROCEDURE (TBD)

HOLD
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6.3.8.3 Bag Filter Replacement

The following components contain a Bag Filter:

25ARA182A, 182B, 200

25ASA100, 101, 171, 184A&B

25ACA400, 410A&B, 411, 412, 471A&B

25AGA201-204, 206

PROCEDURE (TBD)

HOLD
25000144

6.3.8.4 HEPA Filter Replacement

The following components contain HEPA filters:

25ARA070, 182A, 182B

25ASA171, 172, 184A&B

25ACA471A & 471B

PROCEDURE (TBD)

HOLD
25000144

6.3.8.5 Adsorbent Filters

The following units contain Adsorbent Filters:

25STS182A & 182B

25ASA184A & 184B

25ACA471A & 471B

PROCEDURE (TBD)

Hold
25000144

6.3.9 Heating and Ventilating Fans

Observe drive for condition and satisfactory operation. Repair and clean fans (as necessary) to maintain good operating conditions as described by the appropriate vendor O&M manual.

1. V Belt drives - (semi-annual)

- a. Check sheaves for proper alignment.
- b. Check belt for good tension.

2. Vortex Dampers (semi-annual)

- a. Verify free operation
- b. Verify all blades operate in unison
- c. Verify all blades close tightly (where required)
- d. Verify blades move full open and closed.

3. Couplings - (semi-annual)

- a. Check coupling alignment as described by Vendor's O&M Manual

4. Bearings (semi-annual)

- a. Lubricate as described by applicable Vendor's O&M Manual.

B

5. Fan Blades

- a. Check fan blade angle and clearance as described by applicable Vendor's O&M Manual.
- b. Check fan blades for signs of physical damage, replace if necessary.

6. Fan Motor (semi-annual)

- a. Check current input to fan motor.
- b. Lubricate as described by applicable Vendor's O&M Manual.

6.3.10 Plenum Chambers

Observe condition of plenum chambers. Inspect doors for good seals and latches. Repair adjust and clean as needed.

6.3.11 Electric Duct Heaters

Test duct heaters and replace defective elements. Check elements for indications of rust or other deterioration. Check terminal connections. Clean, tighten and repair as necessary to maintain good condition.

6.3.12 Heating Ventilating and Air Conditioning Controls

B

6.3.12.1 Instrumentation and Control

Instrumentation and controls are designed to allow maintenance and calibration during periods when the HVAC System or affected portions thereof are not in operation. When this cannot be met, down-time for instrument maintenance or calibration shall not be greater than the maximum allowable outage time for the affected part of the HVAC System.

Examine thermostats, step controllers, contactors, etc. to determine items are in good condition and operating properly. Adjust or repair as needed to provide proper operation.

6.3.13 Unit Heaters

Examine heaters to determine general condition. Check fan motors for satisfactory operation. Inspect hot water heating elements for leaks. Repair and clean heater housing as required.

6.3.14 Containment Isolation Valves

Automatic and fail closed ventilation containment isolation valves are provided on the ventilation supply and exhaust penetrations through the containment and equipment airlock. Maintenance and testing of the valves will be performed in conjunction with the leakage testing of the containment on a periodic basis.

1. Verify that the connected ventilation system supply and exhaust fans are ready for performance testing of the valves.

2. Note the positions of all the valves to be tested, then cycle the supply and exhaust valves through several recycles, observe the closure time of each valve. Verify all valves meet specifications and restore the valves in their respective operating conditions and positions.
3. In conjunction with the containment leakage testing, evaluate the leak tightness of the ventilation valves in relation with testing of other supporting and instrumentation valves.
4. Perform required maintenance on the valves to meet the plant technical specification requirements.
5. Return the valves to their operating condition.

The RCB Vent and Purge System will not be running during normal plant operations and the containment isolation valves will be closed. Routine maintenance may be done on the system without impairing the containment isolation features.

6.3.15 Air Scrubber

Air Scrubbers should be checked periodically to insure that:

1. A sufficient supply of scrubbing liquid is available for the distributor.
2. Liquid distributor (spray nozzles) are not clogged.

NOTE: The liquid distributor should be periodically cleaned. This is done by removing the scrubber top. Also the liquid rate to the distributor should be spot-checked. It can be accurately measured by noting the crest height of the distributor over the flow weir (screen).

3. Particulate does not build up in the liquid sump and cause undue nozzle and pump wear.
4. Chemical scrubbing solutions are maintained.
5. Weir box orifices are not clogged.
6. No voids are present beneath the liquid distributor (the packed bed is completely filled).
7. Packing is not plugged with accumulated solids.

6.4 Surveillance

1. Perform leakage test on the CI valves ADV 046A-C, ADV 047A-C, MOV 19A-D, MOV 106A-D per MOP 25A-71 as required by 10CRF50 Appendix J.
2. All other system surveillance is TBD.

D

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6.5 Deleted

6.6 Inservice Inspection

The periodic test requirements Table 6-1 lists each examination and test, the test method and the frequency of testing to be used for the ISI. This ISI is in accordance with the 1980 Edition, ASME B&PV code, Section XI, Division I including Addenda thru the winter 1980.

D

TABLE 6-1
PERIODIC TEST REQUIREMENTS

S00-25A
REV D
UNBASELINED

SYSTEM 2A

Test No.	Component	Code Class	Type	Category	PI&D	Reference	Frequency	Description	Remarks
F1	ADVD46A-C, ADVD47A-C, MOV15A-D, MOV105A-D	2	Butterfly	A-Active	NV501 NV502 NV503	IWV 3400	Quarterly	Exercise open Measure Stroke Time Confirm Failure Mode	MOP 25A-69
F2	ADVD46A-C, ADVD47A-C, MOV15A-D, MOV106A-D	2	Butterfly	A-Active	NV501 NV502 NV503	IWV 3420	81-annually	Determine Leakage	MOP 25A-70
11	Pressure Retaining Components	2	-	-	NV501 NV502 NV503	Table IWD-2500-1 (Note 1)	Each Period	Functional Pressure Visual Examination VI-2 (IWD-2610)	MOP 25A-73

Note 1: ASME B&PV Code Section XI Edition/Addenda applicable specified in Section 1, paragraph 1.3.12

The HVAC System is designed to allow accessibility to components and ducting and includes instrumentation to aid in the performance of ISI.

PROCEDURE (TBD)

Hold
25000144

6.7 Maintenance Outline Procedure Index

<u>Procedure</u>		<u>Procedure Index Number</u>	<u>Page</u>
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RAPs and CAPs Cell Exhaust Fans	162A,162B	MOP-25A-3	6-71
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ABHX Unit Heater	191	MOP-25A-6	6-74
RSB and Annulus Filter Cell Unit Coolers	132,146	MOP-25A-7	6-75
RSB Stairwell Pressurization Fans	166,167,168,169	MOP-25A-8	6-76
RSB Smoke Vent Fan	165	MOP-25A-9	6-77
RSB Inerted Cell Booster Fan	144	MOP-25A-10	6-78
RSB Clean-up Filter Cell Unit Cooler	133,134	MOP-25A-11	6-79
RSB Portable Filter/Fan Unit	070	MOP-25A-12	6-80
RWA A/C System	101	MOP-25A-13	6-81
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CB Stairwell Pressurization Fan	442	MOP-25A-34	6-102
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Diesel Generator Rooms H and V Unit	331,332	MOP-25A-36	6-104
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DGB Smoke Vent Fan	360	MOP-25A-38	6-106
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Map Title: FHA A/C System (100)

Map Number: 25A-1

500-25A
Rev. B
Unhaselined

Maintenance Operation	Frequency	OH Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqt.	Supply Sys.	Men. Reqt. H	Elapse Time HR	Man-hours H-MR	Dose Rate HR	Dose Man 18TH
TBD HOLD 25000571													

Map Title: RAPS & CAPS Unit Cooler (131)

Map Number: 25A-2

S00-25A
Rev. 8
Unbaselined

Maintenance Operation	Frequency	OM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. liced	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man-Hours H-HR	Dose Rate HR	Dose Man 15TH
TBD HOLD 2500057													

Rep Title: RAPS & CAPS Cell Exhaust Fans (162A, 162B)

Rep Number: 25A-3

S00-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	Old Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Hen. Repl. H	Elapso Time HR	Man- hours H-HR	Dose Rate HR	Dose Man H:CH
TBD HOLD 25000571													

Map Title: Refueling Communication Center A/C System (103)

S00-25A
Rev. B
Unbaselined

Map Number: 25A-4

Maintenance Operation	Fre- quency	OMH Manual	Sys. 0-5-50	RP 0-5-50	Equip. Items	Supply Sys.	Servs. Requ.	Supply Sys.	Men. Requ H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man H/Min
TBD HOLD 25000571													

Map Title: ABHX Cell Unit Cooler (104A, 104B)

Map Number: 25A-5

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Unbaselined

SAFETY RELATED

Maintenance Operation	Frequency	Oil Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Mon. Repl. H	Elapse Time HR	Man- hours H-100	Dose Rate HR	Dose Man H-100
TBD													
HOLD 25-00571													

Map Title: ABUX Unit Heater (191)

Map Number: 25A-6

S00-25A
Rev. B
Unbated/Ined

Maintenance Operation	Frequency	OMH Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Req'd.	Supply Sys.	Men. Req'd. H	Elope Time HR	Man-Hours H-HR	Dose Rate HR	Dose Plan (NCH)
TBD HOLD 25000571													

Prop Title: RSB & Annulus Filter Cell Unit Cooler (132, 146)

SDD-25A
Rev. 8
Unbaselined

Prop Number: 25-7

SAFETY RELATED

Maintenance Operation	Frequency	OSH Manual	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Requi.	Supply Sys.	Men. Requi. H	Elapse Time HR	Man-hours H-HR	Dose Rate HR	Dose Man HCT/H
TBD													
HOLD 25000571													

Map Title: RSB Stairwell Pressurization Fans (166, 167, 168, 169)

Map Number: 25A-8

500-25A
Rev. B
Unshelined

Maintenance Operation	Frequency	Old Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Eloaso Time HR	Man- hours H-IR	Dose Rate HR	Dose Non HR/H
T80 HOLD 25000571													

Map Title: RSB Smoke Vent Fan (165)

Map Number: 25A-9

500-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Requl.	Supply Sys.	Men. Perqul. H	Elapse Time IM	Man-hours H-IM	Dose Rate IM	Dose Plan ITEM
TBD HOLD 25000571													

Wsp Title: RSB Inerted Cell Booster Fan (144)

Wsp Number: 25A-10

SDD-25A
Rev. B
Unstallmed

Maintenance Operation	Fre- quency	QA Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man HR:EN
TBD HOLD 25000571													

Map title: RSB Clean-Up Filter Cell Unit Coolers (133, 134)

Map Number: 25A-11

500-25A
Rev. B
Unbaselined

SAFETY RELATED

Maintenance Operation	Frequency	OSH Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Erase Time HR	Man-Hr	Dose Rate HR	Dose Man RECH
TBD													
HOLD 25000571													

Map Title: RSB Portable Filter/Fan Unit (070)

Map Number: 25A-12

S00-25A
Rev. B
Unbaselined

Maintenance Operation	Fre- quency	OM Manual	Sys. 0-5-50	RP 0-5-50	Equip. Holds	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man H/HR
TBD MOLD 25000571													

Prop Title: RMA A/C System (101)

Prop Number: 25A-13

SMD-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	OLM Handoff	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man-hours H-HR	Dose Rate HR	Dose Man HRECH
TBD HOLD 25000571													

Map Title: RMA Exhaust Filter Unit (171)

Map Number: 25A-14

S00-25A
Rev. B
Unbaselined

Maintenance Operation	Fra- quency	Old Hammal	Sys. 0-5-50	RP 0-5-50	Equip. Reeds	Supply Sys.	Serva. Repl.	Supply Sys.	Req. H	Elapse Time HR	Man- hours H-IR	Dose Rate IR	Dose Man HCTH
TBD HOLD 25000571													

Fig 11-1e: RMA Unit Heaters (135, 136, 193, 194)

Fig Number: 25A-15

SDO-25A
Rev.B
Unbaseline

Maintenance Operation	Fre- quency	OLH Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqt.	Supply Sys.	Men. Reqt. H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Plan HCEH
TBD HOLD 25000571													

Map Title: Steam Generator & Auxiliary Bay A/C System (201, 202, 203)

Map Number: 25A-16

SDO-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	QA Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man-hours H-HR	Dose Rate HR	Dose Man HR:EH
TBD													
HOLD 25000571													

Map Title: Intermediate Bay A/C System (704, 706)

Map Number: 25A-17

S00-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	OMH Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Eloase Time HR	Man-hours H-HR	Dose Rate HR	Dose Rate LCH
TBD													
HOLD 25000571													

Map Title: Emergency Chilled Water Equipment Rooms Unit Coolers (223A, 223B)

SDG-25A
Rev. B
Unbaselined

Map Number: 25A-18

SAFETY RELATED

Maintenance Operation	Frequency	OLM Manual	Sys. 0-S-50	RP 0-S-50	Equip. Records	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man-hours H-HR	Dose Rate HR	Dose Man PERH
TBD HOLD 25000571													

Map Title: Primary Sodium Tank Unit Cooler (220)

Map Number: 25A-19

SDO-25A
Rev.B
Unhaselined

Maintenance Operation	Frequency	QA Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reql.	Supply Sys.	Req. H	Elope Time HR	Plan- hours H-IR	Dose Rate HR	Dose Plan H-IR
TBD													
HOLD 25000571													

SMD-25A
rev. B
Unchanged

Map Title: Auxiliary Feed Pump Unit Coolers (221A, 221B, 222A, 222B)

Map Number: 25A-20

SAFETY RELATED

Maintenance Operation	Frequency	Oil Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Reqd. H	Elapsed Time HR	Hours to 10-100	Dose Rate HR	Dose Man. (G/GH)
TBD													
HOLD 25000571													

S00-25A
Rev. 8
Unbaselined

Prop Title: Auxiliary Feed Pump Ventilation System (255, 256)

Prop Number: 25A-21

Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Req.	Supply Sys.	Men. Req. H	Elast. Time HR	Man- hours H-HR	Dose Rate HR	Dose Man IRLH
T90 HOLD 25000571													

Map Title: Maintenance Bay A/C System (210)

Map Number: 25A-22

S00-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	OWH Manual	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Plan FTEH
T80 HOLD 25000571													

SMD-25A
Rev. B
Unbaselined

Map Title: System 56 Panel Unit Coolers (237A, 237B, 237C)

Map Number: 25A-23

SAFETY RELATED

Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Req'd.	Supply Sys.	Men. Req'd. H	Elapse Time HR	Man- hours H-IR	Dose Rate IIR	Dose Man IREH
TBD													
HOLD 25000571													

500-25A
Rev. B
Unbaselined

Map Title: SGB Stairwell Pressurization Fans (246A, 246B, 247A, 247B, 248A, 248B)

Map Number: 25A-24

Maintenance Operation	Frequency	OMH Hazard	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	Elaste Time HR	Man- hours H-HR	Dose Rate HR	Dose Plan FREM
TBD HOLD 25000571													

Map Title: SGB-1B Smoke Vent Fan (266)

Map Number: 25A-25

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Unbaselined

Maintenance Operation	Frequency	OMH Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Reql.	Supply Sys.	Men. Reql. H	Elapsed Time HR	Man- hours H-IR	Dose Rate IR	Dose Man IR/CH
T80 HOLD 25000571													

Map Title: Control Room A/C System (410A, 410B)

Map Number: 25A-26

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Rev. B
Unbaselined

SAFETY RELATED

Maintenance Operation	Frequency	OLA Manual	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man-hours M-HR	Dose Rate HR	Dose Man IB/H
TBD													
HOLD 25000571													

Map Title: Electric Reheat Coils (480-486)

Map Number: 25A-27

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Maintenance Operation	Fre- quency	Old Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	Elope Time HR	Man- hours H-IR	Dose Rate HR	Dose Man IR/H
TBD HOLD 25000571													

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Map Title: Control Room Supply Fan and Filter Unit (441A*, 441B*, 471A, 471B)

Map Number: 25A-26

*SAFETY RELATED

Maintenance Operation	Frequency	OMU Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Req'd.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man-Hours H-HR	Dose Rate IIR	Dose Man IREH
TBD													
HOLD 25000571													

Wsp Title: Battery Room Exhaust Fans (461-464)

Wsp Number: 25A-29

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Unbaselined

SAFETY RELATED

Maintenance Operation	Fre- quency	OLN Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elaste Time HR	Man- hours H-IR	Dose Rate IR	Dose Man IR/HH
TBD HOLD 25000571													

Item Title: MG Set/Switchgear A/C System (400)

Item Number: 25A-30

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Maintenance Operation	Frequency	QA Manual	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	Elope Time HR	Man-Hours H-HR	Dose Rate HR	Dose Man HREN
TBD HOLD 25000571													

Map Title: MG Set Unit Coolers (421, 422, 423, 424)

Map Number: 25A-31

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Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Eloaso Time HR	Plan- Hours H-IR	Dose Rate HR	Dose Plan H:EH
TBD													
HOLD 25000571													

Prop 11110: Switchgear A/C System (411, 412)

Prop Number: 25A-32

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SAFETY RELATED

Maintenance Operation	Fre- quency	Oil Manual	Sys. 0-5-50	RP 0-5-50	Equip. liceds	Supply Sys.	Servs. Repl.	Supply Sys.	Men- Reqd H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man H/HR
TBD HOLD 25000571													

Map Title: CB Smoke Vent Fm (466)

Map Number: 25A-33

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Unshelined

Maintenance Operation	Fre- quency	OMB Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man- hours H-IR	Dose Rate IR	Dose Plan IR/HR
T80 HOLD 25000571													

Part Title: CB Stairwell Pressurization Fan (442)

Part Number: 25A-34

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Maintenance Operation	Frequency	OWH Hrs: Min	Sys. 0-S-SD	ip 0-S-SD	Equip. Heds	Supply Sys.	Servs. Repl.	Supply Sys.	Mon. Repl. H	Elope Time HR	Man- hours H-IR	Dose Rate IR	Dose Plan IR:HM
TBD													
HOLD 25000571													

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Map Title: Diesel Generator Rooms Emergency Supply Fans (341A, 341B, 342A, 342B)

Map Number: 25A-35

SAFETY RELATED

Maintenance Operation	Frequency	Old Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Non-Reqd. H	Elapse Time HR	Man-hours H-IR	Dose Rate HR	Dose Man HELLH
TBD													
HOLD 25000571													

Map Title: Diesel Generator Rooms H&V Units (331, 332)

Map Index: 25A-36

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Maintenance Operation	Fre- quency	OMH Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Records	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	EIapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man HCHH
TBD HOLD 25000571													

Map Title: MG Set Unit Coolers (321, 322)

Map Number: 25A-27

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Unbaselined

Maintenance Operation	Frequency	OLH Interval	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Eclipse Time HR	Man- hours H-1HR	Dose Rate HR	Dose Plan HOURS
TBD HOLD 25000571													

Map Title: DGB Smoke Vent Fan (360)

Map Number: 25A-38

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Unissued

Maintenance Operation	Fre- quency	OLH Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	EIapse Time HR	Man- Hours H-IR	Dose Rate HR	Dose Man FRTN
T80 HOLD 25000571													

Map title: DGB Day Tank Cell Exhaust Fans (343, 344)

Map Number: 25A-39

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SAFETY RELATED

Maintenance Operation	Frequency	Old Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Med. Reqd. H	Elapse Time HR	Man-hours H-HR	Dose Rate HR	Dose Plan H/LEM
TBD HOLD 25000571													

Map Title: RCB Supply Fan (240A, 240B)

Map Number: 25A-40

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Maintenance Operation	Fre- quency	Oil Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Note Man IRCH
TBD HOLD 25000571													

Map Title: RCB Exhaust Fan (165A, 165B)

Map Number: 25A-41

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Maintenance Operation	Fre- quency	OLN Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Re-ql.	Supply Sys.	Men- Reql N	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man HOUR
TBD HOLD 25000571													

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Unbaselined

Map Title: E18 Cubicle Unit Cooler (021, 022, 023)

Map Number: 25A-42

SAFETY RELATED

Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Req'd.	Supply Sys.	Mon. Reqd. H	Eloase Time HR	Plan- hours H-HR	Dose Rate HR	Dose Plan 12:14
TBD HOLD 25000571													

Map title: Above Operating Floor Unit Cooler (020A, 020B, 020C)

Map Number: 25A-43

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Unbaselined

Mainten. - Operation	Fre- quency	OU1 Manual#	Sys. 0-5-SD	MP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Repl. M	Elope Time HR	Man- hours EL-HR	Dose Rate HR	Dose Plan MCEH
TBD HOLD 25000571													

Map Title: LCCV Cell Unit Cooler (053)

Map Number: 25A-44

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Maintenance Operation	Frequency	OLM Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elasto Time HR	Man-hours PI-IR	Dose Rate HR	Dose Run HR:MM
TBD HOLD 25000571													

Map Title: Below Operating Floor Unit Cooler (010, 011)

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Unbaselined

Map Number: 25A-45

Maintenance Operation	Frequency	QA Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Reql.	Supply Sys.	Men. Reql.	Elope Time	Man-hours H-IR	Dose Rate IR	Dose Man IR/II
TBD HOLD 25000571													

Map Title: Return Fans (050, 051)

Map Number: 25A-46

SDO-25A
Rev. B
Unbaselined

Maintenance Operation	Fre- quency	OMH Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Requ.	Supply Sys.	Men. Requ. H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Plan FE/H
TBD HOLD 25000571													

Map Title: Dome Recirculating Fan (052A, 052B)

Map Number: 25A-47

500-25A
Rev. B
Unbaselined

Maintenance Operation	Frequency	OM Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Req'd.	Supply Sys.	Men. Repl. H	Elasto Time HR	Man- hours H-1HR	Dose Rate MLL	Dose Man TMLH
TBD HOLD 25000571													

Map Title: HAA Unit Cooler (024)

Map Number: 25A-48

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Rev. B
Unhoused

Maintenance Operation	Frequency	Oil Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Eloase Time HR	Man- hours 11-1R	Dose Rate HR	Dose Man 18-11
TBD													
HOLD 25000571													

Map Title: Annulus Pressure Maintenance Fan (172A, 172B)

Map Number: 25A-49

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Rev. B
Unbaseline

SAFETY RELATED

Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-50	RP 0-5-50	Equip. floods	Supply Sys.	Servs. Req'd.	Supply Sys.	Mon. Repl. H	Elapse time HR	Man-hours 11-11R	Dose Rate HR	Dose Man 11-11R
TBD HOLD 25000571													

Map Title: Annulus Filter Fan (173A, 173B)

Map Number: 25A-50

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Unbaselined

Maintenance Operation	Fre- quency	OLM Manual#	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men- Reqd H	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man PERH
TRD HOLD 25000571													

Map Title: Annulus Cooling Fan (174A, 174B, 174C, 174D, 174E, 174F)

Map Number: 25A-51

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Rev. B
Unbaselined

Maintenance Operation	Frequency	OLA Handoff	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	EIapse Time HR	Man-hours H-HR	Dose Rate HR	Dose Man H:MM
TBD													
HOLD 25000571													

Map Title: Containment Clean-Up Scrubber Fan (175A, 175B)

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Unbalanced

Map Number: 25A-52

SAFETY RELATED

Maintenance Operation	Frequency	OM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	Elast. Time HR	Man-Hours H-HR	Dose Rate HR	Dose Rate PC/H
TBD													
HOLD 25000571													

Map Title: Dampers

Map Number: 25A-053

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Maintenance Operation	Fre- quency	OWI Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elope Time HR	Man- hours H-HR	Dose Rate HR	Dose Man HCLH
TBD HOLD 25000571													

Map Title: Heating/Cooling Coil Replacement/Repair

Map Number: 25A-54

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Unbaselined

Maintenance Operation	Frequency	Old Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Repl. H	Elope Time HR	Man- hours H-IR	Dose Rate HR	Dose Non IR/CH
TBD HOLD 25000571													

Prop Title: Toll Filter Media Replacement

Prop Number: 25A-55

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Maintenance Operation	Frequency	QMA Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Req'd.	Supply Sys.	Mon. Reqd. H	Elapse Time HR	Plan- hours H-HR	Dose Rate HR	Dose Plan H-HR
TRD HOLD 25000571													

Wip Title: Bag Filter Replacement

Wip Number: 25A-56

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Maintenance Operation	Fre- quency	QM Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elope Time HR	Man- Hours H-HR	Dose Rate HR	Dose Man H-HR
TBD HOLD 25000571													

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Map Title: HEPA FILTER

Map Number: 25A-57

Maintenance Operation	Frequency	OMH Manual	Sys. 0-5-50	RP 0-5-50	Equip. needed	Supply Sys.	Servs. Req'd.	Supply Sys.	Men. Req'd. H	Elope Time HR	Man-hours H-IR	Dose Rate HR	Dose Man H/IRH
TBD HOLD 25000571													

Map Title: CB Toilet Exhaust Fan (465)

Map Number: 25A-58

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Maintenance Operation	Fre- quency	OWI Manual	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqt. H	Elope Time HR	Man- hours H-HR	Dose Rate HR	Dose Plan H/CM
TBD HOLD 25000571													

Map Title: CB Kitchen Exhaust Fan (467)

Map Number: 25A-59

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Unbaselined

Maintenance Operation	Fre- quency	OM Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Plan- hours H-HR	Dose Rate HR	Dose Plan H-HR
TBD HOLD 25000571													

Map Title: RCB AHU (200)

Map Number: 25A-60

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Maintenance Operation	Fre- quency	OHM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reql.	Supply Sys.	Man. Repl. H	Elope Time HR	Man- hours H-HR	Dose Rate HR	Dose Man HRLH
TBD HOLD 25000571													

Map Title: RSB Portable Filter/Fan (172)

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Map Number: 25A-61

Maintenance Operation	Fre- quency	OLH Manual	Sys. 0-S-SD	RP 0-S-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elasto Time HR	Plan- hours H-HR	Dose Rate HR	Dose Plan WEEK
TBD HOLD 25000571													

Map Title: RCB Inerted Cell Booster Fan (060, 061)

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Map Number: 25A-62

Maintenance Operation	Frequency	OLM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reql.	Supply Sys.	Men. Reql. M	Elasto Time HR	Man-hours H-HR	Dose Rate HR	Dose Can FWH
TBD													
HOLD 25000571													

Map Title: Electrical Equipment Cell Unit Cooler (137, 138)

Map Number: 25A-63

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SAFETY RELATED

Maintenance Operation	Frequency	OM Manual	Sys. O-S-SD	RP O-S-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reql M	Elapse Time HR	Man- hours H-HR	Dose Rate HR	Dose Man H-HR
TBD HOLD 25000571													

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Map Title: Containment Clean-Up Pump Cell Unit Cooler (139A, 139B)

Map Number: 25A-64

Maintenance Operation	Frequency	OMH Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elope Time HR	Man-hours H-HR	Dose Rate HR	Dose Man H/CH
TBD HOLD 25000571													

Map Title: Containment Clean-Up Scrubber Cell Unit Cooler (142A, 142B)

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Map Number: 25A-65

SAFETY RELATED

Maintenance Operation	Frequency	OHJ Manual	Sys. 0-5-50	RP 0-5-50	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Repl. M	Elope Time HR	Man- hours H-HR	Dose Rate HR	Dose Man RECH
TBD													
HOLD 25000571													

Wp Title: Containment Clean-Up Pipe Chase Unit Cooler (143, 145)

Wp Number: 25A-66

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Maintenance Operation	Frequency	OM Manual	Sys. 0-S-50	RP 0-S-50	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elope Time IM	Man-Hours H-IM	Dose Rate HR	Dose Man HCTH
TBD HOLD 25000571													

Map Title: Annulus Filter Unit

Map Number: 25A-67

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Maintenance Operation	Fre- quency	QM Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. H	Elope Time HR	Man- hours H-IR	Dose Rate HR	Dose Man H/HR
TBD HOLD 25000571													

Map Title: RWA Exhaust Filter Fan (163)

Map Number: 25A-68

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Maintenance Operation	Frequency	Oil Manual	Sys. 0-5-SD	RP 0-5-SD	Equip. Needs	Supply Sys.	Servs. Repl.	Supply Sys.	Men. Repl. H	Elapse Time HR	Man- hours H-IR	Dose Rate HR	Dose Man H-IR
TBD													
HOLD 25000571													

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UNBASELINED

TEST NO. - F1

MOP 25A-69

VALVE DATA

System: 25A	Code Class: 2
Dwgs: NV501, NV502	Category: A-Active
Valve: AOV 046A-C, AOV047A-C MOV 19A-D, MOV 106A-D	Function Position: Open/Closed
Valve Size and Type: 24" Globe/Butterfly	Limiting Stroke Time: 4 Secs.
Location: RCB/RSB	Frequency: Quarterly
Radiation Zone: I	Type of Test: Exercise

Test Data

Plant Status: Shutdown

System Conditions: AOV 046A-C, AOV 047 are open. RCB HVAC system is shutdown. MOV 19A-D, MOV 106A-D are closed. Containment cleanup system is shutdown.

Test Description: Station observers with stopwatch to measure valve stroke time or hook up valve position signals to multi-channel recorder. Measure stroke time of valve.

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TEST NO. F2

MOP 25A-70

VALVE DATA

System: 25A	Code Class: 2
Dwgs: NV501, NV502	Category: A-Active
Valve: AOV 046A-C, AOV 047A-C MOV-19A-D, MOV 106A-D	Function Position: Open/Closed
Valve Size and Type: 24" Globe/Butterfly	Limiting Stroke Time: 4 Secs.
Location: RCB/RSB	Frequency: Quarterly
Radiation Zone: I	Type of Test: Leakage
Acceptance Criteria: (TBD)	

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D

Test Data

Plant Status: Shutdown

System Conditions: Same as in Test No. F1.

Test Description:

- 1) Close valve
- 2) Bring system to full maximum pressure differential
- 3) Measure leakage through telltale connection

Remarks: This test should be done in conjunction with Test No. F1

Title: Containment Isolation Valve Test Data Table
System: 25A NI HVAC System
Reference: 10 CFR 50 App. J
P&ID: NV 501, NV 502
Type of Test: Type "C" Pneumatic Leakage Test
Location: RCB/RSB
Radiation Zone: I
Code Class: 2
Test Frequency: Every refueling shutdown but not to exceed 2 years

Test Data

Reactor Plant Status: Shutdown

System Status: Shutdown (Lines between the isolation dampers/valves for the CIVs are isolated)

Test Pressure: 10 psig

Test Equipment Required: Flow meter, Pressure gauge, Compressed air

Test Boundaries: Isolation dampers/valves.

Test Medium: Compressed air

Maximum Allowed Leak Rate: $0.6 L_a$ where L_a is the maximum allowable leakage rate at 10 psig test pressure.

Test Description: 1) Close isolation valves/dampers for CIV and close CIV under test.
2) Apply test pressure at test connection.
3) Measure leakage rate using flow meter in the test connection.

Man-Hours: 9

Expected Man-Rem: NIL

Remarks: (1) This test should be performed in conjunction with ISI MOP's 25A-69 and 25A-70.

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CONTAINMENT ISOLATION VALVE
LEAK TEST TABLE
SYSTEM 25A

MOP 25A-71

Sheet 2 of 3

Note: All CIV testing will be performed per the requirements of 10 CFR 50 App. J

Component ID	Size	Valve Type	Code Class	P&ID #	Test Frequency	MOP #
A0V046A	24"	Butterfly	2	NV501	Every refueling but not exceeding 2 yrs	25A-71
A0V046B	24"	Butterfly	2	NV501	Every refueling but not exceeding 2 yrs	25A-71
A0V046C	24"	Butterfly	2	NV501	Every refueling but not exceeding 2 yrs	25A-71
A0V047A	24"	Butterfly	2	NV501	Every refueling but not exceeding 2 yrs	25A-71
A0V047B	24"	Butterfly	2	NV501	Every refueling but not exceeding 2 yrs	25A-71
A0V047C	24"	Butterfly	2	NV501	Every refueling but not exceeding 2 yrs	25A-71

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UNBASELINED

CONTAINMENT ISOLATION VALVE
LEAK TEST TABLE
SYSTEM 25A

MOP 25A-71

Sheet 3 of 3

Note: All CIV testing will be performed per the requirements of 10 CFR 50 App. J

Component ID	Size	Valve Type	Code Class	P&ID #	Test Frequency	MOP #
MOV19A	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV19B	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV19C	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV19D	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV106A	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV106B	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV106C	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71
MOV106D	24"	Globe	2	NV502	Every refueling but not exceeding 2 yrs	25A-71

Mop Title: Containment Isolation Valves (AOV 046A-C, AOV 047A-C, MOV19A-D, MOV106A-D)

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UNBASELINED
Sheet 1 of 2

NUCLEAR SAFETY RELATED

Mop Number: 25A-72

Maintenance Operation	Fre- quency	O&M Manual	RCB-HVAC Sys. O-S-SD	RP O-S-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. M	Elapse Time HR	Man- hours M-HR	Dose Rate HR	Dose Man MREM
No routine maintenance beyond that specified as scheduled maintenance has been identified.													
<u>Scheduled Maintenance</u>													
1. Visually inspect valve for any air leak, scale build-up. Tighten packing/gland to minimize leak, if necessary.	52/YR		O-S	O-S-SD	Flashlight, Mirror, Mechanics Tool Box	45	None	NA	1	0.2	0.2	None	None
<u>Unscheduled Maintenance</u>													
1. Ensure the CI valve is ready for maintenance per Section 6.2.1.15 of this SDD.			S	O-S-SD	None	NA	None	NA	1	0.5	0.5	NIL	NIL
2. Disconnect air/electrical connections from the valve operator.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.25	0.25	NIL	NIL
3. Dismantle the valve and its operator.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.75	0.75	NIL	NIL
4. Inspect and clean valve seat, valve plug and operator internals. Check for any seat corrosion.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.5	0.5	NIL	NIL
5. Repair valve seat valve plug and valve operator as necessary.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.5	0.5	NIL	NIL

Mop Title: Containment Isolation Valves (ADV 046A-C, ADV047A-C, MDV 19A-D, MDV106A-D)

NUCLEAR SAFETY RELATED

Mop Number: 25A-72 (Cont')

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Sheet 2 of 2

Maintenance Operation	Fre- quency	O&M Manual	RCB-HVAC Sys. O-S-SD	RP O-S-SD	Equip. Needs	Supply Sys.	Servs. Reqd.	Supply Sys.	Men. Reqd. M	EIapse Time HR	Man- hours M-HR	Dose Rate HR	Dose Man MREM
6. Reassemble the valve and its operator.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.75	0.75	NIL	NIL
7. Lubricate and check valve packing. Replace packing if necessary. Adjust spring tension if necessary to obtain the required valve closing time.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.25	0.25	NIL	NIL
8. Reconnect air/electrical connections to the valve operator.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.5	0.5	NIL	NIL
9. Return the CI valve to service per Section 6.2.1.15 of this SDD.			S	O-S-SD	Mechanics Tool Box	45	None	NA	1	0.5	0.5	NIL	NIL

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TEST NO. - I1

MOP 25A-73

FUNCTIONAL TEST DATA

System: 25A

Type of Test: Functional Pressure

Dwgs: NV501, NV502, NV503

Code Class: 2

Radiation Zone: I

Test Pressure: Normal Operating Pressure

Frequency: Each Period

TEST DATA

Plant Status: Shutdown

System Conditions: Normal Valve Alignment per valve position Table
(Section 4.6 of this SDD)

- Test Description:
1. Manually initiate operation of RCB HVAC system per SOI 25A-14 and wait 4 hours for conditions to stabilize. Visually examine pressure boundary surfaces as described in Code Article IWA-5000, paragraph 5240.
 2. Shutdown the RCB HVAC system per SOI 25A-30. Start the containment cleanup system per SOI 25A-2. Wait for conditions to stabilize. Visually examine pressure boundary surfaces as described in Code Article IWA-5000, paragraph 5240.
 3. Shutdown containment cleanup system per SOI 25A-30. Restart RCB HVAC system per SOI 25A-2.

Test Equipment Required: None

- Test Exclusions:
1. Vent and drain connections
 2. Instrumentation