

2.6.9 Emergency Power Generating Building Ventilation System

Design Description

1.0 System Description

The emergency power generating building ventilation system (EPGBVS) controls the temperature and air change rate in the Emergency Power Generating Buildings (EPGB) for personnel comfort, personnel safety, and equipment protection. The EPGBVS provides ventilation of the diesel hall, electrical room, and main tank room; and cooling of the electrical room for each of the four divisions of the EPGBs to remove equipment heat, and heat generated from other sources. The EPGBVS also provides heat to maintain a minimum temperature in the buildings.

Each division of the EPGBs has its own independent heating, ventilation and air conditioning system which is not connected to other divisions. Two divisions are located in each of the two EPGBs. EPGBVS Divisions 1 and 2 are located in EPGB 1/2 and Divisions 3 and 4 in EPGB 3/4. During normal plant operation, the emergency diesel generators (EDG) do not operate, however the EPGBVS maintains an acceptable ambient temperature for the startup of EDGs and for personnel comfort.

The EPGBVS provides the following safety-related functions:

- Removes heat generated by the EDGs during operation of the EDGs to maintain acceptable operating conditions in the diesel hall.
- Maintains acceptable ambient conditions in the electrical room and main tank room.
- Maintains environmental conditions for startup of the EDGs.

The EPGBVS provides the following non-safety-related functions:

- Maintains the room ambient conditions to allow personnel access during normal operation.
- Provides ventilation to maintain required air renewal rates.

2.0 Arrangement

2.1 The functional arrangement of the EPGBVS is as described in the Design Description of Section 2.6.9, Tables 2.6.9-12.6.9-1—Emergency Power Generating Building Ventilation System Equipment Mechanical Design and 2.6.9-2, and as shown on Figures 2.6.9-1—Emergency Power Generating Building Ventilation System Functional Arrangement, Division 1, 2.6.9-2—Emergency Power Generating Building Ventilation System Functional Arrangement, Division 2, 2.6.9-3—Emergency Power Generating Building Ventilation System Functional Arrangement, Division 3, and

2.6.9-4—Emergency Power Generating Building Ventilation System Functional Arrangement, Division 4.

2.2 Deleted.

2.3 Physical separation exists between the divisions of the EPGBVS as listed in Table 2.6.9-1 and as shown on Figure 2.6.9-1 through Figure 2.6.9-4.

3.0 Mechanical Design Features

3.1 Deleted.

3.2 Class 1E dampers listed in Table 2.6.9-2 will function to change position as listed in 2.6.9-1 under normal operating conditions.

3.3 Equipment identified as Seismic Category I in Table 2.6.9-1 can withstand seismic design basis loads without a loss of safety function(s).

3.4 Deleted.

3.5 Deleted.

3.6 Equipment listed in Table 2.6.9-1 as ASME AG-1 Code are fabricated, installed, inspected, and tested in accordance with ASME AG-1 Code requirements.

4.0 I&C Design Features, Displays, and Controls

4.1 Displays listed in Table 2.6.9-2 are indicated on the PICS operator workstations in the MCR and the RSS.

4.2 Controls on the PICS operator workstations in the MCR and the RSS perform the function listed in Table 2.6.9-2.

4.3 Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 2.6.9-2 responds to the state requested and provides drive monitoring signals back to the PACS module. The PACS module will protect the equipment by terminating the output command upon the equipment reaching the requested state.

5.0 Electrical Power Design Features

5.1 Equipment designated as Class 1E in Table 2.6.9-2 are powered from the Class 1E division as listed in Table 2.6.9-2 in a normal feed condition.

5.2 Deleted.

6.0 Equipment and System Performance

6.1 The EPGBVS provides cooling to maintain design temperatures in the EPGB Buildings, while operating in a design basis accident alignment.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.6.9-3 lists the EPGBVS ITAAC.

**Table 2.6.9-1—EPGBVS Equipment Mechanical Design
Sheet 1 of 5**

Description	Tag Number ⁽¹⁾	Location	ASME AG-1 Code	Function	Seismic Category
Fresh Air Supply					
Backdraft Dampers	30SAD11AA001 30SAD21AA001 30SAD31AA001 30SAD41AA001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I
Backdraft Dampers	30SAD11AA002 30SAD21AA002 30SAD31AA002 30SAD41AA002	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I
Prefilters	30SAD11AT001 30SAD21AT001 30SAD31AT001 30SAD41AT001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	N/A	I
Prefilters	30SAD11AT002 30SAD21AT002 30SAD31AT002 30SAD41AT002	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	N/A	I
Supply Air Fans	30SAD11AN001 30SAD21AN001 30SAD31AN001 30SAD41AN001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Run	I
Supply Air Fans	30SAD11AN002 30SAD21AN002 30SAD31AN002 30SAD41AN002	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Run	I

**Table 2.6.9-1—EPGBVS Equipment Mechanical Design
Sheet 2 of 5**

Description	Tag Number ⁽¹⁾	Location	ASME AG-1 Code	Function	Seismic Category
Motor Operated Dampers	30SAD11AA004 30SAD21AA004 30SAD31AA004 30SAD41AA004	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4EPGB, Division 4	Yes	Open / Close	I
Diesel Hall Air Supply and Exhaust					
Exhaust Fans	30SAD15AN001 30SAD25AN001 30SAD35AN001 30SAD45AN001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Run	I
Exhaust Fans	30SAD15AN002 30SAD25AN002 30SAD35AN002 30SAD45AN002	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Run	I
Backdraft Dampers	30SAD15AA001 30SAD25AA001 30SAD35AA001 30SAD45AA001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I
Backdraft Dampers	30SAD15AA002 30SAD25AA002 30SAD35AA002 30SAD45AA002	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I
Motor Operated Dampers	30SAD15AA004 30SAD25AA004 30SAD35AA004 30SAD45AA004	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4EPGB, Division 4	Yes	Open / Close	I

**Table 2.6.9-1—EPGBVS Equipment Mechanical Design
Sheet 3 of 5**

Description	Tag Number ⁽¹⁾	Location	ASME AG-1 Code	Function	Seismic Category
Electrical Room Air Supply and Recirculation					
Prefilters	30SAD13AT001 30SAD23AT001 30SAD33AT001 30SAD43AT001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	N/A	I
HEPA Filters	30SAD13AT002 30SAD23AT002 30SAD33AT002 30SAD43AT002	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	N/A	I
Cooling Coils	30SAD13AC001 30SAD23AC001 30SAD33AC001 30SAD43AC001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	N/A	I
Moisture Separators	30SAD13AT003 30SAD23AT003 30SAD33AT003 30SAD43AT003	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	N/A	I
Supply Air Fans	30SAD13AN001 30SAD23AN001 30SAD33AN001 30SAD43AN001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Run	I
Motor Operated Dampers	30SAD13AA007 30SAD23AA007 30SAD33AA007 30SAD43AA007	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I

**Table 2.6.9-1—EPGBVS Equipment Mechanical Design
Sheet 4 of 5**

Description	Tag Number ⁽¹⁾	Location	ASME AG-1 Code	Function	Seismic Category
Backdraft Dampers	30SAD13AA010 30SAD23AA010 30SAD33AA010 30SAD43AA010	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4EPGB, Division 4	Yes	Open / Close	I
Main Tank Room Air Supply and Exhaust					
Backdraft Dampers	30SAD16AA001 30SAD26AA001 30SAD36AA001 30SAD46AA001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I
Electric Heaters	30SAD16AH001 30SAD26AH001 30SAD36AH001 30SAD46AH001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	On / Off	I
Exhaust Fans	30SAD16AN001 30SAD26AN001 30SAD36AN001 30SAD46AN001	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Run	I
Backdraft Dampers	30SAD16AA005 30SAD26AA005 30SAD36AA005 30SAD46AA005	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open / Close	I
Motor Operated Dampers	30SAD16AA007 30SAD26AA007 30SAD36AA007 30SAD46AA007	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open	I

**Table 2.6.9-1—EPGBVS Equipment Mechanical Design
Sheet 5 of 5**

Description	Tag Number ⁽¹⁾	Location	ASME AG-1 Code	Function	Seismic Category
Motor Operated Dampers	30SAD16AA008 30SAD26AA008 30SAD36AA008 30SAD46AA008	1/2 EPGB, Division 1 1/2 EPGB, Division 2 3/4 EPGB, Division 3 3/4 EPGB, Division 4	Yes	Open	I

1. Equipment tag numbers are provided for information only and are not part of the certified design.

**Table 2.6.9-2—EPGBVS Equipment I&C and Electrical Design
Sheet 1 of 2**

Description	Tag Number⁽¹⁾	Location	IEEE Class 1E⁽²⁾	PACS	MCR / RSS Displays	MCR / RSS Controls
Supply Air Fans	30SAD11AN001	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	Run-Stop / Run-Stop
	30SAD21AN001	1/2 EPGB, Division 2	2			
	30SAD31AN001	3/4 EPGB, Division 3	3			
	30SAD41AN001	3/4 EPGB, Division 4	4			
Supply Air Fans	30SAD11AN002	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	Run-Stop / Run-Stop
	30SAD21AN002	1/2 EPGB, Division 2	2			
	30SAD31AN002	3/4 EPGB, Division 3	3			
	30SAD41AN002	3/4 EPGB, Division 4	4			
Exhaust Fans	30SAD15AN001	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	Run-Stop / Run-Stop
	30SAD25AN001	1/2 EPGB, Division 2	2			
	30SAD35AN001	3/4 EPGB, Division 3	3			
	30SAD45AN001	3/4 EPGB, Division 4	4			
Exhaust Fans	30SAD15AN002	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	Run-Stop / Run-Stop
	30SAD25AN002	1/2 EPGB, Division 2	2			
	30SAD35AN002	3/4 EPGB, Division 3	3			
	30SAD45AN002	3/4 EPGB, Division 4	4			
Supply Air Fans	30SAD13AN001	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	Run-Stop / Run-Stop
	30SAD23AN001	1/2 EPGB, Division 2	2			
	30SAD33AN001	3/4 EPGB, Division 3	3			
	30SAD43AN001	3/4 EPGB, Division 4	4			
Motor Operated Dampers	30SAD16AA007	1/2 EPGB, Division 1	1	Yes	Position / Position	Open-Close / Open-Close
	30SAD26AA007	1/2 EPGB, Division 2	2			
	30SAD36AA007	3/4 EPGB, Division 3	3			
	30SAD46AA007	3/4 EPGB, Division 4	4			

**Table 2.6.9-2—EPGBVS Equipment I&C and Electrical Design
Sheet 2 of 2**

Description	Tag Number ⁽¹⁾	Location	IEEE Class 1E ⁽²⁾	PACS	MCR / RSS Displays	MCR / RSS Controls
Motor Operated Dampers	30SAD16AA008	1/2 EPGB, Division 1	1	Yes	Position / Position	Open-Close / Open-Close
	30SAD26AA008	1/2 EPGB, Division 2	2			
	30SAD36AA008	3/4 EPGB, Division 3	3			
	30SAD46AA008	3/4 EPGB, Division 4	4			
Exhaust Fans	30SAD16AN001	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	Run-Stop / Run-Stop
	30SAD26AN001	1/2 EPGB, Division 2	2			
	30SAD36AN001	3/4 EPGB, Division 3	3			
	30SAD46AN001	3/4 EPGB, Division 4	4			
Fan Heaters	30SAD16AH001	1/2 EPGB, Division 1	1	Yes	On-Off / On-Off	On-Off / On-Off
	30SAD26AH001	1/2 EPGB, Division 2	2			
	30SAD36AH001	3/4 EPGB, Division 3	3			
	30SAD46AH001	3/4 EPGB, Division 4	4			
Motor Operated Dampers	30SAD11AA004	1/2 EPGB, Division 1	1	Yes	Position / Position	Open-Close / Open-Close
	30SAD21AA004	1/2 EPGB, Division 2	2			
	30SAD31AA004	3/4 EPGB, Division 3	3			
	30SAD41AA004	3/4EPGB, Division 4	4			
Motor Operated Dampers	30SAD15AA004	1/2 EPGB, Division 1	1	Yes	Position / Position	Open-Close / Open-Close
	30SAD25AA004	1/2 EPGB, Division 2	2			
	30SAD35AA004	3/4 EPGB, Division 3	3			
	30SAD45AA004	3/4EPGB, Division 4	4			
Motor Operated Dampers	30SAD13AA007	1/2 EPGB, Division 1	1	Yes	Position / Position	Open-Close / Open-Close
	30SAD23AA007	1/2 EPGB, Division 2	2			
	30SAD33AA007	3/4 EPGB, Division 3	3			
	30SAD43AA007	3/4EPGB, Division 4	4			

1. Equipment tag numbers are provided for information only and are not part of the certified design.
2. ^N denotes division the equipment is normally powered from, while ^A denotes division the equipment is powered from when alternate feed is implemented.

**Table 2.6.9-3—Emergency Power Generating Building Ventilation System
ITAAC
Sheet 1 of 4**

	Commitment Wording	Inspections, Tests, Analyses	Acceptance Criteria
2.1	The functional arrangement of the EPGBVS is as described in the Design Description of Section 2.6.9, Tables 2.6.9-1 and 2.6.9-2, and as shown on Figures 2.6.9-1, 2.6.9-2, 2.6.9-3, and 2.6.9-4.	An inspection of the as-built EPGBVS functional arrangement will be performed.	The EPGBVS conforms to the functional arrangement as described in the Design Description of Section 2.6.9, Tables 2.6.9-1 and 2.6.9-2, and as shown on Figures 2.6.9-1, 2.6.9-2, 2.6.9-3, and 2.6.9-4.
2.2	Deleted.	Deleted.	Deleted.
2.3	Physical separation exists between the divisions of the EPGBVS as listed in Table 2.6.9-1 and as shown on Figure 2.6.9-1 through Figure 2.6.9-4.	An inspection will be performed to verify that the as-built EPGBVS are located in separate EPGBs.	The divisions of the EPGBVS are located in separate EPGBs as listed in Table 2.6.9-1 and as shown on Figure 2.6.9-1 through Figure 2.6.9-4.
3.1	Deleted.	Deleted.	Deleted.
3.2	Class 1E dampers listed in Table 2.6.9-2 will function to change position as listed in 2.6.9-1 under normal operating conditions.	Tests will be performed to verify the ability of Class 1E dampers to change position under normal operating conditions.	Class 1E dampers listed in Table 2.6.9-2 change position as listed in 2.6.9-1 under normal operating conditions.

**Table 2.6.9-3—Emergency Power Generating Building Ventilation System
ITAAC
Sheet 2 of 4**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.3	Equipment identified as Seismic Category I in Table 2.6.9-1 can withstand seismic design basis loads without a loss of safety function(s).	<p>a. Type tests, analyses, or a combination of type tests and analyses will be performed on the equipment identified as Seismic Category I in Table 2.6.9-1 using analytical assumptions, or under conditions, which bound the Seismic Category I design requirements.</p> <p>b. An inspection will be performed of the as-built equipment identified as Seismic Category I in Table 2.6.9-1 to verify that the equipment, including anchorage, are installed in a condition bounded by the tested or analyzed condition.</p>	<p>a. Test/analysis reports conclude that the equipment identified as Seismic Category I in Table 2.6.9-1 can withstand seismic design basis loads without a loss of safety function(s).</p> <p>b. Inspection reports conclude that the equipment identified as Seismic Category I in Table 2.6.9-1, including anchorage, are installed in a condition bounded by the tested or analyzed condition.</p>
3.4	Deleted.	Deleted.	Deleted.
3.5	Deleted.		Deleted.
3.6	Equipment listed in Table 2.6.9-1 as ASME AG-1 Code are fabricated, installed, inspected, and tested in accordance with ASME AG-1 Code requirements.	An inspection of the as-built construction activities and documentation for ASME AG-1 Code equipment will be conducted.	A report concludes that ASME AG-1 Code equipment listed in Table 2.6.9-1 are fabricated, installed, inspected, and tested in accordance with ASME AG-1 Code requirements.

**Table 2.6.9-3—Emergency Power Generating Building Ventilation System
ITAAC
Sheet 3 of 4**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.1	Displays listed in Table 2.6.9-2 are indicated on the PICS operator workstations in the MCR and the RSS.	<p>a. Tests will be performed to verify that the displays listed in Table 2.6.9-2 are indicated on the PICS operator workstations in the MCR.</p> <p>b. Tests will be performed to verify that the displays listed in Table 2.6.9-2 are indicated on the PICS operator workstations in the RSS.</p>	<p>a. Displays listed in Table 2.6.9-2 are indicated on the PICS operator workstations in the MCR.</p> <p>b. Displays listed in Table 2.6.9-2 are indicated on the PICS operator workstations in the RSS.</p>
4.2	Controls on the PICS operator workstations in the MCR and the RSS perform the function listed in Table 2.6.9-2.	<p>a. Tests will be performed using controls on the PICS operator workstations in the MCR.</p> <p>b. Tests will be performed using controls on the PICS operator workstations in the RSS.</p>	<p>a. Controls on the PICS operator workstations in the MCR perform the function listed in Table 2.6.9-2.</p> <p>b. Controls on the PICS operator workstations in the RSS perform the function listed in Table 2.6.9-2.</p>
4.3	Equipment listed as being controlled by a PACS module in Table 2.6.9-2 responds to the state requested and provides drive monitoring signals back to the PACS module. The PACS module will protect the equipment by terminating the output command upon the equipment reaching the requested state.	A test will be performed using test input signals to verify equipment controlled by a PACS module responds to the state requested and provides drive monitoring signals back to the PACS module.	Equipment listed as being controlled by a PACS module in Table 2.6.9-2 responds to the state requested and provides drive monitoring signals back to the PACS module. The PACS module will protect the equipment by terminating the output command upon the equipment reaching the requested state.
5.1	Equipment designated as Class 1E in Table 2.6.9-2 are powered from the Class 1E division as listed in Table 2.6.9-2 in a normal feed condition.	Testing will be performed by providing a test input signal in each normally aligned division.	The test input signal provided in the normally aligned division is present at the respective Class 1E equipment identified in Table 2.6.9-2.
5.2	Deleted.	Deleted.	Deleted.

**Table 2.6.9-3—Emergency Power Generating Building Ventilation System
ITAAC
Sheet 4 of 4**

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
6.1	The EPGBVS provides cooling to maintain design temperatures in the EPGB Buildings, while operating in a design basis accident alignment.	<p>a. Tests and analysis will be performed to verify EPGBVS provides cooling to maintain design temperatures in the EPGB Buildings, while operating in a design basis accident alignment.</p> <p>b. A test of the EPGBVS fans will be performed to verify that the air flow is greater than the approved design requirement.</p>	<p>a. Each EPGBVS cooling coil provides the design cooling requirements, while operating in a design basis accident alignment, and is capable of maintaining temperatures in the EPGB Buildings.</p> <p>b. Each EPGBVS fan is capable of meeting the design air flow requirements, while operating in a design basis accident alignment.</p>