ENCLOSURE 1

PLANT SYSTEMS

3/4.7.13 SHUTDOWN BOARD ROOM COOLING SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.13 At least two independent shutdown board room cooling systems shall be operable.

APPLICABILITY: Modes 1,2,3, and 4.

ACTION:

With one shutdown board room cooling system operable, restore the inoperable cooling system to operable status within 7 days or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.13 Each train of the shutdown board room cooling system shall be demonstrated operable quarterly by:

a. Verifying that the system operates continuously for $\geq$24 hours and maintains each shutdown board room at $\leq$104°F.

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ENCLOSURE 2

JUSTIFICATION

The shutdown boards are separated into two subareas (rooms) corresponding to train A and train B emergency power. Following an accident, the boards in either subarea have the capability for safe shutdown of the unit. The attendant air handling equipment consists of two 100 percent capacity air conditioning units--one for each subarea. Either air conditioning unit can remove 100 percent of the heat produced by electrical equipment in either subarea. Therefore, the air handling system provides redundant cooling capacity to the shutdown boards. The action statement associated with the proposed technical specification addition will allow maintenance and testing of the redundant air conditioning unit while maintaining safe shutdown capability with the other cooling unit operating.

Radiation monitors are calibrated and tested periodically using a calibrated check source to verify the instruments response and alarm functions. Thermostats and smoke detectors are tested periodically.

The battery rooms ventilating system is in continuous operation, and the exhaust fans are accessible for periodic inspection.

The air-conditioning system filter cells shall have their filtering media replaced upon a resistance buildup to 1-inch water gauge static pressure differential.

Environmental conditions vary only slightly under normal operation and simulated conditions should be such as to prove design conditions.

9.4.2 AUXILIARY BUILDING

9.4.2.1 Design Bases

The auxiliary building ventilating systems serve all areas of the auxiliary building including the radwaste areas and the fuel handling area. Separate subsystems are utilized for the environmental control of the shutdown board rooms, auxiliary board rooms, and other miscellaneous rooms and laboratories. The ventilating systems also incorporate individual cubicle coolers to provide supplementary cooling to specific safety feature equipment.

The auxiliary building ventilating systems are designed to maintain acceptable environmental conditions for personnel access, operation, inspection, maintenance, testing and protection of mechanical and electrical equipment, and controls and to limit the release of radioactivity to the environment during all weather conditions. These building environmental control systems are designed to maintain all building temperatures (except steam valve rooms) between 60 F minimum and 110 F maximum during outdoor design temperatures ranging from 15 F in winter to 97 F in summer. The steam valve rooms are maintained between 80 F and 120 F. 34 68

The shutdown board, auxiliary control and battery board rooms at El 734, and the auxiliary board, and battery rooms at El 749 are cooled by mechanical refrigeration. These air-conditioning systems are designed to limit maximum room temperatures to less than 80 F DB and 68 F WB. The shutdown board room, and auxiliary control room at El 734 are maintained at approximately 75 F DB and 50 percent relative humidity. 34

The auxiliary building is considered divided into four separately controlled and isolated types of areas as follows: 68

1. The fuel-handling area at El 734; the penetration rooms at El 734 and El 759; and the fuel, waste, and cask handling areas at El 706 and El 669. 34

2. The general building and penetration room areas at El 653, El 669, El 690, and El 714.

3. The shutdown board, auxiliary control, and battery board rooms at El 734.0, and auxiliary board room and battery rooms at El 749.0. 34

4. The shutdown board transformer rooms at El 749.

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To control airborne activity, the ventilation air is supplied to clean areas, then routed to areas of progressively greater contamination potential. Areas of the building which are subject to radioactive contamination are maintained at a slight negative pressure to limit outleakage. In addition, the system has the capability of isolating the contaminated areas from the outdoors.
56 All exhaust air is routed through a duct system, and is discharged into the auxiliary building exhaust stack which is located atop the auxiliary building, and extends a distance of 43 feet above the roof.

34 Two 100 percent capacity gas treatment system filter trains, consisting of pre and HEPA filters and carbon adsorbers, are provided for operation upon indication of high radiation in the exhaust air from auxiliary building potentially contaminated areas or upon an isolation signal from either reactor unit. The filter trains are automatically energized and a reduced quantity of building exhaust is diverted through the filter trains and discharged into the shield building exhaust vent. This is located within the annulus space of the reactor building and extends to the top of the reactor building.

9.4.2.1.1 Auxiliary Building Gas Treatment System

34 The auxiliary building gas treatment system is discussed in Subsection 6.2.3.

9.4.2.2 System Description

The auxiliary building ventilation systems are shown on Figures 9.4-4, 9.4-5,
60 9.4-6, and 9.4-19. Logic and Control is shown on Figures 9.4-7 through 9.4-12.

The auxiliary building ventilation and cooling systems consist of the following subsystems:

1. Building air supply and exhaust system (general ventilation).

2. Building cooling system (chilled water).

34 3. Safety feature equipment coolers.

4. Shutdown board room air-conditioning system.

5. Auxiliary board room air-conditioning system.

6. Shutdown transformer room ventilation system.

7. Miscellaneous ventilation and air-conditioning systems.

9.4.2.2.1 Building Air Supply and Exhaust Systems (General Ventilation)

The supply system filters 100 percent of outdoor air through a bank of filters for each of two mechanical equipment rooms located at opposite ends of the building at El 714.0. The filters have a nominal efficiency of 85 percent based on the NBS atmospheric dust spot test.

During periods when the outdoor air temperature is below 40 F, 240 F hot water is supplied to heating/cooling air intake coils to temper the incoming air.

During periods when outdoor ambient temperature is above 60 F, chilled water is supplied to heating/cooling air intake coils to increase cooling capacity of ventilation air. Between outdoor temperatures of 40-60 F, unconditioned air is supplied. The auxiliary building general ventilation system controls are designed to maintain building temperature between 80 F and 104 F during the summer.

The heating/cooling coils are composed of 12 coil sections arranged in 4 banks with 3 coils in each bank. The coils are sized to heat approximately 200,000 cfm of outdoor air from 0 F to 60 F when supplied from Turbine Building heating system with 240 F hot water. The coils have the capability to cool 200,000 cfm of outdoor air from 97 F to 85 F when supplied from one of the general cooling system water chilling machines with 72 F chilled water.

The air supply system utilizes four 50 percent capacity supply fans with two located in each of the two mechanical equipment rooms at El 714.0. During normal operation, one fan in each equipment room is in operation with the other fan in the standby mode.

Fan inlet dampers are used to reduce the volume of supply air during low outdoor temperature conditions to conserve heat. Supply air is ducted to various clean or accessible areas of the auxiliary building and fuel handling areas from where it flows

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to areas of progressively greater contamination potential before being exhausted through a duct system by the building exhaust fans. 34

The building supply fans are belt-driven centrifugal type located downstream of the heating/cooling coils. Each fan is rated at 100,000 cfm at 5.75-inch water gauge static pressure. Each fan is driven by a nominal 150-hp motor. These fans are not ESF equipment and are not energized from emergency power. 34

The building supply filters are composed of 2 banks with 87 individual filter cells per filter bank. Each filter bank is rated at 85 percent efficiency based on NBS atmospheric dust spot test. 34

Manually adjustable modulating type fan inlet dampers are used to reduce volume of supply air. 34

The general exhaust from the Auxiliary Building is provided by four exhaust fans each rated at 50 percent of system capacity. These fans are controlled in blocks of two; during normal operations one fan is in operation and the remaining fan is in the standby mode. These fans are located on the roof of the Auxiliary Building and discharge into the auxiliary building exhaust vent. 56

Air utilized to ventilate the fuel handling area, waste packaging, and cask shipping area is exhausted by the fuel handling area exhaust fans. An exhaust duct system from the waste packaging area and cask loading area is connected to a duct system around the periphery of the spent fuel pit and fuel transfer canal. Thus, exhaust air from the fuel handling area passes across the spent fuel pit forming an air curtain across the pool. Two 100 percent capacity fuel handling exhaust fans are provided. During normal operation one fan is in use with the other in the standby mode. The discharge from these fans is directed into the auxiliary building exhaust stack. 56 34 56

An inlet damper, furnished with each auxiliary building exhaust and fuel handling area exhaust fan, is used to regulate the volume of air exhausted as required to maintain 1/4-inch water gauge negative pressure within the building. These dampers are automatically operated by static pressure controllers. 34

During periods of high radiation in the auxiliary building exhaust, or fuel handling area exhaust, or upon initiation of a containment isolation signal, the auxiliary building supply and exhaust fans and the fuel handling exhaust fans are automatically stopped. Low leakage dampers located in the ducts which penetrate the auxiliary building are closed. An isolation barrier is thus formed between the building and the outdoor environment, and the auxiliary building gas treatment system is placed in service (see Subsection 6.2.3). 34

The building exhaust fans are belt-driven centrifugal type rated at 84,000 cfm each at 6-inch water gauge static pressure. Each fan is driven by a nominal 125-hp motor.

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The fuel handling exhaust fans are belt-driven centrifugal type rated at 60,000 cfm at 7-inch water gauge static pressure. Each fan is driven by a nominal 100-hp motor. These fans are energized by emergency power since they are required to operate under certain conditions when normal power is unavailable.

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9.4.2.2.2 Building Cooling System (Chilled Water)

The purpose of the building cooling system is to supplement the general ventilation system and to maintain a more confortable temperature in auxiliary building general spaces at conditions other than design maximum. The building cooling system consists of (2) 100 percent capacity packaged water chillers, each rated at 400-ton nominal capacity, (2) 100 percent capacity primary loop circulating pumps, each rated at 800 gpm at 70-ft head, (2) 100 percent capacity secondary loop circulating pumps, each rated at 800 gpm at 120-ft head, (6) fan-coil type air handling units, and associated piping, duct work and controls.

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Primary and secondary chilled water circulating loops are designed for mixing supply and return water to obtain a variable coil inlet temperature, mainly 47F to 72F, to minimize unnecessary latent heat removal. Primary loop pump provides circulation of water through the water chiller, whereas the secondary loop pump circulates chilled water to air intake heating/cooling coils and also to the six air handling units located in various areas where ventilation air alone is not sufficient to maintain the 104F maximum space temperature.

The twelve heating/cooling coils, located in the building air intake at El.714.0, are designed to cool a total of 200,000 cfm of outside air, during cooling season, from 97F to 85F when supplied with 72F chilled water, or heat, during heating season, the outside supply air from 15°F to 60F when supplied with 240F hot water.

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The locations and capacities of the chilled water air handling units are as follows:

UNIT	El.	AIR(CFM)	WATER(GPM)	CAPACITY(BTUH)
1A	714.0	11,300	46	222,500
1B	690.0	21,900	81	387,000
1C	669.0	5,850	16	72,500
2A	714.0	11,300	46	222,500
2B	690.0	16,800	62	296,000
2C	669.0	5,850	16	72,500

The chilled water system is designed for manual startup with automatic mixing of primary and secondary loop flows by means of thermostatically controlled three-way control valves. Flow to heating/cooling coils and to air handling units is individually controlled at each terminal unit by three-way modulating control valves. The seasonal change over from heating to cooling or from cooling to heating is done by the manual operation of system changeover valves located in the mechanical equipment rooms on El.714.0. 34

9.4.2.2.3 Safety Feature Equipment Coolers

Cubicles on areas containing emergency operated safety feature equipment are ventilated by the building ventilation exhaust duct system during normal plant operation or when equipment is not required to operate. Air cooling units, located in each cubicle or area, will automatically start to provide necessary cooling whenever the safety feature equipment is operated. Each of these coolers is designed to limit the maximum ambient to 110 F, and is interlocked to operate with the equipment it serves. A thermostat, located near the return airflow to each cooler, allows the cooler to remain in operation until the low limit temperature set point is reached. The cooling water control valve and fan are interlocked to operate together. 34

Air cooling units are provided for the following equipment and areas:

1. RHR pumps.
2. Safety injection pumps.
3. Containment spray pumps.
4. Centrifugal charging pumps.
5. Reciprocating charging pumps. 34
6. Unit 1 auxiliary feedwater and component cooling water pumps.
7. Unit 2 auxiliary feedwater and boric acid transfer pumps.
8. Component cooling water booster and spent fuel pit pumps.
9. Pipe chases. 34
10. El 669 penetration rooms.
11. El 690 penetration rooms.
12. El 714 penetration rooms.
13. Emergency gas treatment assemblies.

34

The above pumps 1 through 5 are each located in a separate room with cooler, and each room (containing pump and cooler) is provided with 100 percent redundancy. Pumps and equipment 6 through 13 are each provided with two 100 percent coolers with one on standby.

The safety feature equipment coolers are designed to limit the maximum ambient
34 temperature to 110 F when supplied with water at 83 F. The coolers have the following capacities:

	Air, CFM	Water, GPM	Capacity, BTUh
RHR pump room	3,700	13	75,000
Safety injection pump room	4,500	16	91,000
Containment spray pump room	7,700	26	155,000
Centrifugal charging pump room	11,000	25	109,000
Reciprocating charging pump room	2,800	10	55,000*
Unit 1 auxiliary feedwater and component cooling water pumps	26,000	88	526,000
Unit 2 auxiliary feedwater and boric acid transfer pumps	11,700	42	235,000
Emergency gas treatment room	2,500	10	50,000
Component cooling water booster and spent fuel pit pumps	9,800	34	200,000*
Pipe chases	18,800	64	378,000
Unit 1, El 669 penetration room	3,500	28	158,000
Unit 2, El 699 penetration room	3,500	28	164,000
El 690 penetration room	2,800	26	150,000
El 714 penetration room	4,700	22	120,000

34 Air coolers, except those indicated with *, are engineered safety feature equipment and are provided with coordinated emergency power and water supply sources.

34 9.4.2.2.4 Shutdown Board Room Air-Conditioning System

The shutdown board rooms are located on El 734 of the auxiliary building with firewall separating units 1 and 2 equipment. The boards in either unit can provide the service necessary for the safe shutdown of both plant units following an accident in either unit.

Each fan-coil unit is designed to cool 34,000 scfm from 76.5 FDB, 63.5 FWB to 54.0 FDB, 53.7 FWB when supplied with 225 GPM of chilled water at 42 F. The total coil capacity per unit is 1,012,000 BTUh (84.3 tons) minimum. Each
34 unit contains a single centrifugal fan driven by a nominal 60-HP motor to operate against 7.0-in. water gauge of external static pressure. The water chiller has the capacity to cool a minimum of 450 GPM of water from 52 F to 42 F when supplied with 560 GPM maximum of essential raw cooling water at 83 F, and is rated at 2,250,000 BTUh (187.5 tons).

Environmental control for the auxiliary control room is maintained by the shutdown board room air-conditioning system. Each of the four 50 percent capacity shutdown board room air-conditioning units is arranged so that any one of the four units can provide the necessary cooling required by the auxiliary control room. A duct heater, provided in the supply duct to the room, provides heating and/or humidity control as required to maintain the design ambient conditions. Each shutdown board room air-conditioning system is connected to coordinated emergency power and water supply source trains.

Each pressurizing fan is centrifugal type designed to supply 1000 cfm against 2.5-inch water gauge static pressure and driven by a nominal 1-hp motor.

9.4.2.2.5 Auxiliary Board Rooms Air-Conditioning Systems

The auxiliary building boards, located at floor El. 749.0 are separated into two subareas per plant unit corresponding to train A and train B emergency power. Four separate air-conditioning systems are provided to serve one each of the four plant subareas. Following an accident, the boards in either subarea have the capability for the safe shutdown of the unit.

The attendant air-conditioning equipment for each subarea, sized to remove 100% of heat produced by electrical equipment in that subarea, are therefore redundant.

Per plant unit, the train A air-conditioning equipment located within the El. 749.0 mechanical equipment room, and the train B air-conditioning equipment is located on the roof above within a housing for protection from outdoor environmental hazards. 34

Each board room air-conditioning system contains a refrigerant compressor, air-cooled condenser, a fan-coil air handling unit with direct-expansion cooling coil(s), two 100 percent pressurizing air supply fans, air supply distribution system, and control and safety devices.

Two 100 percent capacity roof ventilator exhaust fans located on the roof of each of the four separate battery rooms on El. 749 provide continuous ventilation to prevent the possible accumulation of dangerous hydrogen gas.

The two 100 percent capacity pressurizing air supply fans per air-conditioning system serve a twofold purpose. One is to replace a portion of air-conditioning system air exhausted through the battery room and the other is to pressurize the board room to prevent infiltration of contaminated air. The mixture of this makeup air and board room return air is conditioned upon passing through the air handling unit.

One pressurizing air supply fan and one battery room exhaust fan in each individual air-conditioning system are connected to train A power with the other fan pair connected to train B power. Control system interlocks provide simultaneous operation of the pressurizing air supply fan and battery room exhaust fan. The availability of this fan combination on either power train insures continuous ventilation in each battery room regardless of operability of the direct-expansion air-conditioning equipment. In the event of air-conditioning system failure, pressurizing fan air is drawn through the normal board room supply ducts by the battery room exhaust fan.

Condensing unit cooling air for the train A air-conditioning system of each plant unit is routed from intakes located on the roof, El. 763, through the condenser and discharged through a roof-mounted exhaust housing. The train B system condenser cooling air is drawn through an intake on the side of the equipment housing on the roof and is discharged through an exhaust opening atop the equipment housing.

Each train A board room air-conditioning system air handling unit cooling coil is designed to cool approximately 10,500 cfm of air from 80°F DB and 66°F WB to 54.0°F DB and 52.5°F WB when operating at a refrigerant suction temperature of approximately 41°F. Minimum total coil heat removal capacity per air conditioning unit is 337,250 BTUh. The hermetic compressor in each unit has a capacity of 405,600 BTUh when operating at 41°F suction temperature and a condensing temperature of 118°F. Each air-cooled condenser is designed to remove 462,300 BTUh heat when supplied with 21,800 CFM of air at 97°F DB.

Each train B board room air-conditioning system air handling unit cooling coil is designed to cool approximately 10,500 cfm of air from 80°F DB and 66°F WB to 59.7°F DB and 58.0°F WB when operating at a refrigerant suction temperature of approximately 44°F. Minimum total coil heat removal capacity per air-conditioning unit is 395,150 BTUh. The hermetic compressor in each unit has a capacity of 450,00 BTUh when operating at 44°F suction temperature and a condensing temperature of 127°F. Each air-cooled condenser is designed to remove 518,530 BTUh heat when supplied with 21,900 cfm of air at 97°F DB.

34 Dampers capable of withstanding pressure differentials between areas of the El. 749.0 board rooms and mechanical equipment rooms and the outside environment under tornado conditions are located in the intake and exhaust connections for each of the train A air-cooled condensers. Each battery room exhaust fan has a damper capable of withstanding pressure differentials imposed by tornado conditions. The dampers are mounted below the fans 763.0. Small ventilation holes are provided in damper frame between ex an and damper to allow continuous venting of hydrogen gas even when the damper is closed. Each of these dampers is remote manual operating and shall be closed upon tornado alert.

For additional tornado protection, the train B air handling unit intake and discharge ducts, located in the rooftop housing, are capable of withstanding a minimum pressure differential of 0.5 psi with the higher pressure being inside the duct.

9.4.2.2.6 Shutdown Transformer Room Ventilating Systems

The shutdown transformers, located on El. 749, are divided into two subareas with seven transformers in each subarea. These subareas are further divided into two enclosed areas with train A emergency power available to one transformer grouping and train B emergency power for the other.

Outside air enters each subarea through air intake structures located on the auxiliary building roof. Each roof-mounted exhaust for ventilator is energized by thermostatic control according to room temperature rise. Activation of a single ventilation fan will in turn open the dampers in both air intake structures. Upon continued increase in room temperature, the remaining exhaust fans are energized in staged series sequence until all available fans are in operation.

Upon outside temperature decrease, exhaust fans in the individual transformer rooms are deactivated in staged series as determined by thermostatic control. As room temperature increases above a predetermine control point, all exhaust fans are again activated.

The shutdown transformer exhaust fans are each direct-driven, propeller-type, roof ventilator exhaust fans rated at 11,000 cfm each at 0.5 inch water gauge static pressure. Each fan is driven by a nominal 2-hp motor. 34

The transformer room motor-operated air intake dampers have the capability of being remote manually powered to the open position without regard to thermostatic control following tornado alert.

Electric heaters provided in each transformer room are designed to maintain temperature at not less than 60°F.

9.4.2.2.7 Miscellaneous Ventilation and Air-Conditioning Systems

The control rod drive equipment room design maximum ambient temperature is 90°F DB, 78°F WB. To maintain this, two 100 percent capacity air-conditioning units are located within each room per plant unit. During normal operation, one air-conditioning unit in each room is in operation with one on standby. Each unit is automatically controlled by a self-contained thermostat. Electric unit heaters are located in each room to maintain the room at 60°F, during heating season.

The instrument shop design maximum ambient temperature is 80°F. To maintain this, an air-conditioning unit has been selected which utilizes 100 percent makeup air thus preventing the recirculation of any possible contaminant. The rated capacity of the air-conditioning unit is 127,200 BTUh with 1500-cfm air supply. The hot instrument shop ventilation is provided by a lab hood exhaust fan rated at 1,700 cfm and which discharges to the general building exhaust duct system. 34 3

The sample room is ventilated by five lab hoods with exhaust fans. 39
Three fans are located on unit 1 side and each rated at 900 cfm at 4 inch water gauge static and two fans are located on unit 2 side and each rated at 1350 cfm at 4 inch water gauge static pressure. Air enters the sample room through doors with transfer grilles and back draft dampers. Each hood is provided with a separate exhaust fan and HEPA filter assembly. The HEPA filters located upstream from each fan have a nominal efficiency of 99.97 percent. A differential pressure gauge is used to indicate the need for filter replacement. Each hood exhaust fan discharges into the general building exhaust system. 34 34

The turbine-driven auxiliary feedwater pump rooms are normally ventilated by the auxiliary building air exhaust system. For emergency ventilation, two roof ventilator type exhaust fans are located on the roof of each room. One of these two fans per room is designed to operate on 115-volt, 60-Hz (AC) emergency power while the other is designed for 115-volt (DC) station vital battery power.

Both fans per room are thermostatically controlled to automatically operate upon room temperature rise above 100°F. The DC-powered fan will also automatically run upon pump start.

The turbine-driven auxiliary feedwater pump rooms emergency exhaust fans are each the roof ventilator-type rated at 1200 cfm at 0.25 inch water gauge static pressure and driven by a nominal 1/2-hp motor. These fans are designed to circulate a sufficient quantity of building air through their rooms to limit the maximum temperature rise to approximately 20°F above ambient.

The waste gas analyzer room is located in the sample room on Unit 2. Air enters the waste gas analyzer room through a door with a transfer grille and a back-
38 draft damper. Air at the rate of 100 cfm is exhausted into the suction of both sample room exhaust fans on Unit 2 and filtered through the sample room hood exhaust HEPA filter before being discharged into the general building exhaust system.

The reactor building steam valve rooms each have an independent ventilation system consisting of two fully redundant roof mounted exhaust fans, one of
68 which normally operates with one on standby. The normally operating fan draws outside ventilation air for room cooling through a wall opening near the floor. Wintertime space temperature control is maintained by inlet vanes which modulate airflow in response to a wall mounted thermostat.

9.4.2.3 Safety Evaluation

The auxiliary building supply inlets are located near ground level on each side of the building. The inlet area is of sufficient size to limit the incoming air stream velocity to approximately 500 fpm.

The building air supply filters are rated 85 percent efficiency based on NBS atmospheric dust spot test.

Auxiliary building fuel handling areas, reactor building penetration rooms and other spaces located below El. 734 are continuously maintained at a slight nega-
tive pressure relative to outdoors to minimize outleakage. During normal opera-
56 tions, these spaces are exhausted to the outdoors. During

accident conditions, the auxiliary building gas treatment system operates to exhaust a reduced quantity of air from fuel handling and other potentially contaminated areas through HEPA filters and charcoal adsorbers before release to the environs.

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Each filter bank is provided with a static pressure differential indicating gauge. Building supply filters are rated for an initial resistance of approximately 0.40-inch water gauge and shall be replaced with new filtering media upon an increase in resistance to 1.0-inch.

HEPA filter cells are rated for an initial resistance of approximately 1.0-inch water gauge when clean and shall be replaced upon an increase in resistance to 2.0 inches.

To guarantee proper operation of the steam relief valves, the steam valve room exhaust fans modulate in response to a wall mounted thermostat to assure that room ambient temperatures do no fall below 80 F during the heating season. In the event extreme outside wintertime conditions still result in room temperatures falling below 80 F, the fans automatically shutdown. 68

9.4.2.4 Inspection and Testing Requirements

The auxiliary building environment control systems are in continuous operation and are accessible for periodic inspection. Essential electrical components, swithcovers, and starting controls are tested initially and periodically.

HEPA filter cells are tested in place initially and periodically with DOP.

Radiation monitors are calibrated and tested periodically using a calibrated check source to verify the instruments response and alarm functions. Thermostats and smoke detectors are tested periodically.

9.4.3 RADWASTE AREA

9.4.3.1 Design Bases

The auxiliary building ventilating systems serve all of the radwaste areas which are physically located within the auxiliary building at El 690, 669 and 653. These areas are continuously ventilated, and the exhaust air is continuously filtered to limit the release of radioactive material to the atmosphere.

Filtered and heated or cooled (if necessary) fresh air is mechanically supplied to the general occupied or access areas of each floor by the auxiliary building main air supply system. Air is mechanically exhausted from each radwaste equipment room and directly from individual radwaste tanks, sumps and equipment by the auxiliary building main exhaust system. All exhaust air is routed through duct building exhaust stack. 34

All radwaste areas are continuously maintained at a slight negative pressure relative to minimize exfiltration of air to other portions of the building.

A radiation-monitoring system is provided to detect and annunciate high activity in the building exhausts.

9.4.3.2 System Description

The auxiliary building radwaste area ventilating systems are shown on Figure 9.4-4.

Radwaste spaces air supply, air exhaust, and air filtering systems are discussed in Paragraph 9.4.2.2.

9.4.3.3 Safety Evaluation

Refer to auxiliary building FSAR Paragraph 9.4.2.3.

9.4.3.4 Test and Inspection Requirements

Refer to auxiliary building FSAR Paragraph 9.4.2.4.

9.4.4 TURBINE BUILDING

9.4.4.1 Design Bases

34 The turbine building heating, cooling and ventilating systems are designed to maintain an acceptable building environment for the protection of plant equipment and controls; for the comfort and safety of operating personnel; and to allow personnel access for the operation, inspection, maintenance, and testing of mechanical and electrical equipment.

The building environmental control systems are designed to maintain building temperatures between 50 F minimum and 110 F maximum during all outdoor
38 temperature conditions ranging from 15 to 97 F, by use of forced ventilation, mechanical cooling, and heating systems.

9.4.4.2 Ventilation

60 The Turbine Building Heating and Ventilation Systems are shown on Figures 9.4-13, 9.4-14 and 9.4-15.

The building can be considered to contain four large rooms: El 732.0 turbine room, El 706.0 spaces, El 685.0 spaces, and El 662.5 spaces. Because El 732.0 floor is predominantly concrete and thus isolated from the remaining floors below, the turbine building ventilation is provided by two separate systems. One system serves El 732.0 spaces, and the other system provides
34 ventilation for the spaces on El 706.0 and El 685.0, with no direct ventilation provision for spaces on El 662.5.

Basically, both ventilation systems operate on the basis of mechanically supplying a continuous flow of outside air to spaces being ventilated, and exhausting the building air to outdoors.

Each supply and exhaust fan is provided with a motor operated damper designed to automatically close when fan is stopped to prevent air back-flow.