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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
FSAR Revisions Concerning
the Reactor Containment Building
Supplemental Purge System

Reference: (1) HL&P Letter to NRC, M. R. Wisenburg to Document Control Desk, ST-HL-AE-2116, April 22, 1987

In reference (1), Houston Lighting & Power Company (HL&P) committed to modify the design of the reactor containment building (RCB) 18-inch supplemental purge lines to isolate on a high radiation signal. Attached are annotated revisions to FSAR Chapters 7, 9 and 11 which reflect the modified design. These changes are provided for the staff's immediate use and will be incorporated in a future FSAR amendment.

If you should have any questions on this matter, please contact Mr. M. E. Powell at (713) 993-1328.

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Manager, Engineering and Licensing

MEP/yd

Attachments: Annotated Revisions to FSAR Chapters 7, 9 and 11
Concerning the RCB Supplemental Purge System

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17. Electrical Penetration Space HVAC System, to provide cooling for essential equipment located in that area.

Supporting HVAC equipment is also actuated as required, to cool the above equipment. For example, cubicle coolers are required to operate in the rooms containing the safety injection and containment spray pumps, and are therefore actuated. 43

7.3.1.1.2 Analog Circuitry: The process analog sensors and racks for the ESFAS are discussed in Reference 7.3-1. Discussed in this report are the parameters to be measured, including pressures, flows, tank and vessel water levels, and temperatures, as well as the measurement and signal transmission considerations. These latter considerations include the transmitters, orifices, flow elements, and resistance temperature detectors as well as automatic calculations, signal conditioning, and location and mounting of the devices.

The sensors monitoring the primary system are shown on process and instrument diagrams presented in Chapter 5. The secondary system sensors are shown on process and instrument diagrams presented in Chapter 10.

Containment pressure is sensed by four physically separated seismically supported differential pressure transmitters outside of the Containment. (They are connected to the Containment atmosphere by a filled and sealed hydraulic transmission system.) The distance from penetration to transmitter is kept to a minimum, and separation is maintained. This arrangement, together with the pressure sensors external to the Containment, forms a double barrier and conforms to GDC 56 and Regulatory Guide (RG) 1.11. 43

and the Supplementary Containment Purge System exhaust line. monitoring

For the Containment ventilation isolation function, input is provided to the Westinghouse ESFAS from radiation detection equipment on the Normal Containment Purge System exhaust line. During a plant shutdown for refueling, the Normal Containment Purge System is in operation, as discussed in Section 9.4.5. Redundant Class 1E radiation monitors, i.e., the RCB Purge Isolation monitors, monitor the radiation in these purge lines, as discussed in Section 11.5. Upon either monitor sensing radiation above a preset limit, a signal is sent to the logic trains of the Westinghouse ESFAS, and the Containment ventilation signal is actuated. Additionally, as a diverse measurement, the Containment atmosphere radiation monitor, also discussed in Section 11.5, is used to monitor Containment atmosphere radiation levels and provide signals to both logic trains. 43

The logic for the radiation monitoring inputs to the Westinghouse ESFAS is shown in Figure 7.3-2A. Separation criteria, as required by RG 1.75 and IEEE 384-1974, are followed.

7.3.1.1.3 Digital Circuitry: The ESF logic racks are discussed in detail in Reference 7.3-2. The description includes the considerations and provisions for physical and electrical separation as well as details of the circuitry. Reference 7.3-2 also covers certain aspects of on-line test provisions, provisions for test points, considerations for the instrument power source, and considerations for accomplishing physical separation. The outputs from the analog channels are combined into actuation logic as shown on Figures 7.2-6 (pressurizer pressure), 7.2-7 (steam generator water level and 43

Also discussed in that section is the Supplementary Containment Purge System, which may be used during normal plant operation.

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7.3.1.1.5.1 Generating Station Conditions - The following is a summary of those generating station conditions requiring protective action: | 43

1. Primary system:

   a. Rupture in small pipes or cracks in large pipes

   b. Rupture of a reactor coolant pipe or LOCA

   c. Rupture of a SG tube | 43

2. Secondary system:

   a. Minor secondary system pipe breaks resulting in steam release rates equivalent to a single dump, relief, or safety valve

   b. Rupture of a major secondary system pipe

3. Fuel handling accident inside Containment

7.3.1.1.5.2 Generating Station Variables: The accidents identified above are described in Chapter 15, including the ESFAS signals used to mitigate the accident consequences. The variables listed below are monitored for the automatic initiation of ESF systems during these accidents. Post-accident monitoring requirements are discussed in Section 7.5.

1. Containment pressure

2. Pressurizer pressure

3. Steam line pressure

4. Reactor coolant cold leg temperature (T_{cold}) 43

5. SG water level

6. Feedwater flow

7. Primary coolant flow

8. Normal and Supplementary Containment purge exhaust radiation

9. Containment atmosphere radiation (no credit taken for this parameter)

7.3.1.1.5.3 Spatially Dependent Variables: The only variable monitored for deriving ESFAS accident mitigating signals that could be considered spatially dependent is the T_{cold} measurement, which is made at the cold leg of each loop downstream of the reactor coolant pump. In this location turbulent mixing at the pump will eliminate stratification.

7.3.1.1.5.4 Limits, Margins, and Setpoints: Prudent operational limits, available margins, and setpoints before onset of unsafe conditions requiring protective action are discussed in Chapter 15 and the Technical Specifications. | 43 a steam line break in time to limit or prevent further core damage for steam line break cases. 43

Additional protection against the effects of steam line break is provided by feedwater isolation. Feedwater line isolation is initiated in order to protect the Containment from overpressurization and to prevent excessive 43 cooldown of the reactor vessel and thus protect the reactor coolant pressure boundary. The feedwater isolation signal is initiated by the SI signal for the steam line break accident. 43

Further protection against a steam line break accident is provided by closure of all steam line isolation valves in order to prevent uncontrolled blowdown of all SG's. The generation of the protection system signal (about 2.0 seconds) is again short compared to the time to trip the fast acting steam line isolation valves, which are designed to close in less than approximately 5 seconds.

In addition to actuation of the ESF systems, an effect of a steam line break 43 accident is generation of a signal resulting in a reactor trip on overpower or following ECCS actuation. The core reactivity is also reduced by the borated 43 water injected by the ECCS.

The analyses in Chapter 15 of the steam line break accidents and an evaluation of the protection system instrumentation and channel design show that the ESFAS is effective in preventing or mitigating the effects of a steam line 43 break accident.

7.3.1.2.4.3 Fuel Handling Accident Inside Containment Protection: Should a postulated fuel handling accident occur inside the Containment, a prompt radiation detection and automatic Containment isolation capability has been provided to mitigate the consequences of this accident. The redundant RCB Purge Isolation radiation monitors ~~(located in the Normal Containment & Purge System exhaust lines)~~ sense the high radioactivity and the Containment ventilation isolation signal is generated to isolate the Containment. This prevents further release of radioactive materials to the environment, and ensures that resulting accident doses are well within the guidelines of 10CFR100. Analyses presented in Chapter 15 show that the ESFAS is effective in mitigating the consequences of the fuel handling accident inside Containment. 43

7.3.2 Control Room Envelope HVAC ESFAS

The ESFAS for the Control Room Envelope HVAC System uses the control room/EAB ventilation radiation monitors to sense whether predetermined setpoints have been exceeded. If they are, or if the Westinghouse ESFAS has generated a safety injection signal, this ESFAS sends actuation signals to the appropriate control room envelope HVAC components. The ESFAS meets the requirements of GDC 13,19,20,21 and 22.

7.3.2.1 Description. The ESFAS for the Control Room Envelope HVAC System receives high radiation signals from the redundant control room/EAB ventilation radiation monitors and the safety injection signal from the NSSS ESFAS. Upon receipt of any of these signals, the control room makeup air is diverted through the makeup filters and then, along with a portion of the

Page provided for information only (unless editorial change is made)

5. Circulating Fans:

The circulating fans are of the centrifugal type with direct-drive, single-speed motors. Fans have totally enclosed, fan cooled motors, and are statically and dynamically balanced. 32

9.4.5.2.4 Control Rod Drive Mechanism (CRDM) Ventilation Subsystem: The
CRDM Ventilation Subsystem (Figure 9.4.5-6), designed as nonsafety and 56
nonseismic, operates during normal plant operating conditions and is capable
of operating following a LOOP to maintain the CRDMs within their design ambi-
ent temperature. This subsystem consists of three 50 percent capacity fans
that induce cooler air from the containment into the CRDM shroud and then
discharge the air to the upper containment atmosphere. The CRDM fans are of
the centrifugal type with direct-drive, single-speed motors. Fans have 32
totally enclosed, fan-cooled motors and are statically and dynamically bal-
anced.

9.4.5.2.5 Reactor Cavity and Support Ventilation Subsystem: The Reactor
Cavity and Support Ventilation Subsystem (Figure 9.4.5-6), designed as 56
nonsafety and nonseismic, operates during normal plant operating conditions 32
and is capable of operating following a LOOP. This subsystem removes the
gamma decay and thermal heat from the reactor cavity wall to prevent dehydra- 41
tion of the concrete and cools the incore instrumentation cavities. This
subsystem consists of two 100 percent capacity supply fans and two 100 percent 56
capacity exhaust fans. The following is a brief description of the various 32
components.

1. Supply Fans: 56

The supply fans are of the centrifugal type with direct-drive, single-speed motors. Fans have totally enclosed, fan cooled motors, and are statically and dynamically balanced.

2. Exhaust Fans: 56

The exhaust fans are of the vaneaxial type with direct-drive, single-speed motors. Fans have totally enclosed, air-cooled motors, and are statically and dynamically balanced.

9.4.5.2.6 Normal Containment Purge Subsystem: The Normal Containment 41
Purge Subsystem, (Figure 9.4.5-2) operates during plant shutdown conditions.
It is designed as nonsafety and nonseismic except the containment isolation
valves and the radiation monitors which are safety-related and seismic 56
Category I.

reference section

This subsystem is provided to reduce the concentration of gaseous and particu- 2 Q22.11 3
late contamination to assure safe continuous personnel access after shutdown.
The frequency of use for the Normal Containment Purge Subsystem can be found 41
in the Technical Specifications.

A discussion of how this subsystem meets the requirements of BTP CSB 6-4 is 2 Q22.5
contained in the response to Acceptance Review Question 022.5. 32

Normal Containment Purge Subsystem consists of one 100 percent capacity air
handling unit with two 100 percent capacity supply fans and two 100 percent

capacity exhaust fans. The following is a brief description of the various components that comprise this subsystem. 32

1. Prefilter:

The prefilters are provided upstream of the high efficiency filters to protect them from coarse particles and are designed for 55 percent efficiency in accordance with ASHRAE Standard 52. 41

2. High-Efficiency Filters: 32

High-efficiency filters are provided to filter the outside air. The filters are designed for 95 percent efficiency in accordance with ASHRAE Standard 52. 41

3. Heating Coils:

Electric heating coils are provided downstream of the high-efficiency filters. The heating coils are designed for adequate heating capacity to temper the outside supply air.

4. Supply Fans:

The supply fan provides outside air which is filtered and heated as required to the RCB atmosphere around the periphery of the reactor refueling pool. The supply fans are of the vaneaxial type with direct-drive, single-speed motors. The fans have totally enclosed, air-cooled motors, and are statically and dynamically balanced. 32

5. Exhaust Fans:

The exhaust fans exhaust the purge air to the atmosphere via the plant main exhaust duct. The exhaust fans are of the vaneaxial type with direct-drive, single-speed motors. The fans have totally enclosed, air-cooled motors, and are statically and dynamically balanced.

6. Two redundant radiation monitors are installed outside the RCB in the exhaust duct to monitor the radiation levels in the normal containment purge exhaust air. 41

9.4.5.2.7 Supplementary Containment Purge Subsystem: The Supplementary Containment Purge Subsystem (Figure 9.4.5-3), designed as nonsafety and nonseismic except containment isolation valves which are safety-related and seismic Category I, operates during normal plant operating conditions. Operation of the Supplementary Containment Purge Subsystem enables sufficient reduction in containment airborne radioactive levels to allow inspection access to the RCB. This subsystem is designed for a smaller flowrate than the Normal Purge Subsystem in order to reduce the size of the containment penetration isolation valves. The frequency of operation of the Supplementary Containment Purge Subsystem can be found in the Technical Specifications. 32 41 32 41

This subsystem can be utilized as a nonsafety backup to dilute the hydrogen concentration in the Containment atmosphere after a LOCA as described in Section 6.2.5. 32

This subsystem can be utilized to maintain the normal containment pressure within the limits described in Table 3.11-1.

A discussion of how this subsystem meets the requirements of BTP CSB 6-4 is contained in the response to Acceptance Review Question 022.5.

The Supplementary Containment Purge Subsystem consists of one 100 percent capacity air handling unit with two 100 percent capacity supply fans and two 100 percent capacity exhaust fans. The following is a brief description of the various components that comprise this subsystem. 32

1. Prefilter:

   The prefilters are provided upstream of the high efficiency filters to protect them from coarse particles and are designed for 55 percent efficiency in accordance with ASHRAE Standard 52. 41

2. High-Efficiency Filters: 32

   High-efficiency filters are provided to filter the outside air. The filters are designed for 95 percent efficiency in accordance with ASHRAE Standard 52. 41

3. Heating Coil: 32

   An electric heating coil is provided downstream of the high-efficiency filters. The heating coil is designed for adequate heating capacity to temper the outside supply air. 41

4. Supply Fans:

   The supply fans provide outside air which is filtered and heated as required to the RCB atmosphere. The supply fans are of the centrifugal type with direct-drive, single-speed motors. The fans have totally enclosed, fan-cooled motors, and are statically and dynamically balanced. 32

5. Exhaust Fans:

   The exhaust fans exhaust the purge air to the atmosphere via the plant main exhaust duct. The exhaust fans are of the centrifugal type with direct-drive, single-speed motors. The fans have totally enclosed, fan-cooled motors, and are statically and dynamically balanced.

6. The two radiation monitors which are installed to monitor the normal purge exhaust also are used to monitor the radiation levels in the supplementary containment purge exhaust air.

9.4.5.2.8 <u>Tendon Gallery Tunnel Ventilation Subsystem</u>: The Tendon Gallery Tunnel Ventilation Subsystem (Figure 9.4.5-6), designed as nonsafety and nonseismic, operates during normal plant operating conditions to ventilate the tendon gallery tunnel for personnel access and to prevent odor stagnation. This subsystem consists of two 50 percent capacity vaneaxial type fans with direct-drive, single-speed motors. Fans have totally enclosed, air-cooled motors, and are statically and dynamically balanced. 41 56

Cool air is supplied to the tendon gallery from the MAB Main Supply and Exhaust Subsystem and is exhausted to the atmosphere by the exhaust fans. 32

 56

11. Deleted;

12. Supplementary Containment purge - Containment isolation valves; 32

13. Normal Containment purge - Containment isolation valves;

14. Water Chillers and Chilled Water Pumps.

Provisions are also made for control of the RCFC fans, Containment cubicle exhaust fans, CRDM vent fans, and reactor cavity fans from a transfer switch panel. 56

Instrumentation requirements for the RCFC Subsystem are discussed in Section 6.2.2.5.2. 32

Local differential pressure indicators are provided across the filter banks (except the carbon filter banks) on the Containment Carbon Units. A common differential pressure indicator and alarm across the entire filtration train is provided. Temperature switches on each carbon filter signal alarms on a visual annunciator system on the fire protection local panel with retransmission to the data acquisition system in the MCR when high or high-high air temperature exists in the carbon unit. 56 Pneumatic dampers on inlet of filtration trains and discharge side of fans automatically open before start of the corresponding fan. Local pressure differential indicators with CR alarms are provided for Containment cubicles exhaust fans. 41

Local pressure differential indicators are furnished across each prefilter and high efficiency filter bank. In addition, a common pressure differential indicator with alarm is provided for the Normal and Supplementary Purge Subsystems. The electric heating coil on the supply train is controlled by a temperature sensor located at the heater outlet. 41 Two radiation monitors in series on the exhaust duct of the normal purge provide signals to the Radiation Monitoring System. 32 (See Section 11.5 for a description of the Process and Effluent Radiological Monitoring and Sampling System.) Flow controllers located on the fan discharge in the normal and Supplementary Containment Purge Subsystem modulate inlet dampers to maintain the required Containment purge supply rate. 56 Supplementary Containment Purge Subsystems containment isolation valves are automatically closed by a Containment ventilation isolation signal from the Solid-State Protection System (SSPS). The Normal ~~Containment Purge Subsystem Containment isolation valves are automatically closed on detection of high radiation in the exhaust air.~~ 32

A damper limit switch on the CRDM fan discharge damper is used to alarm no flow from the CRDM fans. 56

See the 9.4.5 Figures for other instrumentation and locations. 41

9.4.5.3 Safety Evaluation. Continued operation of system components is assured by the following features:

1. Safety-related components are designed to pertinent Safety Class (see Section 3.2) and seismic Category I requirements. Safety-related components are located such that failure of portions of other nonessential systems will not prevent operation of any safety-related system. 32

These monitors are also used to monitor the exhaust duct of the supplementary purge by the use of manual valving.

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effluents for iodines and particulates and for noble gas effluents from the plant vent.

11.5.2.3.4 Control Room Electrical Auxiliary Building (CR/EAB) Ventilation Monitors: The CR/EAB ventilation monitors are Class 1E monitors which continuously assess the intake air to the CR for indication of abnormal airborne radioactivity concentration. Each monitor assembly is powered from a separate electrical power source. In the event of high radiation or monitor failure, CR emergency ventilation operation is initiated (see Section 7.3.2).

Each monitor assembly is comprised of a recirculation pump, beta-sensitive scintillation detector, four-pi lead shielding, check source, stainless steel sample gas receiving chamber, and associated electronics.

11.5.2.3.5 Condenser Vacuum Pump Monitor: Gaseous samples are drawn through an off-line system by a pump from the discharge of the vacuum pump exhaust header of the condenser. This channel monitors the gaseous sample for radioactivity which would be indicative of a SG tube leak, allowing reactor coolant to enter the secondary side fluid; this monitor complements the SGBD monitors in indication of a SG tube leak. The gaseous radioactivity levels are monitored by three detectors, in a manner similar to the unit vent wide range gas monitor. This monitor also satisfies the requirements of NUREG-0737, Item II.F.1 for provisions for sampling plant effluents for iodines and particulates and for noble gas effluents from the condenser.

11.5.2.3.6 Spent Fuel Pool Exhaust (SFPE) Monitors: The SFPE monitors are Class 1E monitors and are identical to the CR/EAB ventilation monitors described in Section 11.5.2.3.4 except that they sample the exhaust from the FHB. In the event of high radiation or monitor failure, the monitors initiate emergency operation of the FHB heating ventilating and air conditioning (HVAC), causing the exhaust air to be filtered prior to release (see Section 7.3.3). 44

or the Supplementary Purge System

11.5.2.3.7 RCB Purge Isolation Monitors: The RCB/purge isolation monitors are Class 1E monitors that sample the Containment Normal Purge System and are identical to the CR/EAB ventilation monitors described in Section 11.5.2.3.4. In the event of high radiation or monitor failure, the monitors send signals to the Solid-State Protection System (SSPS) for containment ventilation isolation (see Section 7.3.1).

11.5.2.4 Liquid Monitors. Fixed, off-line monitors are provided for continuous detection and measurement of radioactivity for liquid process streams. The design parameters for these monitors are summarized in Table 11.5-1. Each monitor is provided with demineralized water for flushing.

11.5.2.4.1 Sampling Devices: For each monitor, a sample is drawn from the process line, passed through a shielded sample chamber, through the sample pump and then returned to the system. Each sample pump is capable of drawing at least one gal/min of liquid through the monitor. The sample flow rate is controlled by means of a manual valve.

Each monitor has a low-sample-flow alarm.

A failure modes and effects analysis for these monitors is given in Table 11.5-2.

11.5.3 Effluent Monitoring and Sampling

Effluent sampling of all potentially radioactive liquid and gaseous effluent paths is conducted on a regular basis. This verifies the adequacy of effluent processing for compliance with the discharge limits to unrestricted areas. This effluent sampling program is a comprehensive nature and provides the information for the effluent measuring and reporting programs required by 10CFR50.36a in semiannual reports the NRC.

The requirement of GDC 64 for the monitoring of effluent discharge paths is implemented by providing continuous radiation detection and periodic sampling. This monitoring and sampling are provided for all liquid and gaseous effluent paths from which detectable quantities of radioactivity can be released from the plant during normal operation, including anticipated operational occurrences, and from postulated accidents.

These effluent monitors are as follows:

1. Condenser Vacuum Pump Monitor

2. Liquid Waste Processing System Monitor #1

3. Unit Vent Monitor

4. Main Steamline Monitors (post-accident) 44

11.5.4 Process Monitoring and Sampling

Potentially radioactive systems which lead to effluent discharge paths are equipped with a control system to automatically isolate the discharge upon indication of a high radioactivity level. These include: the Containment Normal and Supplementary Purge Systems, TGB drain sump, Condensate Polishing System, SGBD, and the gaseous and liquid radwaste systems. Batch releases are sampled and analyzed prior to discharge, in addition to the continuous effluent monitoring.

By means of the continuous radiation monitors mentioned above and their associated control valves, and due to the extensive sampling program described in the Environmental Report, GDC 60, and the Radiological Effluent Technical Specifications are met with regard to the control of releases of radioactivity to the environment.

Process monitoring is accomplished by continuous radiation monitors. By means of these monitors, GDC 63 is met with regard to monitoring radioactivity levels in the radioactive waste processing systems.

TABLE 11.5-1 (Continued)

PROCESS AND EFFLUENT RADIATION MONITORING SYSTEM

Service	Sample Location	Detector Number	Detector Type	Analysis Performed	Range (9) (μCi/cc)	MDC (1) (μCi/cc)	Controlling-Isotope	Alert Alarm(10) (μCi/cc)	High Alarm(10) (μCi/cc)	Control Function
Spent Fuel Pool Exhaust	Fuel Handling Building Ventilation Exhaust	RE-8036 (NG)	(2)	Gross Beta	3.4(-7) to 3.4(-1)	2.7(-7)	Xe-133	(8)	(8)	Initiates Fuel Handling Building Exhaust Filtration (Section 9.4.2)
Reactor Containment Building (RCB) Purge Isolation	RCB Normal and Supplementary Purge Systems Exhaust	RE-8012 (NG)	(2)	Gross Beta	3.4(-7) to 3.4(-1)	2.7(-7)	Xe-133	(8)	(8)	Sends signal to SSPS for Containment Ventilation Isolation (Section 9.4.5)
RCB Purge Isolation	RCB Normal and Supplementary Purge Systems Exhaust	RE-8013 (NG)	(2)	Gross Beta	3.4(-7) to 3.4(-1)	2.7(-7)	Xe-133	(8)	(8)	Sends signal to SSPS for Containment Ventilation Isolation (Section 9.4.5)
Steam Generator Blowdown (SGBD) Liquid	SGBD Flash Tank Outlet, Demineralizer Outlet	RE-8043 Liquid (L)	(4)	Gross Gamma	7.8(-8) to 7.8(-2)	3.9(-8)	Cs-137	3.0(-6)	1.0(-5)	Closes SGBD Discharge to Neutralization Basin Isolation Valve, FV-5019
Liquid Waste Processing System (LWPS)	Upstream of LWPS Diversion Valve FV-4077	RE-8038 (L)	(4)	Gross Gamma	7.8(-8) to 7.8(-2)	7.9(-8)	Cs-137	4.2(-6)	8.4(-6)	Positions Diversion Valve FV-4077 to Divert Effluent Back to Waste Monitor Tanks (Section 11.2)
Liquid Waste Processing System (LWPS)	Upstream of LWPS Diversion Valve FV-5050	RE-8045 (L)	(4)	Gross Gamma	7.8(-8) to 7.8(-2)	7.9(-8)	Cs-137	2.4(-5)	4.8(-5)	None
Component Cooling Water (CCW)	Discharge of CCW Pumps	RE-8040 (L)	(4)	Gross Gamma	7.8(-8) to 7.8(-2)	7.9(-8)	Cs-137	3.0(-6)	1.0(-5)	None
Boron Recycle System (BRS)	BRS Evaporator Condensate Line	RE-8037 (L)	(4)	Gross Gamma	7.8(-8) to 7.8(-2)	7.9(-8)	Cs-137	2.0(-6)	5.0(-6)	Positions Diversion Valve RCV-4202 to Divert Fluid Back to BRS Evaporator Feed Demineralizers (Section 9.3.4.2)
Turbine Generator Building Drain	Discharge Sump Pumps Sump No. 1	RE-8041 (L)	(4)	Gross Gamma	7.8(-8) to 7.8(-2)	3.9(-8)	Cs-137	3.0(-6)	3.0(-5)	Stops TBG Sump No. 1 Sump Pump (Section 9.3.3)

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