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INFORMATION FROM THE APPLICANT

RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.2 LAND USE CENSUS

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LIMITING CONDITION FOR OPERATION

3.12.2 A land use census shall be conducted and shall identify the location of the nearest milk animal, the nearest residence and the nearest garden* of greater than 500 square feet producing fresh leafy vegetables in each of the 16 meteorological sectors within a distance of five miles. (For elevated releases as defined in Regulatory Guide 1.111, Revision 1, July 1977, the land use census shall also identify the locations of all milk animals and all gardens of greater than 500 square feet producing fresh leafy vegetables in each of the 16 meteorological sectors within a distance of three miles.)

APPLICABILITY: At all times. **

ACTION:

- a. With a land use census identifying a location(s) which yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 4.11.2.3, in lieu of any other report required by Specification 6.9.1., prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the new location(s).
- b. With a land use census identifying a location(s) which yields a calculated dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with Specification 3.12.1, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the new location. The new location shall be added to the radiological environmental monitoring program within 30 days. The sampling location, excluding the control station location, having the lowest calculated dose or dose commitment (via the same exposure pathway) may be deleted from this monitoring program after (October 31) of the year in which this land use census was conducted.
- c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2 The land use census shall be conducted at least once per 12 months between the dates of (June 1 and October 1) using that information which will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities.

* Broad leaf vegetation sampling may be performed at the site boundary in the direction sector with the highest D/O in lieu of the garden census.

** Land use census not required prior to initial operation above 5% power or July 1, 1982, whichever is earlier.

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3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

LIMITING CONDITION FOR OPERATION

3.12.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which has been approved by the Commission.

APPLICABILITY: At all times.*

ACTION:

- a. With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.3 A summary of the results obtained as part of the above required Interlaboratory Comparison Program and in accordance with the ODCM ~~for participants in the EPA crosscheck program shall provide the EPA program code designation for the unit~~ shall be included in the Annual Radiological Environmental Operating Report.

* Not applicable prior to initial operation above 5% power

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- g. PROCESS CONTROL PROGRAM implementation.
- h. OFFSITE DOSE CALCULATION MANUAL implementation.
- i. Quality Assurance Program for effluent and environmental monitoring, using the guidance in Regulatory Guide 4.15 Rev. 1, February 1979. *
- j. Modification of Core Protection Calculator (CPC) Addressable Constants.

NOTE: Modification to the CPC addressable constants based on information obtained through the Plant Computer - CPC data link shall not be made without prior approval of the Onsite Review Committee.

6.8.2 Each procedure of 6.8.1 above, and changes thereto, shall be reviewed and approved by the Station Manager; or by (1) the Station Operations Manager, (2) the Station Technical Manager, (3) the Station Maintenance Manager, (4) the Station Deputy Manager or (5) the Health Physics Manager as previously designated by the Station Manager; prior to implementation and shall be reviewed periodically as set forth in administrative procedures.

6.8.3 Temporary changes to procedures of 6.8.1 above be made provided:

- a. The intent of the original procedure is not altered.
- b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.
- c. The change is documented, reviewed and approved by the Station Manager; or by (1) the Station Operations Manager, (2) the Station Technical Manager, (3) the Station Maintenance Manager, (4) the Deputy Station Manager or (5) the Health Physics Manager as previously designated by the Station Manager; within 14 days of implementation.

6.8.4 The following programs shall be established, implemented, and maintained:

a. Primary Coolant Sources Outside Containment

A program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. The systems include the high pressure safety injection recirculation, the shutdown cooling system, the reactor coolant sampling system (post-accident sampling piping only), the containment spray system, the radioactive waste gas system (post-accident sampling return piping only) and the liquid radwaste system (post-accident sampling return piping only). The program shall include the following:

- (i) Preventive maintenance and periodic visual inspection requirements, and
- (ii) Integrated leak test requirements for each system at refueling cycle intervals or less.

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TABLE 4.3.-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
7. LOSS OF POWER (LOV)				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage and Degraded Voltage)	S	R	R	1, 2, 3, 4
8. EMERGENCY FEEDWATER (EFAS)				
a. Manual (Trip Buttons)	N.A.	N.A.	R	1, 2, 3
b. SG Level (A/B)-Low and ΔP (A/B) - High	S	R	H	1, 2, 3
c. SG Level (A/B) - Low and No Pressure - Low Trip (A/B)	S	R	H	1, 2, 3
d. Automatic Actuation Logic	N.A.	N.A.	H(1)(3), SA(4)	1, 2, 3
9. Control Room Isolation (CRIS)				
a. Manual CRIS (Trip Buttons)	N.A.	N.A.	R	N.A.
b. Manual SIAS (Trip Buttons)	N.A.	N.A.	R	N.A.
c. Airborne Radiation				
i. Particulate/Iodine	S	R (6)	H	A11
ii. Gaseous	S	R (6)	H	A11
d. Automatic Actuation Logic	N.A.	N.A.	R(3)	A11
10. Toxic Gas Isolation (TGIS)				
a. Manual (Trip Buttons)	N.A.	N.A.	R	N.A.
b. Chlorine - High	S	R	H	A11
c. Ammonia - High	S	R	H	A11
d. Butane/Propane - High	S	R	H	A11
e. Carbon Dioxide - High	S	R	H	A11
f. Automatic Actuation Logic	N.A.	N.A.	R (3)	A11

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
11. Fuel Handling Isolation (FHIS)				
a. Manual (Trip Buttons)	N.A.	N.A.	R	N.A.
b. Airborne Radiation				
i. Gaseous	S	R	M	*
ii. Particulate/Iodine	S	R	M	*
c. Automatic Actuation Logic	N.A.	N.A.	R(3)	*
12. Containment Purge Isolation (CPIS)				
a. Manual (Trip Buttons)	N.A.	N.A.	R	N.A.
b. Airborne Radiation				
i. Gaseous	(2)	(2)(6)	(2)	All
ii. Particulate	(2)	(2)(6)	(2)	All
iii. Iodine	(2)	(2)(6)	(2)	All
c. Containment Area Radiation (Gamma)	S	R (6)	M	6
d. Automatic Actuation Logic	N.A.	N.A.	R (3)	All

TABLE NOTATION

- (1) Each train or logic channel shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (2) In accordance with Table 4.3-9 surveillance requirements for these instrument channels.
- (3) Testing of Automatic Actuation Logic shall include energization/de-energization of each initiation relay and verification of the OPERABILITY of each initiation relay.
- (4) A subgroup relay test shall be performed which shall include the energization/de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.
- (5) Actuated equipment only; does not result in CIAS.

(6) Equivalent testing (FSAR Sect. 11.5.2.1.5.2) performed in the startup program is acceptable in place of the initial CHANNEL CALIBRATION prior to initial operation above 5% power.

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TABLE 3.3-6

RADIATION MONITORING ALARM INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
1. Area Monitors					
a. Containment - High Range	2	1, 2, 3 4	2 R/hr 20 R/hr 2	1-10 ⁸ R/hr	18 19
b. Containment - Purge Isolation	1	1, 2, 3, 4 6	< 325 mR/hr #	10 ⁻¹ -10 ⁵ mR/hr	19 (a)
** c. Main Steam Line	1/line	1, 2, 3 4	1 mR/hr (low); 1 R/hr (high) 1 mR/hr (low); 1 R/hr (high)	10 ⁻¹ -10 ⁴ mR/hr;	18 19
2. Process Monitors					
a. Fuel Storage Pool Airborne					
i. Gaseous	1	*	#	10 ¹ -10 ⁷ cpm	(d)
ii. Particulate/Iodine	1	*	#	10 ¹ -10 ⁷ cpm	(d)
b. Containment Airborne					
i. Gaseous	1	All	Per ODCM	10 ¹ -10 ⁷ cpm	(a)(b)(c)
ii. Particulate	1	All	Per ODCM	10 ¹ -10 ⁷ cpm	(a)(b)(c)
iii. Iodine	1	All	Per ODCM	10 ¹ -10 ⁷ cpm	(a)(c)
c. Control Room Airborne					
i. Particulate/Iodine	1	All	#	10 ¹ -10 ⁷ cpm	(e)
ii. Gaseous	1	All	#	10 ¹ -10 ⁷ cpm	(e)

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TABLE 3.3-6 (Continued)

RADIATION MONITORING ALARM INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
3. Noble Gas Monitors					
***a. Plant Vent Stack	1	All	Per ODCM	$10^1 - 10^7$ cpm	19, (c)
**b. Condenser Evacuation System	1	All	Per ODCM	$10^1 - 10^7$ cpm	19, (c)

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ACTION STATEMENTS

- ACTION 18 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.3.3.6.
- ACTION 19 - With the number of OPERABLE Channels less than the Minimum Channels OPERABLE requirement, restore the inoperable Channel(s) to OPERABLE status within 7 days, or be in at least HOT STANDBY within the next 6 hours, and in at least HOT SHUTDOWN within the following 6 hours and in COLD SHUTDOWN within the subsequent 24 hours.

#In accordance with Engineered Safety Feature trip value specified by Table 3.3-4.

* With irradiated fuel in the storage pool.

** To be operational prior to initial criticality.

- (a) In accordance with Table 3.3-3 - ACTION 17.
- (b) In accordance with Table 3.3-3 - ACTION 17a.
- (c) In accordance with Table 3.3-3 - ACTION 17b.
- (d) In accordance with Table 3.3-3 - ACTION 16.
- (e) In accordance with Table 3.3-3 - ACTION 13.

(f) For the purpose of performing the initial channel calibration on the vent stack monitor, continued operation in the ACTION statement for 14 days is allowed.

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TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
1. Area Monitors				
a. Containment - High Range	S	R (1)	M	1, 2, 3, 4
b. Containment - Purge Isolation	S #	R (1) #	M #	1, 2, 3, 4 6
**c. Main Steam Line	S	R	M	1, 2, 3, 4
2. Process Monitors				
a. Fuel Storage Pool Airborne				
i. Gaseous	#	#	#	*
ii. Particulate/Iodine	#	#	#	*
b. Containment Airborne				
i. Gaseous	@	@	@	A11
ii. Particulate	@	@	@	A11
iii. Iodine	@	@	@	A11
c. Control Room Airborne				
i. Particulate	#	#	#	A11
ii. Gaseous	#	#	#	A11

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TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
PROCESS MONITORS (Continued)				
3. Noble Gas Monitors				
^a Plant Vent Stack	@	@	@	A11
**b. Condenser Evacuation System	@	@	@	A11

NOTES:

In accordance with Table 4.3-2 surveillance requirements for these instrument channels.

* With irradiated fuel in the storage pool.

** To be operational prior to initial ~~criticality~~ *operation above 5% power*

@ In accordance with Table 4.3-9 surveillance requirements for these instrument channels.

(1) *Equivalent testing performed in the startup program is acceptable prior to initial entry into MODE 1.*

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TABLE 3.3-10
ACCIDENT MONITORING INSTRUMENTATION (CONTINUED)

<u>INSTRUMENT</u>	<u>REQUIRED NUMBER OF CHANNELS</u>	<u>MINIMUM CHANNELS OPERABLE</u>
19. Containment Area Radiation - High Range	2	1
**20. Main Steam Line Area Radiation	1/steam line	N.A.
**21. Condenser Evacuation System Radiation Monitor - Wide Range	1	N.A.
**22. Purge/Vent Stack Radiation Monitor - Wide Range*	2	1
23. Cold Leg HPSI Flow	2/cold leg	1/cold leg
24. Hot Leg HPSI Flow	1/hot leg	N.A.

NOTES:

*The two required channels are the Unit 2 monitor and the Unit 3 monitor.

**To be operational prior to initial criticality. *operation above 5% power.*



TABLE 4.3-7

ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS (CONTINUED)

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>
19. Containment Area Radiation - High Range	(a)	(a)
**20. Main Steam Line Area Radiation	(a)	(a)
**21. Condenser Evacuation System Radiation Monitor - Wide Range	M	R
**22. Purge/Vent Stack Radiation Monitor - Wide Range	M	R
23. Cold Leg HPSI Flow	M	R
24. Hot Leg HPSI Flow	M	R

NOTES:

(a) In accordance with Table 4.3-3.

** To be operational prior to initial criticality. *operation above 5% power.*

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TABLE 4.3-8 (Continued)

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TABLE NOTATION

- (1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:
 1. Instrument indicates measured levels above the alarm/trip setpoint.
 2. Circuit failure.
 3. Instrument indicates a downscale failure.
- (2) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used.
- (3) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.

The initial CHANNEL CALIBRATION shall be satisfied by startup testing in accordance with FSAR Sect. 11.5.2.1.5.2 until initial operation above 5% power.

The initial CHANNEL FUNCTIONAL TEST shall be satisfied by startup testing in accordance with FSAR Sect. 14.2.12.22 until 30 days after initial criticality.

*If the instrument controls are not in the operate mode, procedures shall call for declaring the channel inoperable.

TABLE 3.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. WASTE GAS HOLDUP SYSTEM			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release - 2/3 RT - 7814	1	*	35
b. Effluent System Flow Rate Measuring Device	1	*	36
2. WASTE GAS HOLDUP SYSTEM EXPLOSIVE GAS MONITORING SYSTEM			
a. Hydrogen Monitor	2	**	39
b. Oxygen Monitor	2	**	39
3. CONDENSER EVACUATION SYSTEM			
a. Noble Gas Activity Monitor - 2RT - 7818 [#] or 2RT - 7870-1	1		37, (a)
b. Iodine Sampler	1		40
c. Particulate Sampler	1		40
d. Flow Rate Monitor	1		36
4. PLANT VENT STACK			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release from Waste Gas Storage Tanks - 2/3 RT - 7808, or 2 RT - 7865-1 and 3 RT - 7865-1	1	*	37, (a)
b. Iodine Sampler	1	*	40
c. Particulate Sampler	1		40
d. Flow Rate Monitor	1		36
e. Sampler Flow Rate Measuring Device	1	*	36
5. CONTAINMENT PURGE SYSTEM			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release - 2RT - 7804-1 or 2RT - 7807-2	1	*	38, (b), (c)
b. Iodine Sampler	1	*	40, (c)
c. Particulate Sampler	1	*	40, (b), (c)
d. Flow Rate Monitor	1		36
e. Sampler Flow Rate Measuring Device	1		36

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TABLE NOTATION

* At all times.

** During waste gas holdup system operation (treatment for primary system offgases).

*** To be operational prior to exceeding 5% RATED THERMAL POWER.

a) In accordance with Table 3.3-6 ACTION 19

b) In accordance with the ACTION Requirements of Specification 3.4.5.1 (Modes 1, 2, 3 and 4)

c) In accordance with the ACTION Requirement of Specification 3.9.8 (Mode 6)

To be operational prior to initial criticality

ACTION 35 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank(s) may be released to the environment for up to 14 days provided that prior to initiating the release:

a. At least two independent samples of the tank's contents are analyzed, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 36 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated at least once per 4 hours.

ACTION 37 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 38 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, immediately suspend PURGING of radioactive effluents via this pathway.

ACTION 39 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, operation of this system may continue for up to 14 days. With two channels inoperable, be in at least HOT STANDBY within 6 hours.

ACTION 40 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue for up to 30 days provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

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TABLE 4.3-9

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. WASTE GAS HOLDUP SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release - 2/3 RT - 7814 <i>or 2/3 RT-7808</i>	P	P	<i>R(3)(1/</i> <i>R (1)</i>	<i>Q(1)(8)</i> <i>Q (8)</i>	*
b. Flow Rate Monitor	P	N.A.			*
2. WASTE GAS HOLDUP SYSTEM EXPLOSIVE GAS MONITORING SYSTEM					
a. Hydrogen Monitor (continuous)	D	N.A.	Q(4)	M	**
b. Hydrogen Monitor (periodic)	D	N.A.	Q(4)	M	**
c. Oxygen Monitor (continuous)	D	N.A.	Q(5)	M	**
d. Oxygen Monitor (periodic)	D	N.A.	Q(5)	M	**
3. CONDENSER EVACUATION SYSTEM					
a. Noble Gas Activity Monitor - 2RT - 7818, 2RT - 7870-1 <i>****</i>	D	M	R(3)	Q(2)	<i>* * *</i>
b. Iodine Sampler <i>****</i>	W	N.A.	N.A.	N.A.	<i>* * *</i>
c. Particulate Sampler <i>****</i>	W	N.A.	N.A.	N.A.	<i>* * *</i>
d. Flow Rate Monitor <i>****</i>	D	N.A.	R	Q	<i>* * *</i>
4. PLANT VENT STACK					
a. Noble Gas Activity Monitor - 2/3 RT - 7808, <i>or 2 RT-7865-1 and 3RT-7865-1</i>	D	M	<i>R(3)(1)</i> <i>N.A.</i>	<i>Q(2)(8)</i> <i>N.A.</i>	*
b. Iodine Sampler	W	N.A.	<i>N.A.</i>	<i>N.A.</i>	*
c. Particulate Sampler	W	N.A.	<i>N.A.</i>	<i>N.A.</i>	*
d. Flow Rate Monitor <i>****</i>	D	N.A.	<i>R (1)</i>	<i>Q (8)</i>	<i>* * *</i>
e. Sampler Flow Rate Measuring Device	D	N.A.	<i>R (1)</i>	<i>Q (8)</i>	*

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TABLE 4.3-9 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>SOURCE CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES FOR WHICH SURVEILLANCE IS REQUIRED</u>
5. CONTAINMENT PURGE SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release - 2/3 RT - 7804-1 2 RT - 7807-2	S	P(6)	R(3) (7)	M(1)	*
b. Iodine Sampler	W	N.A.	N.A.	N.A.	*
c. Particulate Sampler	W	N.A.	N.A.	N.A.	*
d. Flow Rate Monitor	D	N.A.	R (7)	Q	* **
e. Sampler Flow Rate Measuring Device	D	N.A.	R (7)	Q	*

PROOF OF REVIEW

TABLE 4.2-2

TABLE NOTATION

PROT

- * At all times, *Surveillance requirements on Containment Airborne Monitor ZRT-7807-2 shall be identical to those for effluent monitor ZRT-7804-1.*
- ** During waste gas holdup system operation (treatment for primary system offgases).

*** To be operational prior to exceeding 5% RATED THERMAL POWER.

To be operational prior to initial criticality.

- (1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.

- (2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint.
2. Circuit failure.
3. Instrument indicates a downscale failure.

- (3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used.

- (4) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent hydrogen, balance nitrogen, and
2. Four volume percent hydrogen, balance nitrogen.

- (5) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent oxygen, balance nitrogen, and
2. Four volume percent oxygen, balance nitrogen.

- (6) Prior to each release and at least once per month.

- (7) *Testing performed in the startup program per FSAR 11.5.2.1.5.2 is acceptable prior to initial operation above 5% power*

If the instrument controls are not set in the operate mode, procedures shall call for declaring the channel inoperable.

- (8) *Testing performed in the startup program per FSAR 14.2.12.22 is acceptable prior to initial operation above 5% power*

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TABLE 4.11-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml) ^a
A. Batch Waste Release _d Tanks	P Each Batch	P Each Batch	Principal Gamma Emitters	5x10 ⁻⁷
1. Primary Plant Makeup Storage Tanks			I-131	1x10 ⁻⁶
2. Radwaste Primary Tanks	P One Batch/M	M	Dissolved and Entrained Gases (Gamma emitters)	1x10 ⁻⁵
3. Radwaste Secondary Tanks	P Each Batch	M Composite ^b	H-3	1x10 ⁻⁵
4. Miscellaneous Waste Condensate Monitor Tanks			Gross Alpha	1x10 ⁻⁷
5. Neutralization Sump	P Each Batch	Q Composite ^b	Sr-89, Sr-90	5x10 ⁻⁸
			Fe-55	1x10 ⁻⁶
B. Continuous Releases ^e	D Grab Sample	W Composite ^c	Principal Gamma Emitters	5x10 ⁻⁷
1. Steam Generator Blowdown			I-131	1x10 ⁻⁶
2. Turbine Building Sump	M Grab Sample	M	Dissolved and Entrained Gases (Gamma Emitters)	1x10 ⁻⁵
3. Miscellaneous Waste Evaporator Condensate *	D Grab Sample	M Composite ^c	H-3	1x10 ⁻⁵
4. Salt Water Discharge From Component Cooling Heat Exchanger			Gross Alpha	1x10 ⁻⁷
	D Grab Sample	Q Composite ^c	Sr-89, Sr-90	5x10 ⁻⁸
			Fe-55	1x10 ⁻⁶

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TABLE 4.11-1 (Continued)

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TABLE NOTATION

- b. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.
- c. To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.
- d. A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed, by a method described in the ODCM, to assure representative sampling.
- e. A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a volume of system that has an input flow during the continuous release.
- f. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, and Ce-144. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.

* sampling of this flow path is not required if the condensate monitor tank bypass valve is verified locked shut at least once every 31 days.

These requirements shall not be applicable until after January 1, 1983. In the interim ADMINISTRATIVE CONTROLS shall provide for sampling per Note b.

FEB 01 1962

TABLE 4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) ($\mu\text{Ci}/\text{m}^3$) ^a
A. Waste Gas Storage Tank	Each Tank Grab Sample ^p	Each Tank ^p	Principal Gamma Emitters ^g	1×10^{-4}
B. Containment Purge ^h 42 inch	Each Purge ^{p, b, c}	Each Purge ^{p, b}	Principal Gamma Emitters	1×10^{-4}
			H-3	1×10^{-6}
8 inch	M ^b Grab Sample	M ^b	Principal Gamma Emitters	1×10^{-4}
			H-3	1×10^{-6}
C. 1. Condenser Evacuation System ***	M ^b Grab Sample	M ^b	Principal Gamma Emitters ^g	1×10^{-4}
			H-3	1×10^{-6}
2. Plant Vent Stack	W ^{b, e}	W ^b		
D. All Release Types as listed in B and C above. ^h	Continuous ^f Sampler	Charcoal Sample ^{W^d} *	I-131	1×10^{-12}
			I-133	1×10^{-10}
	Continuous ^f Sampler	Particulate Sample ^{W^d}	Principal Gamma Emitters ^g (I-131, Others)	1×10^{-11}
	Continuous ^f Sampler	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous ^f Sampler	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}
	Continuous ^f Monitor	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1×10^{-6}

* or equivalent radio-iodine sample

** after initial criticality

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TABLE 4.11-2 (Continued)

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TABLE NOTATION

- b. Analyses shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.
- c. Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.
- d. Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing (or after removal from sampler). Sampling shall also be performed at least once per 24 hours for at least 7 days following each shutdown, startup or THERMAL POWER change exceeding 15 percent of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10.
- e. Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.
- f. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.11.2.1, 3.11.2.2 and 3.11.2.3.
- g. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measureable and identifiable, together with the above nuclides, shall also be identified and reported.

h. Containment airborne samples shall be considered representative samples for containment purge.