

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
b. Phase "B" Isolation					
1) Manual	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	18
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
3) Containment Pressure--High-High	4	2	3	1, 2, 3	16
c. Purge and Exhaust Isolation					
1) Manual	2	1	2	1, 2, 3, 4	17
2) Containment Atmo- sphere Radioactivity- High		per table 3.3-6			
4. STEAM LINE ISOLATION					
a. Manual	1/steam line	1/steam line	1/operating steam line	1, 2, 3	18
b. Automatic Actuation Logic	2	1	2	1, 2, 3	13
c. Containment Pressure-- High-High	4	2	3	1, 2, 3	16

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
2. Containment Atmosphere Gaseous Radioactivity	per Table 3.3-6	
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq 23.5$ psig	$\leq 24$ psig
d. Steam Flow in Two Steam Lines -- High Coincident with $T_{avg}$ -- low-low or Steam Line Pressure--low	<p><math>&lt;</math> A function defined as follows: A <math>\Delta p</math> corresponding to 40% of full steam flow between 0% and 20% load and then a <math>\Delta p</math> increasing linearly to a <math>\Delta p</math> corresponding to 110% of full steam flow at full load</p> <p><math>T_{avg} \geq 543^{\circ}\text{F}</math>  <math>\geq 500</math> psig steam line pressure</p>	<p><math>&lt;</math> A function defined as follows: A <math>\Delta p</math> corresponding to 44% of full steam flow between 0% and 20% load and then a <math>\Delta p</math> increasing linearly to a <math>\Delta p</math> corresponding to 111.5% of full steam flow at full load</p> <p><math>T_{avg} \geq 541^{\circ}\text{F}</math>  <math>\geq 480</math> psig steam line pressure</p>

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION  
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNELS CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
b. Phase "B" Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Pressure-- High-High	S	R	M(3)	1, 2, 3
c. Containment Ventilation Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Radioactivity -- High	per table 4.3-3			

TABLE 3.3-6  
RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
1. AREA MONITORS					
a. Fuel Storage Area - R5/R9	1	*	$\leq 15$ mR/hr	$10^{-1} - 10^4$ mR/hr	19
b. Containment Area - R44	2	1, 2, 3 & 4	$\leq 10^3$ R/hr	$1 - 10^7$ R/hr	23
2. PROCESS MONITORS					
a. Containment					
1) Gaseous Activity					
a) Purge & Pressure - Vacuum Relief Isolation - R12a	1#	6 and 1, 2, 3, 4 & 5	$\leq 2 \times$ background per Specification 3.3.3.9	$10^1 - 10^6$ cpm	22 & 23
b) RCS Leakage Detection - R12a		1, 2, 3 & 4	N/A	$10^1 - 10^6$ cpm	20
2) Air Particulate Activity					
a) Purge & Pressure - Vacuum Relief Isolation - R11a	1	6	$\leq 2 \times$ background	$10^1 - 10^6$ cpm	22
b) RCS Leakage Detection - R11a		1, 2, 3 & 4	N/A	$10^1 - 10^6$ cpm	20
b. Noble Gas Effluent Monitors					
1) Medium Range Auxiliary Building Exhaust System (Plant Vent) - R45B	1	1, 2, 3 & 4	$\leq 3.0 \times 10^{-2}$ uCi/cm <sup>3</sup> (Alarm only)	$10^{-3} - 10^1$ uCi/cm <sup>3</sup>	23
2) High Range Auxiliary Building Exhaust System (Plant Vent) - R45C	1	1, 2, 3 & 4	$\leq 1.0 \times 10^2$ uCi/cm <sup>3</sup> (Alarm only)	$10^{-1} - 10^5$ uCi/cm <sup>3</sup>	23

\*With fuel in the storage pool or building.

#The unit vent sampling monitor (R-41c) may also function in this capacity when the purge/pressure-vacuum relief isolation valves are open.



TABLE 3.3-6 (CONTINUED)  
RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
2. PROCESS MONITORS					
b. Noble Gas Effluent Monitors					
3) Main Steamline Discharge (Safety Valves and Atmospheric Steam Dumps) - R46	1/ MS Line	1, 2, 3 & 4	< 10 mR/hr (alarm only)	1 - 10 <sup>4</sup> mR/hr	23
4) Condenser Exhaust System - R15	1	1, 2, 3 & 4	< 1.27 x 10 <sup>4</sup> cpm (alarm only)	1 - 10 <sup>6</sup> cpm	23

TABLE 3.3-6 (Continued)

TABLE NOTATION

- ACTION 19 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.
- ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.
- ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.
- ACTION 23 - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements, initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours, and:
- 1) either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or
  - 2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNELS CHECKS</u>	<u>SOURCE CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE RE QUIRED</u>
1. AREA MONITORS					
a. Fuel Storage Area - R5/R9	S	M	R	Q	*
b. Containment Area - R44	S	M	R	Q	1, 2, 3 & 4
2. PROCESS MONITORS					
a. Containment Monitors					
1) Gaseous Activity					
a) Purge & Pressure Vacuum Relief Isolation - R12a	S	M	R	Q	1, 2, 3, 4, 5 & 6
b) RCS Leakage Detection - R12a	S	M	R	Q	1, 2, 3 & 4
2) Air Particulate Activity					
a) Purge & Pressure - Vacuum Relief Isolation - R11a	S	M	R	Q	1, 2, 3, 4 & 6
b) RCS Leakage Detection - R11a	S	M	R	Q	1, 2, 3 & 4
b. Noble Gas Effluent Monitors					
1) Medium Range Auxiliary Building Exhaust System (plant vent) - R45B	S	M	R	Q	1, 2, 3 & 4
2) High Range Auxiliary Building Exhaust System (plant vent) - R45C	S	M	R	Q	1, 2, 3 & 4

\*With fuel in the storage pool or building.

TABLE 4.3-3 (CONTINUED)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNELS CHECKS</u>	<u>SOURCE CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
2. PROCESS MONITORS					
b. Noble Gas Effluent Monitors					
3) Main Steamline Discharge (Safety valves & atmospheric dumps) - R46	S	M	R	Q	1, 2, 3 & 4
4) Condenser Exh. Sys. - R15	S	M	R	Q	1, 2, 3 & 4

## INSTRUMENTATION

### ACCIDENT MONITORING INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

3.3.3.7 The accident monitoring instrumentation channels shown in Table 3.3-11a and Table 3.3-11b shall be operable.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTION:

- a. As shown in Table 3.3-11a and Table 3.3-11b.
- b. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.3.3.7 Each accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK AND CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-11.



TABLE 3.3-11a  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>REQUIRED NO. OF CHANNELS</u>	<u>ACTION</u>
1. Reactor Coolant Outlet Temperature - T HOT (Wide Range)	4 (1/loop)	2	1
2. Reactor Coolant Inlet Temperature - T COLD (Wide Range)	4 (1/loop)	2	1
3. Reactor Coolant Pressure (Wide Range)	2	2	1
4. Pressurizer Water Level	3 (hot)	2	1
5. Steam Line Pressure	3/Steam Generator	2/Steam Generator	1
6. Steam Generator Water Level (Narrow Range)	3/Steam Generator	2/Steam Generator	1
7. Steam Generator Water Level (Wide Range)	4/(1/Steam Generator)	4 (1/Steam Generator)	1
8. Refueling Water Storage Tank Water Level	2	2	1
9. Boric Acid Tank Solution Level	2 (1/tank)	2 (1/tank)	3
10. Auxiliary Feedwater Flow Rate	4 (1/Steam Generator)	4 (1/Steam Generator)	4
11. Reactor Coolant System Subcooling Margin Monitor	2*	2*	5
12. PORV Position Indicator	2/valve**	2/valve**	1

TABLE 3.3-11a (CONTINUED)  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>REQUIRED NO. OF CHANNELS</u>	<u>ACTION</u>
13. PORV Block Valve Position Indicator	2/valve**	2/valve**	1
14. Pressurizer Safety Valve Position Indicator	2/valve**	2/valve**	1
15. Containment Pressure - Narrow Range	4	2	1
16. Containment Pressure - Wide Range	2	2	7
17. Containment Water Level - Wide Range	2	2	7
18. Core Exit Thermocouples	65	4/core quadrant	1

(\*) Total number of channels is considered to be two (2) with one (1) of the channels being manual calculation by licensed control room personnel using data from OPERABLE wide range Reactor Coolant Pressure and Temperature along with Steam Tables as described in ACTION 5.

(\*\*) Total number of channels is considered to be two (2) with one (1) of the channels being any one (1) of the following alternate means of determining PORV, PORV Block, or Safety Valve position: Tailpipe Temperatures for the valves, Pressurizer Relief Tank Temperature Pressurizer Relief Tank Level Operable.

TABLE 3.3-11b

ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>MINIMUM NO. OF CHANNELS</u>	<u>ACTION</u>
1. Reactor Coolant Outlet Temperature - T HOT (Wide Range)	4 (1/loop)	1	2
2. Reactor Coolant Inlet Temperature - T COLD (Wide Range)	4 (1/loop)	1	2
3. Reactor Coolant Pressure (Wide Range)	2	1	2
4. Pressurizer Water Level	3 (hot)	1	2
5. Steam Line Pressure	3/Steam Generator	1/Steam Generator	2
6. Steam Generator Water Level (Narrow Range)	3/Steam Generator	1/Steam Generator	2
7. Steam Generator Water Level (Wide Range)	4/(1/Steam Generator)	3 (1/Steam Generator)	2
8. Refueling Water Storage Tank Water Level	2	1	2
9. Boric Acid Tank Solution Level	2 (1/tank)	1 (1/tank)	3
10. Auxiliary Feedwater Flow Rate	4 (1/Steam Generator)	3 (1/Steam Generator)	6
11. Reactor Coolant System Subcooling Margin Monitor	2*	1	6
12. PORV Position Indicator	2/valve**	1	2

TABLE 3.3-11b (CONTINUED)

ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>MINIMUM NO. OF CHANNELS</u>	<u>ACTION</u>
13. PORV Block Valve Position Indicator	2/valve**	1	2
14. Pressurizer Safety Valve Position Indicator	2/valve**	1	2
15. Containment Pressure - Narrow Range	4	1	2
16. Containment Pressure - Wide Range	2	1	2
17. Containment Water Level - Wide Range	2	1	2
18. Core Exit Thermocouples	65	2/core quadrant	2

(\*) Total number of channels is considered to be two (2) with one (1) of the channels being manual calculation by licensed control room personnel using data from OPERABLE wide range Reactor Coolant Pressure and Temperature along with Steam Tables as described in ACTION 5.

(\*\*) Total number of channels is considered to be two (2) with one (1) of the channels being any one (1) of the following alternate means of determining PORV, PORV Block, or Safety Valve position: Tailpipe Temperatures for the valves, Pressurizer Relief Tank Temperature Pressurizer Relief Tank Level Operable.

TABLE 3.3-11a & b (continued)

TABLE NOTATION

- ACTION 1 With the number of OPERABLE accident monitoring channels less than the Required Number of Channels shown in Table 3.3-11a, restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours.
- ACTION 2 With the number of OPERABLE accident monitoring channels less than the MINIMUM Number of Channels shown in Table 3.3-11b, restore the inoperable channel(s) to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
- ACTION 3 With the number of OPERABLE channels one less than the Required Number of Channels shown in Table 3.3-11a, operation may proceed provided that the Boric Acid Tank associated with the remaining OPERABLE channel satisfies all requirements of Specification 3.1.2.8.a.
- ACTION 4 With the number of OPERABLE channels one less than the Required Number of Channels shown in Table 3.3-11a, operations may proceed provided that an OPERABLE Steam Generator Wide Range Level channel is available as an alternate means of indication for the Steam Generator with no OPERABLE Auxiliary Feedwater Flow Rate channel.
- ACTION 5 With the number of OPERABLE channels less than the Required Number of Channels shown in Table 3.3-11a, operation may proceed provided that Steam Tables are available in the Control Room and the following Required Channels shown in Table 3.3-11a are OPERABLE to provide an alternate means of calculating Reactor Coolant System subcooling margin:
- a. Reactor Coolant Outlet Temperature -  $T_{HOT}$  (Wide Range)
  - b. Reactor Coolant Pressure (Wide Range)



TABLE 3.3-11a & b (continued)

TABLE NOTATION

- ACTION 6 With the number of OPERABLE channels less than the Minimum Number of channels shown in Table 3.3-11b, restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours.
- ACTION 7 With the number of OPERABLE channels one less than the Required Number of Channels shown in Table 3.3-11a, operation may proceed until the next CHANNEL CALIBRATION (which shall be performed upon the next entry into MODE 5, COLD SHUTDOWN).

TABLE 4.3-11  
SURVEILLANCE REQUIREMENTS FOR  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>CHANNEL CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>
1. Reactor Coolant Outlet Temperature - T HOT (Wide Range)	M	R	NA
2. Reactor Coolant Inlet Temperature - T COLD (Wide Range)	M	R	NA
3. Reactor Coolant Pressure (Wide Range)	M	R	NA
4. Pressurizer Water Level	M	R	NA
5. Steam Line Pressure	M	R	NA
6. Steam Generator Water Level (Narrow Range)	M	R	NA
7. Steam Generator Water Level (Wide Range)	M	R	NA
8. Refueling Water Storage Tank Water Level	M	R	NA
9. Boric Acid Tank Solution Level	M	R	NA
10. Auxiliary Feedwater Flow Rate	SU#	R	NA
11. Reactor Coolant System Subcooling Margin Monitor	M	N/A*	NA

#Auxiliary Feedwater System is used on each startup and flow rate indication is verified at that time.

\*The instruments used to develop RCS subcooling margin are calibrated on an 18 month cycle; the monitor will be compared quarterly with calculated subcooling margin for known input values.

TABLE 4.3-11 (CONTINUED)  
SURVEILLANCE REQUIREMENTS FOR  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>
12. PORV Position Indicator	M	NA	Q
13. PORV Block Valve Position Indicator	M	NA	Q
14. Pressurizer Safety Valve Position Indicator	M	NA	R
15. Containment Pressure - Narrow Range	M	NA	NA
16. Containment Pressure - Wide Range	M	R	NA
17. Containment Water Level - Wide Range	M	R	NA
18. Core Exit Thermocouples	M	R	NA

## INSTRUMENTATION

### RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

---

3.3.3.9 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-13 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the (ODCM).

APPLICABILITY: As shown in Table 3.3-13

#### ACTION:

- a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel or declare the channel inoperable or change the setpoint so it is acceptably conservative.
- b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-13. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next semi-annual radioactive effluent release report why the inoperability was not corrected in a timely manner.
- c. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.3.3.9 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, AND CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-13.

TABLE 3.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABILITY</u>	<u>ACTION</u>
1. WASTE GAS HOLDUP SYSTEM			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (1-R41C)	1	*	31
b. Oxygen Monitor	1	**	35
2. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (1-R41C or 1-R12A)	1	***	34
3. PLANT VENT HEADER SYSTEM#			
a. Noble Gas Activity Monitor (1-R16 or 1-R41C)	1	*	33
b. Iodine Sampler	1	*	36
c. Particulate Sampler	1	*	36
d. Flow Rate Monitor	1	*	32
e. Sampler Flow Rate Monitor	1	*	32

# The following process streams are routed to the plant vent where they are effectively monitored by the instruments described:

- (a) Condenser Air Removal System
- (b) Auxiliary Building Ventilation System
- (c) Fuel Handling Building Ventilation System
- (d) Radwaste Area Ventilation System
- (e) Containment Purges

Action item #34 applies to the purging of the containment only.



TABLE 3.3-13 (Continued)

TABLE NOTATION

ACTION 31 - 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 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 valving lineup;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 32 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 33 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 34 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, immediately suspend PURGING of radioactive effluents via this pathway.

\* At all times, other than when the line is valved out and locked.

\*\* During waste gas holdup system operation.

\*\*\* During containment purges or containment pressure - vacuum reliefs.

TABLE 3.3-13 (Continued)

TABLE NOTATION

- ACTION 35 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, operation of the waste gas holdup system may continue provided grab samples are collected at least once per 24 hours and analyzed within the following 4 hours.
- ACTION 36 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

TABLE 4.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNELS OPERABLE</u>	<u>SOURCE CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. WASTE GAS HOLDUP SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (1-R41C)	P	P	R(3)	Q(1)	*
b. Oxygen Monitor	D	N.A.	Q(4)	M	**
2. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (1-R41C or 1-R12A)	P	P	R(3)	Q(1)	***
3. PLANT VENT HEADER SYSTEM#					
a. Noble Gas Activity Monitor (1-R16 or 1-R41C)	D	M	R(3)	Q(2)	*
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	N.A.	*
e. Sampler Flow Rate Monitor	W	N.A.	R	N.A.	*

# The following process streams are routed to the plant vent where they are effectively monitored by the instruments described:

- (a) Condenser Air Removal System
- (b) Auxiliary Building Ventilation System
- (c) Fuel Handling Building Ventilation System
- (d) Radwaste Area Ventilation System
- (e) Containment Purges

TABLE 4.3-13 (Continued)

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 exist:
  1. Instrument indicates measured levels above the alarm/trip setpoint.
  2. Circuit failure. (Loss of Power)
  3. Instrument indicates a downscale failure. (Alarm Only)
- (2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exist:
  1. Instrument indicates measured levels above the alarm/trip setpoint.
  2. Circuit failure. (Loss of Power)
  3. Instrument indicates a downscale failure.
  4. Instrument controls not set in operate mode.
- (3) The initial CHANNEL CALIBRATION was performed using appropriate liquid or gaseous calibration sources obtained from reputable suppliers. The activity of the calibration sources were reconfirmed using a multi-channel analyzer which was calibrated using one or more NBS standards.
- (4) 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.

\* At all times

\*\* During waste gas holdup system operation.

\*\*\* During containment purge or containment pressure - vacuum relief.



UNIT 2



TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
b. Phase "B" Isolation					
1) Manual	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	18
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
3) Containment Pressure--High-High	4	2	3	1, 2, 3	16
c. Containment Ventilation Isolation					
1) Manual	2	1	2	1, 2, 3, 4	17
2) Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
3) Containment Atmosphere Gaseous Radioactivity-High		per table 3.3-6			
4. STEAM LINE ISOLATION					
a. Manual	2/steam line	1/steam line	1/operating steam line	1, 2, 3	21
b. Automatic Actuation Logic	2	1	2	1, 2, 3	20
c. Containment Pressure--High-High	4	2	3	1, 2, 3	16

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
2. Containment Atmosphere Gaseous Radioactivity		per Table 3.3-6
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure--High-High	$\leq 23.5 \text{ psig}$	$\leq 24 \text{ psig}$
d. Steam Flow in Two Steam Lines -- High Coincident with $T_{avg}$ -- low-low or Steam Line Pressure--low	$< \text{A function defined as follows: A } \Delta p \text{ corresponding to 40\% of full steam flow between 0\% and 20\% load and then a } \Delta p \text{ increasing linearly to a } \Delta p \text{ corresponding to 110\% of full steam flow at full load}$  $T_{avg} \geq 543^{\circ}\text{F}$ $\geq 500 \text{ psig steam line pressure}$	$< \text{A function defined as follows: A } \Delta p \text{ corresponding to 44\% of full steam flow between 0\% and 20\% load and then a } \Delta p \text{ increasing linearly to a } \Delta p \text{ corresponding to 111.5\% of full steam flow at full load}$  $T_{avg} \geq 541^{\circ}\text{F}$ $\geq 480 \text{ psig steam line pressure}$

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION  
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNIT</u>	<u>CHANNELS CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
3. CONTAINMENT ISOLATION				
a. Phase "A" Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) From Safety Injection Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
b. Phase "B" Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Pressure-- High-High	S	R	M(3)	1, 2, 3
c. Containment Ventilation Isolation				
1) Manual	N.A.	N.A.	R	1, 2, 3, 4
2) Automatic Actuation Logic	N.A.	N.A.	M(2)	1, 2, 3, 4
3) Containment Radioactivity -- High	per table 4.3-3			

TABLE 3.3-6  
RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SET POINT	MEASUREMENT RANGE	ACTION
1. AREA MONITORS					
a. Fuel Storage Area - R5/R9	1	*	$\leq 15$ mR/hr	$10^{-1} - 10^4$ mR/h r	23
b. Containment Area - R44	2	1, 2, 3 & 4	$\leq 10^3$ R/hr	1 - $10^7$ R/h r	26
2. PROCESS MONITORS					
a. Containment					
1) Gaseous Activity					
a) Purge & Pressure- Vacuum Relief Isolation - R12a	1#	6 and 1, 2, 3, 4 & 5	$\leq 2 \times$ background per Specification 3.3.3.9	$10^1 - 10^6$ cpm	26
b) RCS Leakage Detection - R12a		1, 2, 3 & 4	N/A	$10^1 - 10^6$ cpm	24
2) Air Particulate Activity					
a) Purge & Pressure Vacuum Relief Isolation - R11a	1	6	$\leq 2 \times$ background	$10^1 - 10^6$ cpm	25
b) RCS Leakage Detection - R11a		1, 2, 3 & 4	N/A	$10^1 - 10^6$ cpm	24
b. Noble Gas Effluent Monitors					
1) Medium Range Auxiliary Building Exhaust System (Plant Vent) - R45B	1	1, 2, 3 & 4	$\leq 3.0 \times 10^{-2}$ uCi/cm <sup>3</sup> (Alarm only)	$10^{-3} - 10^1$ uCi/cm <sup>3</sup>	26
2) High Range Auxiliary Building Exhaust System (Plant Vent) - R45C	1	1, 2, 3 & 4	$\leq 1.0 \times 10^2$ uCi/cm <sup>3</sup> (Alarm only)	$10^{-1} - 10^5$ uCi/cm <sup>3</sup>	26

\*With fuel in the storage pool or building.

#The unit vent sampling monitor (R-41c) may also function in this capacity when the purge/pressure-vacuum relief isolation valves are open.

TABLE 3.3-6 (CONTINUED)  
RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>		<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM/TRIP SETPOINT</u>	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
2. PROCESS MONITORS						
b. Noble Gas Effluent Monitors						
3)	Main Steamline Discharge (Safety Valves and Atmospheric Steam Dumps) - R46	1/ MS Line	1, 2, 3 & 4	10 mR/hr (alarm only)	1 - 10 <sup>4</sup> mR/hr	26
4)	Condenser Exhaust System - R15	1	1, 2, 3 & 4	$\leq 7.12 \times 10^4$ cpm (alarm only)	1 - 10 <sup>6</sup> cpm	26



TABLE 3.3-6 (Continued)

TABLE NOTATION

- ACTION 23 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.
- ACTION 24 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.
- ACTION 25 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.
- ACTION 26 - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements, initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours, and:
- 1) either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or
  - 2) prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.



TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNELS CHECKS</u>	<u>SOURCE CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. AREA MONITORS					
a. Fuel Storage Area - R5/R9	S	M	R	Q	*
b. Containment Area - R44	S	M	R	Q	1, 2, 3 & 4
2. PROCESS MONITORS					
a. Containment Monitors					
1) Gaseous Activity					
a) Purge & Pressure Vacuum Relief Isolation - R12a	S	M	R	Q	1, 2, 3, 4, 5 & 6
b) RCS Leakage Detection - R12a	S	M	R	Q	1, 2, 3 & 4
2) Air Particulate Activity					
a) Purge & Pressure - Vacuum Relief Isolation - R11a	S	M	R	Q	1, 2, 3, 4 & 6
b) RCS Leakage Detection - R11a	S	M	R	Q	1, 2, 3 & 4
b. Noble Gas Effluent Monitors					
1) Medium Range Auxiliary Building Exhaust System (plant vent) - R45B	S	M	R	Q	1, 2, 3 & 4
2) High Range Auxiliary Building Exhaust System (plant vent) - R45C	S	M	R	Q	1, 2, 3 & 4

\*With fuel in the storage pool or building.

TABLE 4.3-3 (CONTINUED)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNELS CHECKS</u>	<u>SOURCE CHECKS</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
2. PROCESS MONITORS					
b. Noble Gas Effluent Monitors					
3) Main Steamline Discharge (Safety valves & atmospheric dumps) - R46	S	M	R	Q	1, 2, 3 & 4
4) Condenser Exh. Sys. - R15	S	M	R	Q	1, 2, 3 & 4

## INSTRUMENTATION

### ACCIDENT MONITORING INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

3.3.3.7 The accident monitoring instrumentation channels shown in Table 3.3-11a and Table 3.3-11b shall be operable.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTION:

- a. As shown in Table 3.3-11a and Table 3.3-11b.
- b. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.3.3.7 Each accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK AND CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-11.

TABLE 3.3-11a

ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>REQUIRED NO. OF CHANNELS</u>	<u>ACTION</u>
1. Reactor Coolant Outlet Temperature - T HOT (Wide Range)	4 (1/loop)	2	1
2. Reactor Coolant Inlet Temperature - T COLD (Wide Range)	4 (1/loop)	2	1
3. Reactor Coolant Pressure (Wide Range)	2	2*	1
4. Pressurizer Water Level	3 (hot)	2	1
5. Steam Line Pressure	3/Steam Generator	2/Steam Generator	1
6. Steam Generator Water Level (Narrow Range)	3/Steam Generator	2/Steam Generator	1
7. Steam Generator Water Level (Wide Range)	4/(1/Steam Generator)	4 (1/Steam Generator)	1
8. Refueling Water Storage Tank Water Level	4	2	1
9. Boric Acid Tank Solution Level	2 (1/tank)	2 (1/tank)	3
10. Auxiliary Feedwater Flow Rate	4 (1/Steam Generator)	4 (1/Steam Generator)	4
11. Reactor Coolant System Subcooling Margin Monitor	2*	2*	5
12. PORV Position Indicator	2/valve**	2/valve**	1

TABLE 3.3-11a (CONTINUED)  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>REQUIRED NO. OF CHANNELS</u>	<u>ACTION</u>
13. PORV Block Valve Position Indicator	2/valve**	2/valve**	1
14. Pressurizer Safety Valve Position Indicator	2/valve**	2/valve**	1
15. Containment Pressure - Narrow Range	4	2	1
16. Containment Pressure - Wide Range	2	2	7
17. Containment Water Level - Wide Range	2	2	7
18. Core Exit Thermocouples	65	4/core quadrant	1

(\*) Total number of channels is considered to be two (2) with one (1) of the channels being manual calculation by licensed control room personnel using data from OPERABLE wide range Reactor Coolant Pressure and Temperature along with Steam Tables as described in ACTION 5.

(\*\*) Total number of channels is considered to be two (2) with one (1) of the channels being any one (1) of the following alternate means of determining PORV, PORV Block, or Safety Valve position: Tailpipe Temperatures for the valves, Pressurizer Relief Tank Temperature Pressurizer Relief Tank Level Operable.



TABLE 3.3-11b  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>MINIMUM NO. OF CHANNELS</u>	<u>ACTION</u>
1. Reactor Coolant Outlet Temperature - T HOT (Wide Range)	4 (1/loop)	1	2
2. Reactor Coolant Inlet Temperature - T COLD (Wide Range)	4 (1/loop)	1	2
3. Reactor Coolant Pressure (Wide Range)	2	1	2
4. Pressurizer Water Level	3 (hot)	1	2
5. Steam Line Pressure	3/Steam Generator	1/Steam Generator	2
6. Steam Generator Water Level (Narrow Range)	3/Steam Generator	1/Steam Generator	2
7. Steam Generator Water Level (Wide Range)	4/(1/Steam Generator)	3 (1/Steam Generator)	2
8. Refueling Water Storage Tank Water Level	4	1	2
9. Boric Acid Tank Solution Level	2 (1/tank)	1 (1/tank)	3
10. Auxiliary Feedwater Flow Rate	4 (1/Steam Generator)	3 (1/Steam Generator)	6
11. Reactor Coolant System Subcooling Margin Monitor	2*	1	6
12. PORV Position Indicator	2/valve**	1	2



TABLE 3.3-11b (CONTINUED)  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>MINIMUM NO. OF CHANNELS</u>	<u>ACTION</u>
13. PORV Block Valve Position Indicator	2/valve**	1	2
14. Pressurizer Safety Valve Position Indicator	2/valve**	1	2
15. Containment Pressure - Narrow Range	4	1	2
16. Containment Pressure - Wide Range	2	1	2
17. Containment Water Level - Wide Range	2	1	2
18. Core Exit Thermocouples	65	2/core quadrant	2

(\*) Total number of channels is considered to be two (2) with one (1) of the channels being manual calculation by licensed control room personnel using data from OPERABLE wide range Reactor Coolant Pressure and Temperature along with Steam Tables as described in ACTION 5.

(\*\*) Total number of channels is considered to be two (2) with one (1) of the channels being any one (1) of the following alternate means of determining PORV, PORV Block, or Safety Valve position: Tailpipe Temperatures for the valves, Pressurizer Relief Tank Temperature Pressurizer Relief Tank Level Operable.

TABLE 3.3-11a & b (continued)

TABLE NOTATION

- ACTION 1 With the number of OPERABLE accident monitoring channels less than the Required Number of Channels shown in Table 3.3-11a, restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours.
- ACTION 2 With the number of OPERABLE accident monitoring channels less than the MINIMUM Number of Channels shown in Table 3.3-11b, restore the inoperable channel(s) to OPERABLE status within 48 hours or be in HOT SHUTDOWN within the next 12 hours.
- ACTION 3 With the number of OPERABLE channels one less than the Required Number of Channels shown in Table 3.3-11a, operation may proceed provided that the Boric Acid Tank associated with the remaining OPERABLE channel satisfies all requirements of Specification 3.1.2.8.a.
- ACTION 4 With the number of OPERABLE channels one less than the Required Number of Channels shown in Table 3.3-11a, operations may proceed provided that an OPERABLE Steam Generator Wide Range Level channel is available as an alternate means of indication for the Steam Generator with no OPERABLE Auxiliary Feedwater Flow Rate channel.
- ACTION 5 With the number of OPERABLE channels less than the Required Number of Channels shown in Table 3.3-11a, operation may proceed provided that Steam Tables are available in the Control Room and the following Required Channels shown in Table 3.3-11a are OPERABLE to provide an alternate means of calculating Reactor Coolant System subcooling margin:
- a. Reactor Coolant Outlet Temperature -  $T_{HOT}$  (Wide Range)
  - b. Reactor Coolant Pressure (Wide Range)

TABLE 3.3-11a & b (continued)

TABLE NOTATION

- ACTION 6 With the number of OPERABLE channels less than the Minimum Number of channels shown in Table 3.3-11b, restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours.
- ACTION 7 With the number of OPERABLE channels one less than the Required Number of Channels shown in Table 3.3-11a, operation may proceed until the next CHANNEL CALIBRATION (which shall be performed upon the next entry into MODE 5, COLD SHUTDOWN).

TABLE 4.3-11  
SURVEILLANCE REQUIREMENTS FOR  
ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	CHANNEL CHECKS	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Reactor Coolant Outlet Temperature - T HOT (Wide Range)	M	R	NA
2. Reactor Coolant Inlet Temperature - T COLD (Wide Range)	M	R	NA
3. Reactor Coolant Pressure (Wide Range)	M	R	NA
4. Pressurizer Water Level	M	R	NA
5. Steam Line Pressure	M	R	NA
6. Steam Generator Water Level (Narrow Range)	M	R	NA
7. Steam Generator Water Level (Wide Range)	M	R	NA
8. Refueling Water Storage Tank Water Level	M	R	NA
9. Boric Acid Tank Solution Level	M	R	NA
10. Auxiliary Feedwater Flow Rate	SU#	R	NA
11. Reactor Coolant System Subcooling Margin Monitor	M	N/A*	NA

#Auxiliary Feedwater System is used on each startup and flow rate indication is verified at that time.

\*The instruments used to develop RCS subcooling margin are calibrated on an 18 month cycle; the monitor will be compared quarterly with calculated subcooling margin for known input values.

TABLE 4.3-11 (CONTINUED)  
SURVEILLANCE REQUIREMENTS FOR  
ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>
12. PORV Position Indicator	M	NA	Q
13. PORV Block Valve Position Indicator	M	NA	Q
14. Pressurizer Safety Valve Position Indicator	M	NA	R
15. Containment Pressure - Narrow Range	M	NA	NA
16. Containment Pressure - Wide Range	M	R	NA
17. Containment Water Level - Wide Range	M	R	NA
18. Core Exit Thermocouples	M	R	NA



## INSTRUMENTATION

### RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

---

3.3.3.9 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-13 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the (ODCM).

APPLICABILITY: As shown in Table 3.3-13

#### ACTION:

- a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel or declare the channel inoperable or change the setpoint so it is acceptably conservative.
- b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-13. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next semi-annual radioactive effluent release report why the inoperability was not corrected in a timely manner.
- c. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.3.3.9 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, AND CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-13.



TABLE 3.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABILITY</u>	<u>ACTION</u>
1. WASTE GAS HOLDUP SYSTEM			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (2-R41C)	1	*	31
b. Oxygen Monitor	1	**	35
2. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF			
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (2-R41C or 2-R12A)	1	***	34
3. PLANT VENT HEADER SYSTEM#			
a. Noble Gas Activity Monitor (2-R16 or 2-R41C)	1	*	33
b. Iodine Sampler	1	*	36
c. Particulate Sampler	1	*	36
d. Flow Rate Monitor	1	*	32
e. Sampler Flow Rate Monitor	1	*	32

# The following process streams are routed to the plant vent where they are effectively monitored by the instruments described:

- (a) Condenser Air Removal System
- (b) Auxiliary Building Ventilation System
- (c) Fuel Handling Building Ventilation System
- (d) Radwaste Area Ventilation System
- (e) Containment Purges

Action item #34 applies to the purging of the containment only.

TABLE 3.3-13 (Continued)

TABLE NOTATION

ACTION 31 - 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 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 valving lineup;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 32 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 33 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 34 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, immediately suspend PURGING of radioactive effluents via this pathway.

\* At all times, other than when the line is valved out and locked.

\*\* During waste gas holdup system operation.

\*\*\* During containment purges or containment pressure - vacuum reliefs.

TABLE 3.3-13 (Continued)

TABLE NOTATION

- ACTION 35 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, operation of the waste gas holdup system may continue provided grab samples are collected at least once per 24 hours and analyzed within the following 4 hours.
- ACTION 36 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

TABLE 4.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNELS OPERABLE</u>	<u>SOURCE CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. WASTE GAS HOLDUP SYSTEM					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (2-R41C)	P	P	R(3)	Q(1)	*
b. Oxygen Monitor	D	N.A.	Q(4)	M	**
2. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (2-R41C or 2-R12A)	P	P	R(3)	Q(1)	***
3. PLANT VENT HEADER SYSTEM#					
a. Noble Gas Activity Monitor (2-R16 or 2-R41C)	D	M	R(3)	Q(2)	*
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	N.A.	*
e. Sampler Flow Rate Monitor	W	N.A.	R	N.A.	*

# The following process streams are routed to the plant vent where they are effectively monitored by the instruments described:

- (a) Condenser Air Removal System
- (b) Auxiliary Building Ventilation System
- (c) Fuel Handling Building Ventilation System
- (d) Radwaste Area Ventilation System
- (e) Containment Purges

TABLE 4.3-13 (Continued)

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 exist:
  1. Instrument indicates measured levels above the alarm/trip setpoint.
  2. Circuit failure. (Loss of Power)
  3. Instrument indicates a downscale failure. (Alarm Only)
- (2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exist:
  1. Instrument indicates measured levels above the alarm/trip setpoint.
  2. Circuit failure. (Loss of Power)
  3. Instrument indicates a downscale failure.
  4. Instrument controls not set in operate mode.
- (3) The initial CHANNEL CALIBRATION was performed using appropriate liquid or gaseous calibration sources obtained from reputable suppliers. The activity of the calibration sources were reconfirmed using a multi-channel analyzer which was calibrated using one or more NBS standards.
- (4) 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.

\* At all times

\*\* During waste gas holdup system operation..

\*\*\* During containment purge or containment pressure - vacuum reliefs.