TABLE 1.2

FREQUENCY NOTATION*

NOTATION	FREQUENCY
S	Shiftly (once per 12 hours)
D	Daily (once per 24 hours)
T/W	Twice per week (once per 84 hours)
W	Weekly (once per 7 days)
BW	Every two weeks (once per 14 days)
M	Monthly (once per 31 days)
BM	Every two months (once every 62 days)
Q	Quarterly (once per 92 days)
SA	Semi-annually (once per 184 days)
R	Refueling interval (once per 18 months)
S/U	Prior to each reactor startup
P	Completed Prior to each release
N/A	Not applicable

*Each Surveillance Requirement shall be performed within the specified time interval with:

1. A maximum allowable extension not to exceed 25% of the surveillance interval, and

2. A total maximum combined interval for any 3 consecutive tests not to exceed 3.25 times the specified surveillance interval.

INSTRUMENTATION

RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.8 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3-11 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.1.1 are not exceeded. The ALARM/TRIP setpoints of these channels shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM).

APPLICABILITY: At all times*

ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, immediately suspend the release of radioactive liquid effluents monitored by the affected channel or declare the channel inoperable.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels operable, take the ACTION shown in Table 3.3-11.

SURVEILLANCE REQUIREMENTS

4.3.3.8.1 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL TEST operations during the MODES and at the frequencies shown in Table 4.3-11.

*For RM-L6, and FT-84 operability is not required when discharges are positively controlled through the closure of WDL-V 257, and RM-L7 is operable.

TABLE 4.3-11

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL TEST
1. Radioactivity Monitors Providing Alarm and Automatic Isolation				
a. Unit 1 Liquid Radwaste Effluents Line (RM-L6)	D	P	R(3)	Q(1)
2. Flow Rate Monitors				
a. Unit 1 Liquid Radwaste Effluent Line (FT-84)	D(4)	N/A	R	Q
b. Station Effluent Discharge (FT-146)	D(4)	N/A	R	Q
3. Gross Beta or Gamma Radioactivity Monitors Providing Alarm but not Providing Automatic Termination of Release				
a. Station Effluent Line (RM-L7)	D	M	R(3)	Q(2)

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TMI-1

TABLE 4.3-11
(Continued)

TABLE NOTATION

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

1. Instrument indicates measured levels above the high alarm/trip setpoint. (Includes - circuit failure)

2. Instrument indicates a down scale failure. (Alarm function only.) (Includes - circuit failure)

3. Instrument controls moved from the operate mode (Alarm function only).

(2) The CHANNEL 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 setpoint. (Includes circuit failure).

2. Instrument indicates a down scale failure (Includes - circuit failure).

3. Instrument controls moved from the operate mode.

(3) The initial CHANNEL CALIBRATION for radioactivity measurement instrumentation 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 should 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 should be used. (Operating plants may substitute previously established calibration procedures for this requirement)

(4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once daily on any day on which continuous, periodic, or batch releases are made.

RADIOACTIVE GASEOUS PROCESS AND EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.9 The radioactive gaseous process and effluent monitoring instrumentation channels shown in Table 3.3-12 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 3.3-12.

ACTION:

a. With a radioactive gaseous process or effluent monitoring instrumentation channel alarm trip setpoint less conservative than required by the above, immediately suspend the release of radioactive effluents monitored by affected channel or declare the channel inoperable.

b. With less than the minimum number of radioactive gaseous process or effluent monitoring instrumentation channels operable, take the ACTION shown in Table 3.3-12.

SURVEILLANCE REQUIREMENTS

4.3.3.9.1 Each radioactive gaseous process or effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL TEST operations at the frequencies shown in Table 4.3.12.

TABLE 3.3-12
(Continued)

TABLE NOTATION

*At all times.
**During waste gas holdup system operation.
***Operability is not required when discharges are positively controlled through the closure of WDG-V47 and RM-AS and FT-151 are operable.

ACTION 25 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank may be released to the environment for up to 14 days provided that prior to initiating the release:

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

2. At least two technically qualified members of the unit staff independently verify the release rate calculations and verify the discharge valve lineup.

3. The Manager Unit 1 shall approve each release.

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 26 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 28 days provided the flow rate is estimated at least once per 4 hours.

ACTION 27 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 28 days provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 30 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 both channels inoperable, be in at least HOT STANDBY within 6 hours.

ACTION 31 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 28 days, provided that within 4 hours after the channels have been declared inoperable samples are continuously collected with auxiliary sampling equipment.

TABLE 4.3-12

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNELS CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL TEST	APPLICABILITY
1. Waste Gas Holdup System (RM-A7)					
a. Noble Gas Activity Monitor	P	P	R(3)	Q(1)	* ** *
b. System Effluent Flow Rate Measuring Device	P	N/A	R	Q	* ** *
2. Waste Gas Holdup System Explosive Gas Monitoring System					
a. Hydrogen Monitor	D	N/A	Q(4)	M	**
b. Oxygen Monitor	D	N/A	Q(5)	M	**

TABLE 4.3-12 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNELS CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL TEST	APPLICABILITY
3. Containment Purge Vent System					
a. Noble Gas Activity Monitor (RM-A9)	D	P	R(3)	M(1)	*
b. Iodine Sampler (RM-A9)	W	N	N/A	N/A	*
c. Particulate Sampler (RM-A9)	W	N/A	N/A	N/A	*
d. System Effluent Flow Rate Measuring Device	D	N/A	R	Q	*
e. Sampler Flow Rate Monitor	D	N/A	R	N/A	*

TABLE 4.3-12 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNELS CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL TEST	APPLICABILITY
4. Condenser Vent System					
a. Noble Gas Activity Monitor (RM-A5)	D	M	R(3)	Q(2)	*

TABLE 4.3-12 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNELS CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL TEST	APPLICABILITY
5. Auxiliary and Fuel Handling Building Ventilation System					
a. Noble Gas Activity Monitor (RM-A8) or (RM-A4 or RM-A6)	D	M	R(3)	Q(1)	*
b. Iodine Sampler (RM-A8) or (RM-A4 and RM-A6)	W	N/A	N/A	N/A	*
c. Particulate Sampler (RM-A8)or (RM-A4 and RM-A6)	W	N/A	N/A	N/A	*
d. System Effluent Flow Rate Measurement Devices	D	N/A	R	Q	*
e. Sampler Flow Rate Measurement Device	D	N/A	R	Q	*

TABLE 4.3-12
(Continued)

TABLE NOTATION

*At all times.
**During waste gas holdup system operation.
***Operability is not required when discharges are positively controlled through the closure of WDG-V47 and RM-A8 and FT-151 are operable.

(1) The CHANNEL .. TEST shall also demonstrate that automatic isolation of this pathway (for the Auxiliary and Fuel Handling Buildings only supply ventilation is isolated) and the Control Room alarm annunciation occurs if the following condition exists:

1. Instrument indicates measured levels above the high alarm setpoint (Includes circuit failure).

2. Instrument indicates a downscale failure. (Alarm function only) (Includes circuit failure).

3. Instrument controls moved from the operate mode. (Alarm function only)

(2) The CHANNEL 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 setpoint. (Includes circuit failure)

2. Instrument indicates a downscale failure. (Includes circuit failure)

3. Instrument controls moved from the operate mode.

(3) The initial CHANNEL CALIBRATION for radioactivity measurement instrumentation 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 should 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 should be used. (Operating plants may substitute previously established calibration procedures for this requirement)

(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.

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) (uCi/ml)[a]
A.1 Batch Waste Release Tanks[d]	P Each batch	P Each batch	H-3	1×10^{-5}
			Principal Gamma Emitters[g,f]	5×10^{-7}
			I-131	1×10^{-6}
	P One Batch/M	M	Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-4}
	P Each Batch	Q Composite[c]	Gross Beta[g]	5×10^{-8}
			Gross alpha	1×10^{-7}
			P-32	1×10^{-6}
			Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
A.2 Continuous Releases (RML-7)[e]	Continuous[c]	W Composite[c]	Principal Gamma Emitters[g,f]	5×10^{-7}
			I-131	1×10^{-6}
	M GRAB Sample	M	Dissolved and Entrained Gases (gamma emitters)	1×10^{-5}
	Continuous[c]	M Composite[c]	H-3	1×10^{-5}
			Gross alpha	1×10^{-7}
	Continuous[c]	Q Composite[c]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
			P-32	1×10^{-6}

TABLE 4.11-1 (Continued)

TABLE NOTATION

a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability with 5% uncertainty. (probability of falsely concluding that a blank observation represents a "real" signal).

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ s_b}{E \times V \times 2.22 \times 10^6 \times Y \times \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above (as microcurie per unit mass or volume),

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),

E is the counting efficiency (as counts per transformation),

V is the sample size (in units of mass or volume),

2.22×10^6 is the number of transformations per minute per microcurie,

Y is the fractional radiochemical yield (when applicable),

λ is the radioactive decay constant for the particular radionuclide, and

Δt is the elapsed time between midpoint of sample collection and time of counting (for plant effluents, not environmental samples).

The value of s_b used in the calculation of LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. Typical values of E, V, Y, and Δt shall be used in the calculation.

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.

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) (uCi/ml)[a]
A. Waste Gas Storage Tank	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters[g]	1×10^{-4}
B. Containment Purge	P Each Purge[b] Grab Sample	P Each Purge[b]	Principal Gamma Emitters[g]	1×10^{-4}
			H-3	1×10^{-6}
C. Auxiliary and Fuel Handling Building Ventilation	M[b,c,e] Grab Sample	M[b]	Principal Gamma Emitters[g]	1×10^{-4}
			H-3	1×10^{-6}
D. All Release Type as listed in A, B, C above.	Continuous[f]	W[d] Charcoal Sample	I-131	1×10^{-12}
			I-133	1×10^{-10}
	Continuous[f]	W[d] Particulate	Principal Gamma Emitters[g] (I-131, Others)	1×10^{-11}
	Continuous[f]	Q Composite Particulate Sample	Gross alpha	1×10^{-11}
	Continuous[f]	Q Composite Particulate Sample	Sr-89 , Sr-90	1×10^{-11}
E. Condenser vacuum Pumps Exhaust[h]	M[h,b] Grab sample	M[o,h]	Principal Gamma Emitters[g]	1×10^{-4}
			H-3	1×10^{-6}

TABLE 4.11-2 (Continued)

TABLE NOTATION

d. Samples shall be changed weekly and analyses shall be completed within 48 hours after changing (or after removal from sampler).

e. Tritium grab samples shall be taken weekly 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 steam 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 emmissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, 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 measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses shall be reported as "less than" the nuclide's LLD and shall not be reported as being present at the LLD level for that nulcide. The "less than" values shall not be used in the required dose calculations.

h. Applicable only when condenser vacuum is established. Sampling and analyses shall be performed within 4 hours following each shutdown, startup, or thermal power level change exceeding 15% of RATED THERMAL POWER in one hour.

This specification applies to the release of liquid effluents from each reactor at the site.

3/4.11.1.3 LIQUID WASTE TREATMENT

The use of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents need treatment prior to release to the environment. The appropriate portions of this system provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable." This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and design objective Section II.D of Appendix A to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the guide set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents...

3/4.11.1.4 LIQUID HOLDUP TANKS

Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20, Appendix B, Table II, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area.

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE

The specification is provided to ensure that the release rate at anytime at the site boundary from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR Part 20 for unrestricted areas. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an Individual in an unrestricted area, either within or outside the site boundary, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20 Part 20.106(b)). For individuals who may at times be within the site boundary, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the exclusion area boundary to $\leq$ 500mrem/year to the total body or to $\leq$ 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk infant pathway to $\leq$ 1500 mrem/year for the nearest cow to the plant.

This specification applies to the release of gaseous effluents from all reactors at the site.

3/4.11.2.2 DOSE, NOBLE GASES

This specification is provided to implement the requirements of Sections II.B, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.B of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conform with the guides of Appendix I to be shown by calculational procedures based on models and data such that the actual exposure of an individual through the appropriate pathways is unlikely to be substantially underestimated. The dose calculations established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the air doses at the site boundary will be based upon the historical average atmospheric conditions. NUREG - 0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.111.

3/4.11.2.3 DOSE, RADIOIODINES, RADIOACTIVE MATERIAL IN PARTICULATE FORM AND RADIONUCLIDES OTHER THAN NOBLE GASES

This specification is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methods approved by NRC for calculating the doses due to the actual release rates of the subject materials are required to be consistent with the methodology provided in Regulatory Guide 1.109, "Calculating of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT [3/]

6.9.4.1 Routine radiological environmental operating reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year.

6.9.4.2 The annual radiological environmental operating reports shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of the land use censuses required by Specification 3.12.2. If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.

The annual radiological environmental operating reports shall include summarized and tabulated results in the format of the Radiological Assessment Branch Technical Position of November 1978 on the "Radiological Environmental Monitoring Program" for all radiological environmental samples taken during the report period. In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; a map of all sampling locations keyed to a table giving distances and directions from one reactor; and the results of licensee participation in the Interlaboratory Comparison Program, required by Specification 3.12.3.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT [3/]

6.9.5.1 Routine radioactive effluent release reports covering the operation of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year.

3/ A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors", Revision 1, July 1977. These equations also provide for or determine the actual doses based upon the historical average atmospheric conditions. The release rate specifications for radioiodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man, in the unrestricted area. The pathways which are examined in the development of these calculations are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

3/4.11.2.4 GASEOUS WASTE TREATMENT

The operability of the gaseous radwaste treatment system and the ventilation exhaust treatment system ensure that the systems will be available for use whenever gaseous effluents require treatment prior to release to the environment. The appropriate portions of this system provide reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonable achievable." This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and design objective Section IID of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the guide set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4.11.2.5 EXPLOSIVE GAS MIXTURE

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas holdup system is maintained below the flammability limits of hydrogen and oxygen. Maintaining the concentration of hydrogen and oxygen below their flammability limits provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 Appendix A to 10 CFR Part 50.

3/4.11.2.7 GAS STORAGE TANKS

Restricting the quantity of radioactivity contained in each gas storage tank provides assurance that in the event of an uncontrolled release of the tanks contents, the resulting total body exposure to an individual at the nearest exclusion area boundary will not exceed 0.5 rem. This is consistent with Standard Review Plan 15.7.1, "Waste Gas System Failure."

3/4.11.3 SOLID RADIOACTIVE WASTE

The operability of the Solid Radwaste System ensures that the system will be available for use whenever solid radwastes need processing and packaging prior to being shipped offsite. This specification implements the requirements of 10 CFR Part 50.36a.

TABLE 4.1-1
INSTRUMENT SURVEILLANCE REQUIREMENTS

	CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
1.	Protection Channel Coincidence Logic	NA	M	NA	
2.	Control Rod Drive Trip Breaker	NA	M	NA	
3.	Power Range Amplifier	D(1)	NA	(2)	(1) When reactor power is greater than 15%. (2) When above 15% reactor power run a heat balance check once per shift. Heat balance calibration shall be performed whenever heat balance exceeds indicated neutron power by more than two percent.
4.	Power Range Channel	S	M	M(1)(2)	(1) When reactor power is greater than 60% verify imbalance using incore instrumentation. (2) When above 15% reactor power calculate axial offset upper and lower chambers after each startup if not done within the previous seven days.
5.	Intermediate Range Channel	S(1)	SU	NA	(1) When in service
6.	Source Range Channel	S(1)	SU	NA	(1) When in service
7.	Reactor Coolant Temperature Channel	S	M	R	
8.	High Reactor Coolant Pressure Channel	S	M	R	
9.	Low Reactor Coolant Pressure Channel	S	M	R	

TABLE 4.1-1 (Continued)

	CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
38.	Steam Generator Water Level	W	NA	R	
39.	Turbine Overspeed Trip	NA	R	NA	
40.	Sodium Thiosulfate Tank Level Indicator	NA	NA	R	
41.	Sodium Hydroxide Tank Level Indicator	NA	NA	R	
42.	Diesel Generator Protective Relaying	NA	NA	R	
43.	4 KV ES Bus Undervoltage Relays (Diesel Start)	NA	M(1)	R	(1) Relay operation will be checked by local test pushbuttons.
44.	Reactor Coolant Pressure DH Valve Interlock Bistable	S(1)	M	R	(1) When reactor coolant system is pressurized above 300 psig or Tavee is greater than 200°F.

S - Each Shift

D - Daily

W - Weekly

M - Monthly

T/W - Twice per week

B/M - Every 2 months

Q - Quarterly

SU - Prior to each startup if not done previous week

R - Each Refueling Period

NA - Not Applicable

B/W - Every two weeks