3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.1 Liquid Effluents Concentration

TRO 3.11.1.1 The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (See FSAR Section 2.1.1.3) shall be limited to 10 times the concentrations specified in Appendix B, Table 2, Column 2 to 10CFR 20.1001-20.2402 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 µCi/ml total activity.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (See FSAR Section 2.1.1.3) exceeds the limits specified in TRO 3.11.1.1	A1. Restore the concentration to within the above limits	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE		FREQUENCY
TRS 3.11.1.1.1	The radioactivity content of each batch of radioactive liquid waste shall be determined by sampling and analysis in accordance with Table 3.11.1.1-1. The results of pre-release analyses shall be used with the calculational methods and parameters in the ODCM to assure that the concentration at the point of release is maintained within the limits of TRO 3.11.1.1	Prior to each release
TRS 3.11.1.1.2	Post release analyses of samples composited from batch releases shall be performed in accordance with Table 3.11.1.1-1. The results of the previous post-release analyses shall be used with the calculational methods and parameters in the ODCM to assure that the concentrations at the point of release were maintained within the limits of TRO 3.11.1.1	According to the ODCM

TABLE 3.11.1.1-1
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)
Batch Waste Release Tanks	Prior to Release Each Batch	Prior to release Each Batch	Principal Gamma Emitters	5E-7
			I-131	1E-6
	Prior to Release One Batch per month	31 days	Dissolved and Entrained Gases (Gamma Emitters)	1E-5
	Prior to Release Each Batch	31 days Composite[a]	H-3	1E-5
			Gross Alpha	1E-7
	Prior to Release Each Batch	92 days Composite[a]	Sr-89, Sr-90	5E-8
			Fe-55	1E-6

[a] Minimum frequency for initiation of required analysis.

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.2 Liquid Effluents Dose

TRO 3.11.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released from each reactor unit UNRESTRICTED AREAS shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ.

AND

b. During any calendar year to less than or equal to 3.0 mrems to the total body and to less than or equal to 10 mrems to any organ.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits	A1. Prepare and submit a Special Report to the Commission	Within 30 days

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.1.2.1 Determine cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year in accordance with methodology and parameters in the ODCM	31 days

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.3 Liquid Waste Treatment System

TRO 3.11.1.3 The appropriate portions of the Liquid Radwaste Treatment System, as described in the ODCM, shall be OPERABLE. Appropriate portions of the Liquid Waste Treatment System shall be used to reduce the radioactive materials in liquid effluent, prior to their discharge, when projected doses due to liquid effluent releases from each reactor unit to UNRESTRICTED AREAS would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31 day period.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Liquid effluent releases being discharged without treatment and in excess of the TRO limit.	A1. Prepare and submit a Special Report to the Commission	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

	SURVEILLANCE	FREQUENCY
TRS 3.11.1.3.1	Project doses due to liquid releases from each reactor unit to the UNRESTRICTED AREAS in accordance with the methodology and parameters in the ODCM.	31 days
TRS 3.11.1.3.2	----------NOTE---------- Not required to be performed if the liquid radwaste system has been utilized to process radioactive liquid during the previous 92 days ---------- Demonstrate the Liquid Radwaste (LRW) Treatment System OPERABLE by operating LRW Treatment System equipment for at least 10 minutes.	92 days

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.4 Liquid Radwaste Effluent Monitoring Instrumentation

TRO 3.11.1.4 The Radioactive Liquid Radwaste Effluent Monitoring Instrumentation channels shown in Table 3.11.1.4-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of TRO 3.11.1.1.

APPLICABILITY: At all times.

ACTIONS

---NOTE---

1. Separate condition entry is allowed for each channel
2. The provisions of TRO 3.0.4 are not applicable

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more radioactive liquid effluent monitoring instrumentation alarm/trip channels setpoint less conservative than the limits allowed by TRO 3.11.1.1	A.1 Suspend the release of radioactive liquid effluents monitored by the affected channel OR A.2 Declare the channel inoperable	Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Liquid Radwaste releases are necessary and Effluent Line Gross Radioactivity Monitoring Instrumentation inoperable.	B.1 Analyze at least two independent samples in accordance with TRO 3.11.1.1 AND B.2 Independently determine release rates for samples analyzed per Action B.1 AND B.3 Perform and independently verify discharge valve lineup AND B.4 Restore monitoring instrumentation	Prior to initiating each release. Prior to initiating each release. Prior to initiating each release. 14 days
C. Liquid Radwaste releases are not in progress and the Gross Radioactivity Monitoring instrumentation is inoperable because the inoperable channel is caused by a discharge valve interlock in an off-normal condition or not functioning.	C.1 Maintain at least one isolation valve closed between each source of release and the liquid radwaste discharge valve.	Within 1 hour of securing from release or discovery of inoperable instrument.

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Liquid Radwaste releases are necessary and Effluent Line or Cooling Tower Blowdown Flow Monitoring Instrumentation inoperable.	D.1 Estimate Flow Rate. AND D.2 Restore Monitoring Instrumentation.	Once per 4 hours during releases. 30 days
E. Liquid Radwaste releases are not in progress and cooling tower blowdown flow monitoring instrumentation is inoperable because the inoperable channel is a discharge valve interlock in an off-normal condition or not functioning.	E.1 Maintain at least one isolation valve closed between each source of release and the liquid radwaste discharge valve.	Within 1 hour of securing release or discovery of inoperable instrument.
F. Required Action and Associated Completion Time of Conditions B, C, D, or E not met.	F.1 --------NOTE---------- Only applicable to Condition B ---------- Suspend release of radioactive effluents via this pathway AND F.2 Explain why the inoperability was not corrected in a timely manner	Immediately In the next Annual Radioactive Effluent Release Report per TS Section 5.6

TECHNICAL REQUIREMENT SURVEILLANCE

----------NOTE----------

Refer to Table 3.11.1.4-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.1.4.1	Perform CHANNEL CHECK.	24 hours
TRS 3.11.1.4.2	Perform CHANNEL CHECK including a source check.	Prior to commencing release
TRS 3.11.1.4.3	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.1.4.4	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.1.4-1
LIQUID RADWASTE EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. GROSS RADIOACTIVITY MONITORS PROVIDING AUTOMATIC TERMINATION OF RELEASE		
a. Liquid Radwaste Effluent Line	1	TRS 3.11.1.4.2 TRS 3.11.1.4.3 TRS 3.11.1.4.4
2. FLOW RATE MEASUREMENT DEVICES		
a. Liquid Radwaste Effluent Line	1	TRS 3.11.1.4.1[a] TRS 3.11.1.4.3 TRS 3.11.1.4.4
b. Cooling Tower Blowdown	1	TRS 3.11.1.4.1[a] TRS 3.11.1.4.3 TRS 3.11.1.4.4

[a] Only required when performing batch releases.

3.11 Radioactive Effluents

3.11.1 Liquid Effluents

3.11.1.5 Radioactive Liquid Process Monitoring Instrumentation

TRO 3.11.1.5 The Radioactive Liquid Process Monitoring Instrumentation channels shown in Table 3.11.1.5-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure the alarm will occur prior to exceeding the limits of TRO 3.11.1.1.

APPLICABILITY: As specified in Table 3.11.1.5-1.

ACTIONS

----------NOTE----------
1. Separate condition entry is allowed for each channel
2. The provisions of TRO 3.0.4 are not applicable

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Radioactive Liquid Process Monitoring Instrumentation alarm/trip channels setpoint less conservative than the limits allowed by TRO 3.11.1.1.	A.1 Suspend the release of liquid effluents monitored by the affected channel OR A.2 Declare the channel inoperable	Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Radioactive Liquid Process Monitoring Instrumentation otherwise inoperable.	B.1.1 Suspend the release of liquid effluents monitored by the affected channel. OR B.1.2 Analyze grab samples for isotopic activity to the required LLDs for liquid effluents (Table 3.11.1.1-1). AND B.2 Restore monitoring instrumentation	Immediately Once per 8 hours when the associated pathway is in service 30 days
C. Required Action and Associated Completion Time of Conditions B not met.	C.1 Explain why the inoperability was not corrected in a timely manner	In the next Annual Radioactive Effluent Release Report per TS Section 5.6
D. RHR Heat Exchanger to be drained to the spray pond.	D.1 Analyze grab samples from the RHR Heat Exchanger for isotopic activity to the required LLDs for liquid effluents (Table 3.11.1.1-1).	Prior to draining RHR Heat Exchanger to the spray pond.

TECHNICAL REQUIREMENT SURVEILLANCE

----------NOTE----------

Refer to Table 3.11.1.5-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.1.5.1	Perform CHANNEL CHECK.	24 hours
TRS 3.11.1.5.2	Perform a Source Check	31 days
TRS 3.11.1.5.3	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.1.5.4	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.1.5-1
RADIOACTIVE LIQUID PROCESS MONITORING INSTRUMENTATION

FUNCTION	REQUIRED CHANNELS	APPLICABILITY	SURVEILLANCE REQUIREMENTS
GROSS RADIOACTIVITY MONITORS NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE			
1. Service Water System Effluent Line	1	(a)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4
2. Supplemental Decay Heat Removal Service Water	1	(a)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4
3. RHR Service Water System Effluent Line.	1/Loop	(b)	TRS 3.11.1.5.1 TRS 3.11.1.5.2 TRS 3.11.1.5.3 TRS 3.11.1.5.4

(a) System aligned through Fuel Pool Cooling Heat Exchanger. Alignment change between Service Water System Effluent Line and Supplemental Decay Heat Removal Service Water is not considered to be a change in the applicable condition.

(b) At all times

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.1 Dose Rate

TRO 3.11.2.1 The dose rate due to radioactive materials released in gaseous effluents to areas at and beyond the SITE BOUNDARY (See FSAR Section 2.1.1.3) shall be limited to the following:

I. For Noble Gases:

A. Less than or equal to 500 mrems/yr to the total body, and

B. Less than or equal to 3000 mrems/yr to the skin

AND

II. For iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives greater than 8 days

A. Less than or equal to 1500 mrem/yr to any organ (Inhalation pathways only.)

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Dose rate(s) exceed the above limits	A.1 Restore the release rate to within the above limits	Immediately

TECHNICAL REQUIREMENT SURVEILLANCE

	SURVEILLANCE	FREQUENCY
TRS 3.11.2.1.1	Determine the dose rate due to noble gases in gaseous effluents.	See ODCM
TRS 3.11.2.1.2	The dose rate due to iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the limits in accordance with the methodology and parameters of the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 3.11.2.1-1	See Table 3.11.2.1-1

TABLE 3.11.2.1-1
RADIOACTIVE GASEOUS EFFLUENT SAMPLING AND ANALYSIS

Gaseous Release Type	Sampling Method and Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml)
A. Containment Purge	Prior to each purge Grab Sample	Prior to each purge	Principal Noble Gas Gamma Emitters	1E-4
			H-3	1E-6
B. Reactor Building Vents, Turbine Building Vents, and SGTS	31 days[a] Grab Sample	31 days[a]	Principal Noble Gas Gamma Emitters	1E-4
			H-3	1E-6
	Continuous[b] Iodine Cartridge Sample	7 days[c]	I-131	1E-12
			I-133	1E-10
	Continuous[b] Particulate sample	7 days[c]	Principal Particulate Gamma Emitters I-131	1E-11
	Continuous[b] Particulate Sample	92 days Composite[d]	Gross Alpha	1E-11
	Continuous[b] Particulate sample	92 days Composite[d]	Sr-89, Sr-90	1E-11
	Continuous[b]	Noble Gas Monitor	Noble Gases, Gross Beta or Gamma	1E-6 (Xe-133 equivalent)

[a] If the iodine or particulate monitoring channel(s) is (are) inoperative, noble gas analyses shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15% of the RATED THERMAL POWER within a 1-hour period.

[b] 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 TROs 3.11.2.1, 3.11.2.2, and 3.11.2.3.

[c] 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. If the iodine or particulate monitoring channel(s) is (are) inoperative, 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% of RATED THERMAL POWER in 1 hour, and analyses completed within 48 hours of changing. When samples collected for ≤ 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10.

[d] Minimum frequency for initiation of required analysis.

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.2 Dose - Noble Gases

TRO 3.11.2.2 The air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at and beyond the SITE BOUNDARY (See FSAR Section 2.1.1.3) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation, and

b. During any calendar year: Less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The calculated air dose exceeds the limits.	A.1 Prepare and submit a Special Report to the Commission	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.2.2.1 Determine the cumulative dose contributions for the current calendar quarter and current calendar year for these sources in accordance with the methodology and parameters in the ODCM	31 days

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.3 Dose - Iodine, Tritium, and Radionuclides in Particulate Form

TRO 3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY shall be limited to the following:

a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ and,

b. During any calendar year: Less than or equal to 15 mrems to any organ.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The calculated dose from the release exceeds the limits.	A.1 Prepare and submit a Special Report to the Commission.	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.2.3.1 Determine the cumulative dose contributions for the current calendar quarter and current calendar year for these sources in accordance with the methodology and parameters in the ODCM.	31 days

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

TRO 3.11.2.4 The GASEOUS RADWASTE TREATMENT SYSTEM shall be OPERABLE and in operation.

APPLICABILITY: When the main condenser air ejector (evacuation) system is in operation.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. GASEOUS RADWASTE TREATMENT SYSTEM inoperable.	A.1 Restore GASEOUS RADWASTE TREATMENT SYSTEM to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Prepare and submit a Special Report to the Commission.	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.2.4.1 Verify GASEOUS RADWASTE TREATMENT SYSTEM to be in operation.	92 days

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

TRO 3.11.2.5 The appropriate portions of the VENTILATION EXHAUST TREATMENT SYSTEM, as described in the Offsite Dose Calculation Manual (ODCM), shall be OPERABLE.

---NOTE---
Appropriate portions of the VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when projected doses due to gaseous effluent releases from either reactor unit to areas at and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ in a 31 day period.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. VENTILATION EXHAUST TREATMENT SYSTEM inoperable.	A.1 Restore VENTILATION EXHAUST TREATMENT SYSTEM to OPERABLE status.	31 days
B. Required Action and Associated Completion Time of Condition A not met. OR Gaseous waste being discharged without treatment and in excess of TRO limits.	B.1 Prepare and submit a Special Report to the Commission.	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

	SURVEILLANCE	FREQUENCY
TRS 3.11.2.5.1	Perform dose projection due to gaseous releases from each reactor unit to areas at and beyond the SITE BOUNDARY in accordance with the methodology and parameters in the ODCM.	31 days
TRS 3.11.2.5.2	----------NOTE---------- Not required if the appropriate system has been utilized to process radioactive gaseous effluents during the previous 92 days. ---------- Verify VENTILATION EXHAUST TREATMENT SYSTEM is OPERABLE by operating the system ≥ 10 minutes.	92 days

3.11 Radioactive Effluents

3.11.2 Gaseous Effluents

3.11.2.6 Radioactive Gaseous Effluent Monitoring Instrumentation

TRO 3.11.2.6 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.11.2.6-1 shall be OPERABLE with their setpoints established in accordance with the ODCM to ensure that the limits of Requirement 3.11.2.1 are not exceeded.

APPLICABILITY: According to Table 3.11.2.6-1

ACTIONS

----------NOTE----------
1. Separate condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required to ensure that the limits of Requirement 3.11.2.1 are not exceeded	A.1 Suspend the release of radioactive gaseous effluents monitored by the affected channel OR A.2 Declare the channel inoperable	Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Reactor Building Ventilation System Noble Gas Activity Monitor low range channel inoperable	B.1 Take grab samples AND B.2 Analyze grab samples for isotopic activity to the required LLDs for principal noble gas gamma emitters (Table 3.11.2.1-1) AND B.3 Restore monitoring instrumentation.	Once per 8 hours while release is in progress. Within 24 hours of grab sample 30 days
C. Reactor Building Ventilation System Iodine Monitor or Particulate Monitor inoperable	C.1 Ensure samples are collected with auxiliary sampling equipment as required by Table 3.11.2.1-1 AND C.2 Restore monitoring instrumentation	Continuously while release is in progress. 30 days
D. Reactor Building Ventilation Monitoring System Effluent System Flow Rate Monitor or Sampler Flow Rate Monitor inoperable	D.1 Estimate flow rate. AND D.2 Restore monitoring instrumentation.	Once per 4 hours while release is in progress 30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Turbine Building Ventilation System Noble Gas Activity Monitor low range channel inoperable	E.1 Verify mechanical vacuum pump is not in operation. AND E.2 Take grab samples. AND E.3 Analyze grab samples for isotopic activity to the required LLDs for principal noble gas gamma emitters (Table 3.11.2.1-1). AND E.4 Restore monitoring instrumentation	Immediately Once per 8 hours while release is in progress Within 24 hours after sample 30 days
F. Turbine Building Ventilation System Iodine Monitor or Particulate Monitor inoperable	F.1 Ensure samples are collected with auxiliary sampling equipment as required by Table 3.11.2.1-1 AND F.2 Restore monitoring instrumentation	Continuously while release is in progress 30 days
G. Turbine Building Ventilation Monitoring System Effluent System Flow Rate Monitor or Sampler Flow Rate Monitor inoperable	G.1 Estimate flow rate. AND G.2 Restore monitoring instrumentation	Once per 4 hours while release is in progress. 30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Standby Gas Treatment System Noble Gas Activity Monitor low range channel inoperable	H.1 Take grab samples. AND	Once per 4 hours while release is in progress.
	H.2 Analyze grab samples for isotopic activity to the required LLDs for principal noble gas gamma emitters (Table 3.11.2.1-1). AND	Within 24 hours of grab sample being taken.
	H.3 Restore monitoring instrumentation.	30 days
I. Standby Gas Treatment System Iodine Monitor or Particulate Monitor inoperable	I.1 Ensure samples are collected with auxiliary sampling equipment as required by Table 3.11.2.1-1. AND	Continuously while releases are in progress
	I.2 Restore monitoring instrumentation.	30 days
J. SGTS Ventilation Monitoring System Effluent flow rate monitor or sample flow rate monitor Inoperable.	J.1 Estimate flow rate. AND	Once per 4 hours while release is in progress.
	J.2 Restore monitoring Instrumentation.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. Required Actions and Completion Times not met for Conditions B through J.	K.1 Explain why this inoperability was not corrected in a timely manner.	In the next Annual Radioactive Effluents Release Report per TS Section 5.6.

TECHNICAL REQUIREMENT SURVEILLANCE

----------NOTE----------
Refer to Table 3.11.2.6-1 to determine which TRSs apply for each Monitoring Function.

SURVEILLANCE		FREQUENCY
TRS 3.11.2.6.1	Perform CHANNEL CHECK	24 hours
TRS 3.11.2.6.2	Perform CHANNEL CHECK	7 days
TRS 3.11.2.6.3	Perform Source Check	31 days
TRS 3.11.2.6.4	Perform CHANNEL FUNCTIONAL TEST	92 days
TRS 3.11.2.6.5	Perform CHANNEL CALIBRATION	24 months

TABLE 3.11.2.6-1 (Page 1 of 3)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABILITY	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. REACTOR BUILDING VENTILATION MONITORING SYSTEM			
a. Noble Gas Activity Monitor (Low Range)	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
b. Iodine Monitor	At all Times	1	TRS 3.11.2.6.2 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
c. Particulate Monitor	At all Times	1	TRS 3.11.2.6.2 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
d. Effluent System Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5
e. Sampler Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

(continued)

TABLE 3.11.2.6-1 (Page 2 of 3)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABILITY	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
2. TURBINE BUILDING VENTILATION MONITORING SYSTEM			
a. Noble Gas Activity Monitor (Low Range)	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
b. Iodine Monitor	At all Times	1	TRS 3.11.2.6.2 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
c. Particulate Monitor	At all Times	1	TRS 3.11.2.6.2 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
d. Effluent System Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5
e. Sampler Flow Rate Monitor	At all Times	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

(continued)

TABLE 3.11.2.6-1 (Page 3 of 3)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

FUNCTION	APPLICABILITY	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
3. STANDBY GAS TREATMENT SYSTEM (SGTS) MONITOR			
a. Noble Gas Activity Monitor (Low Range)	During operation of SGTS[a]	1	TRS 3.11.2.6.1 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
b. Iodine Monitor	During operation of SGTS[a]	1	TRS 3.11.2.6.2 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
c. Particulate Monitor	During operation of SGTS[a]	1	TRS 3.11.2.6.2 TRS 3.11.2.6.3 TRS 3.11.2.6.4 TRS 3.11.2.6.5
d. Effluent System Flow Rate Monitor	During operation of SGTS[a]	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5
e. Sampler Flow Rate Monitor	During operation of SGTS[a]	1	TRS 3.11.2.6.1 TRS 3.11.2.6.4 TRS 3.11.2.6.5

(a) The provisions of TRO 3.0.4 are not applicable.

3.11 Radioactive Effluents

3.11.3 Total Dose

TRO 3.11.3 The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity and radiation, from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

APPLICABILITY: At all times

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Calculated doses from the release of radioactive materials in liquid or gaseous effluents exceed twice the limits of Requirements 3.11.1.2.a, 3.11.1.2.b, 3.11.2.2.a, 3.11.2.2.b, 3.11.2.3.a, or 3.11.2.3.b	A.1 Initiate actions to calculate whether the TRO limits have been exceeded	Immediately
B. TRO limits exceeded	B.1 Prepare and submit a Special Report to the Commission	30 days

TECHNICAL REQUIREMENT SURVEILLANCE

	SURVEILLANCE	FREQUENCY
TRS 3.11.3.1	Determine the cumulative dose from liquid and gaseous effluents in accordance with the methodology and parameters in the ODCM	31 days
TRS 3.11.3.2	Determine cumulative dose contributions from direct radiation from unit operation in accordance with the methodology and parameters in the ODCM	12 months

3.11 Radioactive Effluents

3.11.4 Radiological Environmental Monitoring

3.11.4.1 Monitoring Program

TRO 3.11.4.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.11.4.1-1.

APPLICABILITY: At all times

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radiological environmental monitoring program not being conducted as specified in Table 3.11.4.1-1	A.1 Report and describe the events and any actions taken to prevent their recurrence in the Annual Radiological Environmental Operating Report	Annually
B. The average level of radioactivity over any calendar quarter as the result of an individual radionuclide in plant effluents in a particular environmental exposure pathway in a particular environmental sampling medium, at a specified location exceeds the applicable reporting level of Table 3.11.4.1-2	B.1 Prepare and submit a Special Report to the Commission	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. More than one of the radionuclides in Table 3.11.4.1-2 are detected in a particular environmental exposure pathway at a specified monitoring location and are the result of plant effluents AND The sum of the ratios of the quarterly average activity levels to their corresponding reporting levels of each detected radionuclide, from Table 3.11.4.1-2, is ≥ 1.0	C.1 Prepare and submit a Special Report to the Commission	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more Radionuclide(s) other than those in Table 3.11.4.1-2 are detected in a particular environmental exposure pathway at a specified location and are the result of plant effluents AND The potential annual dose to a MEMBER OF THE PUBLIC from all detected radionuclides that are the result of plant effluents is greater than or equal to the calendar year limits of TROs 3.11.1.2, 3.11.2.2 and 3.11.2.3	D.1 Prepare and submit a Special Report to the Commission	30 days
E. The requirements for a Special Report per Conditions B, C, or D are met, but the radionuclides that are detected are not the result of plant effluents	E.1 Report and discuss the reasons for not attributing identified radionuclides to plant effluents in the Annual Radiological Environmental Operating Report	Annually

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Milk or fresh leafy vegetable samples are unavailable from one or more of the sample locations required by Table 3.11.4.1-1	----------NOTE---------- The specific locations from which samples were unavailable may then be deleted from the monitoring program. ---------- F.1 Identify locations for obtaining replacement samples and add them to the radiological environmental monitoring program AND F.2 Identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report	30 days Annually

TECHNICAL REQUIREMENT SURVEILLANCE

	SURVEILLANCE	FREQUENCY
TRS 3.11.4.1.1	Collect the radiological environmental monitoring samples pursuant to Table 3.11.4.1-1	As required by Table 3.11.4.1-1
TRS 3.11.4.1.2	Analyze samples pursuant to the requirements of Table 3.11.4.1-1 with equipment meeting the detection capabilities required by Table 3.11.4.1-3	As required by Table 3.11.4.1-1
TRS 3.11.4.1.3	Determine annual cumulative potential dose contributions from radionuclides detected in environmental samples in accordance with the methodology and parameters in the ODCM.	Annually

TABLE 3.11.4.1-1 (Page 1 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
1. DIRECT RADIATION	40 routine monitoring stations with two or more dosimeters or with one instrument for measuring and recording dose rate continuously placed as follows: 1. An inner ring of stations, one in each meteorological sector, in the general area of the SITE BOUNDARY 2. An outer ring of stations, one in each meteorological sector, in the 3 to 9 mile range from the site 3. The balance of the stations placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations	Quarterly	Gamma dose quarterly
2. AIRBORNE			
Radioiodine and Particulates	Samples from 5 locations a. 1 sample from close to each of the 3 SITE BOUNDARY locations (in different sectors) with the highest calculated annual average groundlevel χ/Q b. 1 sample from the vicinity of the community having one of the highest calculated annual ground level χ/Q c. 1 sample from a control location, between 15 and 30 km distant and in the least prevalent wind direction of wind blowing from the plant	Continual sampler operation with sample collection weekly, or more frequently if required by dust loading	Radioiodine Canister: I-131 Analysis weekly Particulate Sampler: Gross Beta radio activity analysis following filter change(a): Gamma isotopic analysis of composite (by location) quarterly

(continued)

(a) Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thorn daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

TABLE 3.11.4.1-1 (Page 2 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. WATERBORNE			
a. Surface	1 sample upstream 1 sample downstream	Composite sample over one-month period	Gamma isotopic analysis monthly. Composite for tritium analyses quarterly
b. Ground	Samples from 1 or 2 sources only if likely to be affected	Quarterly	Gamma isotopic and tritium analyses quarterly
c. Drinking	1 sample from each of 1 to 3 of the nearest water supplies that could be affected by its discharge 1 sample from a control location	Composite sample over 2-week period when I-131 analysis is performed, monthly composite otherwise	I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year. Composite for gross beta and gamma isotopic analyses monthly. Composite for tritium analyses quarterly
d. Sediment from shoreline	1 sample from downstream area with existing or potential recreational value	Semiannually	Gamma isotopic analyses semiannually

(continued)

TABLE 3.11.4.1-1 (Page 3 of 3)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. INGESTION			
a. Milk	a. Samples from milking animals in 3 locations within 5km from the plant having the highest dose potential. If there are none, then, 1 sample from milking animals in each of 3 areas between 5 and 8km distant where doses are calculated to be greater than 1 mrem per year.	Semimonthly when animals are on pasture, monthly at other times.	Gamma isotopic and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
	1 sample from milking animals at a control location (between 15 and 30km from the plant preferably in the least prevalent direction for wind blowing from the plant).		
b. Fish and/or Invertebrates	b. 1 sample of each of two recreationally important species in vicinity of plant discharge area.	Sample in season, or semiannually if they are not seasonal.	Gamma isotopic analysis on edible portions.
	1 sample of same species in areas not influenced by plant discharge.		
c. Food Products	c. 1 sample of each principal class of food products from any area which is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest	Gamma isotopic analysis on edible portions.
	Samples of 3 different kinds of broad leaf vegetation grown nearest each of two different offsite locations of highest predicted annual average ground level D/Q if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis.
	1 sample of each of the similar broad leaf vegetation grown between 15 to 30km from the plant, preferably, in the least prevalent direction for wind blowing from the plant if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis.

TABLE 3.11.4.1-2
REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES
Reporting Levels

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m³)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)
H-3	20,000[a]				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-Nb-95	400[b]				
I-131	2	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-La-140	200[b]			300	

[a] For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/l may be used.
[b] Total for parent and daughter.

TABLE 3.11.4.1-3
DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS
LOWER LIMIT OF DETECTION (LLD)

Analysis	Water (pCi/1)	Airborne Particulate Or Gas (pCi/m³)	Fish (pCi/kg. wet)	Milk (pCi/1)	Food Products (pCi/kg. wet)	Sediments (pCi/kg. dry)
Gross Beta	4	0.01				
H-3	2000					
Mn-54	15		130			
Fe-59	30		260			
Co-58, 60	15		130			
Zn-65	30		260			
Zr-95	30					
Nb-95	15					
I-131	1[a]	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-140	60			60		
La-140	15			15		

[a] LLD for drinking water samples.

3.11 Radioactive Effluents

3.11.4 Radiological Environmental Monitoring

3.11.4.2 Land Use Census

TRO 3.11.4.2 A land use census shall be conducted.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Land use census identifies a location(s) which yields a calculated dose or dose commitment greater than the values currently being calculated in Requirement 3.11.2.3	A.1 Identify the new location(s) in the next Annual Radioactive Effluent and Waste Disposal Report	As defined by the Annual Radioactive Effluent and Waste Disposal Report
B. Land use census identifies a location(s) that 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 Requirement 3.11.4.1	B.1 Add the new location(s) to the radiological environmental monitoring program AND B.2 Identify the new location(s) in the next Annual Radioactive Effluent Release Report per TS Section 5.6	30 days As defined in Annual Radioactive Effluent Release Report

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.4.2.1 Conduct the land use census	12 months

3.11 Radioactive Effluents

3.11.4 Radiological Environmental Monitoring

3.11.4.3 Interlaboratory Comparison Program

TRO 3.11.4.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Analyses not being performed	A.1 Report the corrective actions taken to prevent a recurrence to the Commission	As required

TECHNICAL REQUIREMENT SURVEILLANCE

SURVEILLANCE	FREQUENCY
TRS 3.11.4.3.1 Include a summary of the results obtained as part of the above required Interlaboratory Comparison Program in the Annual Radiological Environmental Operating Report	Annually

B 3.11.1.1 Liquid Effluents Concentration

BASES

TRO

This requirement is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than 10 times the concentration levels specified in 10 CFR Part 20.1001 to 20.2402, Appendix B, Table 2, Column 2. The requirement provides operational flexibility for releasing liquid effluents in concentrations to follow the Section II.A and II.C design objectives of Appendix I to 10 CFR part 50. This limitation provides reasonable assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR 50, to a Member of the Public and (2) restrictions authorized by 10 CFR 20.1301(e). The concentration limit for dissolved or entrained noble gases is based upon the assumptions that Xe-135 is the controlling radionuclide and its effluent concentration in air (submersion) was converted to an equivalent concentration in water. This requirement does not affect the requirement to comply with the annual limitations of 10 CFR 20.1301(a). This requirement applies to the release of radioactive materials in liquid effluents from all units at the site. The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD and the other detection limits can be found in Curie, L.A., "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements." (References 2, 3, and 4)

This section of the TRM is also part of the ODCM (Reference 2).

Actions

The Actions are defined to ensure proper corrective measures are taken in response to exceeding the TRO limits.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the parameters are maintained within the TRO limits. Table 3.11.1.1-1 defines Radioactive Liquid Waste Sampling and Analysis Program. The lower limit of detection (LLD) is defined, for purposes of these Requirements, as the smallest concentration of radioactive material in a sample that

(continued)

B 3.11.1.1 Liquid Effluents Concentration

BASES (continued)

TRS (continued) will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66 s_b}{E \bullet V \bullet 2.22E6 \bullet Y \bullet \exp(-\lambda \Delta t)}$$

Where:

LLD is the *a priori* lower limit of detection as defined above (as microcuries 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 disintegration,
V is the sample size, in units of mass or volume,
2.22 E6 is the number of disintegrations per minute per microcurie,
Y is the fractional radiochemical yield, when applicable.
λ is the radioactive decay constant for the particular radionuclide, and
Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement.

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 to assure representative sampling.

(continued)

B 3.11.1.1 Liquid Effluents Concentration

BASES (continued)

TRS (continued) The principal gamma emitters for which the LLD specification applies include the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144. The dissolved and entrained gases (gamma emitters) for which the LLD specification applies include the following radionuclides: Kr-85, Kr-85m, Kr-87, Kr-88, Ar-41, Xe-133, Xe-133m, Xe-135, and Xe-135m. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in accordance with the ODCM.

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 that is representative of the liquids released over a period no longer than the Minimum Analysis Frequency.

The Minimum Analysis Frequency as listed for the Composite Samples shall mean the minimum frequency for initiation of the required analyses, not completion of the analyses and evaluation of the results. Since the analysis involves sending the samples to an offsite laboratory and performance of involved sample preparation and wet chemical analyses, there will be a delay between initiation of the analysis and receipt of the results.

The analysis initiation shall normally be done on a calendar month for the 31 day frequency or calendar quarter for a 92 day frequency.

REFERENCES
1. Technical Specification 5.5.4 - Radioactive Effluent Controls program.
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual.
3. NUREG/CR-4007, September, 1984.
4. 10 CFR Part 20.

B 3.11.1.2 Liquid Effluents Dose

BASES

TRO

This requirement is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix I, 10 CFR Part 50. The Technical Requirement for Operation implements the guides set forth in Section II.A of Appendix I. Also, for fresh water sites with drinking water supplies which can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR 141. The dose calculation methodology and parameters in the ODCM 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 a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents are 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 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. (References 2, 3, 4, and 5)

This section of the TRM is also part of the ODCM (Reference 2).

Actions

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 material in liquid effluents will be kept "as low as is reasonably achievable."

The Special Report to the Commission under Action A.1 shall

(continued)

B 3.11.1.2 Liquid Effluents Dose

BASES (continued)

ACTIONS (continued)	identify the cause(s) for exceeding the limit(s) and define the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the specified limits. This Special Report shall also include the radiological impact on finished drinking water supplies at the nearest downstream drinking water source.
TRS	The TRSs are defined to be performed at the specified Frequency to ensure that the TRO limits are maintained.
REFERENCES	1. Tech Spec 5.5.4 - Radioactive Effluent Controls program 2. Tech Spec 5.5.1 - Offsite Dose Calculation Manual 3. 10 CFR Part 20 4. 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. 5. Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

B 3.11.1.3 Liquid Waste Treatment System

BASES

TRO	The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment prior to release to the environment. The requirement that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable". This Requirement implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and the design objective given in Section II.D of Appendix I 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 dose design objectives set forth in Section II.A of Appendix I, 10 CFR part 50, for liquid effluents. (Reference 3) This section of the TRM is also part of the ODCM (Reference 2).
Actions	The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components. The Special Report to the Commission under Action A.1 shall include the following: 1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems and the reason for the inoperability, 2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and 3. Summary description of action(s) taken to prevent a recurrence.
TRS	The TRSs are defined to be performed at the specified Frequency to ensure that the system is maintained OPERABLE. OPERABILITY is demonstrated by operating the liquid radwaste treatment system equipment for at least 10 minutes.
REFERENCES	1. Technical Specification 5.5.4 - Radioactive Effluent Controls program. 2. Technical Specification 5.5.1 - ODCM. 3. 10 CFR Part 50.

B 3.11.1.4 Liquid Radwaste Effluent Monitoring Instrumentation

BASES

TRO The radioactive liquid effluent instrumentation are provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in the ODCM (Reference 2) to ensure that the alarm/trip will occur prior to exceeding the 10 times the concentration values specified in Appendix B, Table 2, Column 2 of 10CFR20.1001 - 10CFR20.2401 (Ref. 2). The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. (Reference 4)

OPERABILITY of the radiation monitoring instrumentation requires their alarm/trip setpoints set to ensure that the limits of Requirement 3.11.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the methodology and parameters described in the ODCM.

OPERABILITY of the Liquid Radwaste Effluent Line gross radioactivity monitor includes the proper functioning of the discharge valve interlocks (sample pump low flow, high radiation alarm, and radiation monitor failure).

OPERABILITY of the Cooling Tower Blowdown flow rate measurement device includes the proper functioning of the Liquid Radwaste Effluent Line discharge valve interlock (i.e. cooling tower blowdown low flow).

The Required Channels for each function in Table 3.11.1.4-1 are as follows:

(continued)

B 3.11.1.4 Liquid Radwaste Effluent Monitoring Instrumentation

BASES (continued)

TRO (continued)

a. Liquid Radwaste Effluent rad monitor (Function 1.a) one instrument per station.
b. Liquid Radwaste Effluent flow rate (Function 2.a) one instrument per station.
c. Cooling Tower Blowdown flow rate (Function 2.b) one instrument per station.

It should be noted that the radioactive liquid waste stream is diluted in the Cooling Tower blowdown line prior to entering the Susquehanna River. The setpoint for this dilution water flow is 5000 gpm from the combination of the Unit 1 blowdown, Unit 2 blowdown flow, and Spray Pond Discharge.

Options exist to ensure the requirement of one OPERABLE Cooling Tower Blowdown flow Instrument per station is met as required by Table 3.11.1.4-1, Function 2.b. As long as any one of three instruments (Unit 1 Tower, Unit 2 Tower, Total Site Blowdown) are OPERABLE and alignment of HS-06443A and HSS-01503 on panel 0C301 is such that the OPERABLE instrument(s) are in the circuit, then the TRM Requirement is met.

This section of the TRM is also part of the ODCM (Reference 2).

Actions

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components.

Pump curves generated in situ may be used to estimate flow for Action D.1.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the monitoring instrumentation is maintained OPERABLE.

The TRSs shall be performed in accordance with the Technical Specification definition for the test with the following additional requirements:

The Liquid Radwaste Effluent Line radiation monitor CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any

(continued)

B 3.11.1.4 Liquid Radwaste Effluent Monitoring Instrumentation

BASES (continued)

TRS (continued) of the following conditions exist:

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

The liquid Radwaste Effluent Line radiation monitor initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. 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 may be used in lieu of the reference standards associated with the initial calibration.

The Liquid Radwaste Effluent Line flow rate monitor and Cooling Tower Blowdown flow rate monitor 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.

REFERENCES

1. Technical Specification 5.5.4 - Radioactive Effluent Controls program
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. 10 CFR Part 20
4. 10 CFR Part 50

B 3.11.1.5 Radioactive Liquid Process Monitoring Instrumentation

BASES

TRO

The radioactive liquid process instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in the ODCM (Reference 2) to ensure that the alarm/trip will occur prior to exceeding 10 times the concentration values specified in Appendix B, Table 2, Column 2 of 10CFR20.1001 - 20.2401 (Reference 3). The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. (Reference 4)

This section of the TRM is also part of the ODCM (Reference 2).

Actions

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components.

If an RHR heat exchanger and its applicable RHRSW loop are in service there is a pathway from the heat exchanger to the spray pond. If the heat exchanger and RHRSW loop are not in service (i.e., valved-out, RHRSW pump not running, or piping drained) then a pathway does not exist.

If there is no pathway, the requirement to perform grab sampling is not applicable when the RHR Service Water System Effluent Line Radiation Monitor has been declared inoperable.

The function of pumping down the RHR heat exchanger and RHRSW system piping to the Spray Pond provides a pathway for a release of potentially radioactively contaminated water. The RHRSW system is considered an 80-10 system because a pathway to the environment from this system exists through the Spray Pond and because the system, although normally not radioactively contaminated, has the potential for becoming radioactively contaminated in the event that a leak develops across an RHR heat exchanger. Therefore, grab samples must be collected periodically when the RHRSW system radiation monitor for a particular loop is inoperable (malfunctioning) and water from that loop of the system is being returned to the Spray Pond. Also, grab samples must be collected prior to operations in which water from the RHRSW system will be drained to the Spray Pond.

(continued)

BASES (continued)

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the monitoring instrumentation is maintained OPERABLE.

Performance of the CHANNEL CHECK ensures that a gross failure of the instrument has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel against a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria, which are developed by the plant staff based on an investigation of a combination of the channel instrument uncertainties, may be used to support this parameter comparison and include indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit and does not necessarily indicate the channel is inoperable.

The TRSs shall be performed in accordance with the Technical Specification definition for the test with the following additional requirements:

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, and
4. Instrument controls not set in operate mode.

(continued)

BASES (continued)

TRS (continued)	The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. 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 may be used in lieu of the reference standards associated with the initial calibration.

REFERENCES

1. Technical Specification 5.5.4 - Radioactive Effluent Controls program
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. 10 CFR Part 20
4. 10 CFR Part 50

B 3.11.2.1 Dose Rate

BASES

TRO

This requirement provides reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a Member of the Public either within or outside the Site Boundary, in excess of the design objectives of Appendix I to 10CFR50. It provides operational flexibility for releasing gaseous effluents while satisfying section II.B and II.C design objectives of Appendix I. For individuals who may at times be within the Site Boundary, the occupancy of the individual will usually be sufficiently low to compensate for any increase in atmospheric diffusion factor above that for the Site Boundary. The specified release rate limits restrict, at all times, the corresponding dose rates above background to a Member of the Public at or beyond the Site Boundary to less than or equal to 500 mrem/yr to the total body or to less than or equal to 3000 mrem/yr to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an individual via the inhalation pathway to less than or equal to 1500 mrem/yr. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC 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. (Reference 3)

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

This section of the TRM is also part of the ODCM (Reference 2).

(continued)

B 3.11.2.1 Dose Rate

BASES (continued)

Actions — The Actions are defined to ensure proper corrective measures are taken in response to the limits being exceeded.

TRS — The TRSs are defined to be performed at the specified Frequency to ensure that the dose rates are maintained within limits. Dose rates are determined in accordance with the methodology and parameters of the ODCM.

Table 3.11.2.1-1 defines Radioactive Gaseous Waste Sampling and Analysis Program. The lower limit of detection (LLD) is defined, for purposes of these requirement, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66 s_b}{E \bullet V \bullet 2.22E6 \bullet Y \bullet \exp(-\lambda \Delta t)}$$

Where:

LLD is the *a priori* lower limit of detection as defined above (as microcuries 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 disintegration,
V is the sample size, in units of mass or volume,
2.22 E6 is the number of disintegrations per minute per microcurie,
Y is the fractional radiochemical yield, when applicable,
λ is the radioactive decay constant for the particular radionuclide, and
Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting (for plant effluents, not environmental samples).

(continued)

B 3.11.2.1 Dose Rate

BASES (continued)

TRS (continued) The value of s_b used in the calculation of the 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.

The principal gamma emitters for which the LLD specification applies include the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-135m 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 considered. Other gamma peaks which are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radioactive Effluent Release Report.

The design of the systems for the sampling of particulates and iodines provide for sample nozzle entry velocities which are approximately isokinetic with instack air velocities. Gaseous particulate and iodine samples are gathered continuously, with the sample size proportional to the stack emissions; a composite gaseous sample is a combination of all the particulate filters gathered in a sampling period.

Particulate or iodine sampling required to be in continuous service will be considered to remain and have been in continuous service when its service is interrupted for a time period not to exceed 1 hour per sampling period. For particulate and iodine sampling, this is a small fraction of the normal minimum analysis frequency.

The minimum Analysis Frequency as listed for the Composite Samples shall mean the minimum frequency for initiation of the required analyses, not completion of the analysis and evaluation of the results. Since the analysis involves sending the samples to an offsite laboratory and performance of involved sample preparation and wet chemical analyses, there will be a delay between initiation of the analysis and receipt of the results. The analysis initiation shall normally be done on a calendar quarter for a 92 day frequency.

(continued)

B 3.11.2.1 Dose Rate

BASES (continued)

REFERENCES

1. Technical Specification 5.5.4 - Radioactive Effluent Controls Program
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. 10CFR Part 20

B 3.11.2.2 Dose - Noble Gases

BASES

TRO	This requirement is provided to implement the requirements of Sections II.B, III.A and IV.A of Appendix I, 10 CFR Part 50. (Reference 5) The Technical Requirement for Operation implements the guides set forth in Section II.B of Appendix I. This section of the TRM is also part of the ODCM (Reference 2).
Actions	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 material in gaseous effluents will be kept "as low as is reasonably achievable". The Special Report required under Action A.1 shall identify the cause(s) for exceeding the limit(s) and define the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.
TRS	The TRSs 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 a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The dose calculation established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are 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 and beyond the SITE BOUNDARY are based upon the historical average atmospheric conditions. (References 2, 3 and 4)

(continued)

B 3.11.2.2 Dose - Noble Gases

BASES (continued)

REFERENCES

1. Technical Specification 5.5.4 - Radioactive Effluent Controls program
2. Technical Specification Spec 5.5.1 - Offsite Dose Calculation Manual
3. 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.
4. 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.
5. 10 CFR Part 50.

B 3.11.2.3 Dose - Iodine, Tritium, and Radionuclides in Particulates Form

BASES

TRO

This requirement 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. (Reference 5)

This section of the TRM is also part of the ODCM (Reference 2).

Actions

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 Special Report required under Action A.1 shall identify the cause(s) for exceeding the limit(s) and define the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

TRS

The TRSs are defined to be performed at the specified Frequency to ensure that the TRO limits are maintained.

The ODCM calculational methods specified in the TRSs 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 a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methods for calculating the doses due to the actual release rates of the subject materials are 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. These equations also provide for determining the actual

(continued)

B 3.11.2.3 Dose - Iodine, Tritium, and Radionuclides in Particulates Form

BASES (continued)

TRS (continued) doses based upon the historical average atmospheric conditions. The release rate Requirements for iodine-131, iodine-133, tritium, and radionuclides in particulate form with half lives greater than 8 days are dependent on the existing radionuclide pathways to man in areas at and beyond the SITE BOUNDARY. The pathways which were examined in the development of these calculations were: 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. (References 2, 3 and 4)

REFERENCES

1. Technical Specification 5.5.4 - Radioactive Effluent Controls program.
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual.
3. 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.
4. 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.
5. 10 CFR Part 50

B 3.11.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

BASES

TRO

This TRO ensures that the GASEOUS RADWASTE TREATMENT SYSTEM is OPERABLE and in operation to reduce radioactive materials in gaseous waste prior to discharge when the main condenser air ejector (evacuation) system is in operation. This requirement provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable". This TRO implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The limits governing the use of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents (Ref. 1).

This section of the TRM is part of the Offsite Dose Calculation Manual (Ref. 2) and implements the requirements of the Radiological Effluent Controls Program (Ref. 3).

ACTIONS

The ACTIONS are defined to ensure proper corrective measures are taken in response to the inoperable components.

A.1

With the GASEOUS RADWASTE TREATMENT SYSTEM inoperable, action must be taken to restore it to OPERABLE status in order to maintain radioactive releases from the main condenser as low as reasonably achievable, and in compliance with regulatory requirements. The 7 day Completion Time is reasonable to perform repairs and to maintain radioactive release objectives.

B.1

If the Required Action and Completion Time of Condition A are not met, a Special Report must be prepared and submitted to the Commission. The 30 day Completion Time is reasonable for preparation of the report. The Special Report should include the following information:

1. Identification of the inoperable equipment or subsystems and the reason for inoperability,
2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and
3. Summary description of action(s) taken to prevent a recurrence.

(continued)

B 3.11.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

BASES -

TRS

The TRSs are performed at the specified Frequency to ensure that the GASEOUS RADWASTE TREATMENT SYSTEM is maintained OPERABLE.

TRS 3.11.2.4.1

This surveillance requires verification that the GASEOUS RADWASTE TREATMENT SYSTEM is in operation when the main condenser air ejector (evacuation) system is in operation. The Frequency of 92 days is appropriate considering the performance of monthly dose projections.

REFERENCES

1. 10 CFR Part 50
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. Technical Specification 5.5.4 - Radioactive Effluent Controls program.

B 3.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

BASES

TRO

This TRO ensures that the appropriate portions of the VENTILATION EXHAUST TREATMENT SYSTEM, as described in the Offsite Dose Calculation Manual (ODCM) are OPERABLE at all times. The TRO is modified by a Note which requires that the appropriate portions of the VENTILATION EXHAUST TREATMENT SYSTEM be used to reduce radioactive materials in gaseous waste prior to their discharge when projected doses due to gaseous effluent releases from either reactor unit to areas at and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ in a 31 day period. This requirement provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as reasonably achievable." This TRO implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents (Ref. 1) .

The VENTILATION EXHAUST TREATMENT SYSTEM is comprising of the following systems, as described in the ODCM:

The Unit 1 Reactor Building filtered exhaust system, including the following filters:

1F216A, 1F216B, 1F217A, 1F217B, 1F218A, 1F218B, 1F255A, 1F255B, 1F257A, 1F257B, 1F258A AND 1F258B.

The Unit 2 Reactor Building filtered exhaust system, including the following filters:

2F216A, 2F216B, 2F217A, 2F217B, 2F218A, 2F218B, 2F255A, 2F255B, 2F257A, 2F257B, 2F258A AND 2F258B.

The Unit 1 Turbine Building filtered exhaust system, including the following filters:

1F157A, 1F157B, 1F158A, and 1F158B.

The Unit 2 Turbine Building filtered exhaust system, including the following filters:

2F157A, 2F157B, 2F158A, and 2F158B.

(continued)

B 3.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

BASES

TRO (continued)

The Radwaste Building filtered exhaust system, including the following filters:

0F355A and 0F355B.

The Radwaste Degasifier exhaust system, including the following filters:

0F372, 0F373 and 0F374.

The Radwaste Tank Vent exhaust system, including the following filters:

0F358 and 0F359.

The S&A Hot Shop exhaust system, including the following filters:

0F716.

The Control Structure Filter Unit exhaust system, including the following filters:

0F134, 0F135, 0F137, 0F138, 0F140, 0F141, 0F143, and 0F144.

This section of the TRM is part of the ODCM (Ref. 2) and implements the requirements of the Radiological Effluent Controls Program (Ref. 3).

ACTIONS

The ACTIONS are defined to ensure proper corrective measures are taken in response to the inoperable components. Dose evaluations are performed when evolutions occur which result in an effluent path to the environment with some level of degraded treatment. In effect, degraded treatment renders the monthly dose projection per TRS 3.11.2.5.1 questionable. The dose evaluation is an estimated projection under the degraded conditions.

Dose evaluations should be performed under the following conditions:

1. When bypassing a treatment system (a preliminary evaluation prior to bypassing the filter and a follow-up evaluation after the bypass);

(continued)

B 3.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

BASES -

ACTIONS (continued)

2. When placing an inoperable filter train in service (a preliminary evaluation prior to starting the system and a follow-up evaluation after the system is in service);

3. If a surveillance on a treatment system fails while the filter is in service; and

4. Any other event which results in degraded treatment.

The appropriate portion of the VENTILATION EXHAUST TREATMENT SYSTEM will be declared inoperable if any of the following conditions exist:

1. Failure of a surveillance test;

2. Broken or non-functional component which prevents the system from being run (e.g. both 100% fans or one 50% fan in the system); or

3. Bypass or degradation of system filtration in which effluent flow continues without full treatment.

A.1

With any portion of the VENTILATION EXHAUST TREATMENT SYSTEM inoperable, action must be taken to restore it to OPERABLE status. The 31 day Completion Time is a reasonable time frame to repair the inoperable components.

B.1

If the Required Action and Completion Time of Condition A are not met, or gaseous waste is being discharged without treatment and in excess of the TRO limits, a Special Report must be prepared and submitted to the Commission. The 30 day Completion Time is reasonable for preparation of the report. The Special Report should include the following information:

1. Identification of the inoperable equipment or subsystems and the reason for inoperability;

2. Action(s) taken to restore the inoperable equipment to OPERABLE status; and

3. Summary description of action(s) taken to prevent a recurrence.

(continued)

B 3.11.2.5 VENTILATION EXHAUST TREATMENT SYSTEM

BASES -

TRS

The TRSs are performed at the specified Frequency to ensure that the VENTILATION EXHAUST TREATMENT SYSTEM is maintained OPERABLE.

TRS 3.11.2.5.1

This surveillance requires that a dose projection be performed in accordance with the methodology and parameters in the ODCM. The dose projection is performed based on the most recently available effluent data. If it is known prior to performing the dose projection that a treatment system will be out of service, and if data exists which indicates how the lack of treatment will impact effluents, these factors will be considered when performing the dose projection. The 31 day Frequency is consistent with Reference 3.

TRS 3.11.2.5.2

This surveillance verifies that the VENTILATION EXHAUST TREATMENT SYSTEM is OPERABLE by operating the system ≥ 10 minutes. Operation of the system for at least 10 minutes provides sufficient time to verify the appropriate parameters are within their normal operating range. The Frequency of 92 days is appropriate considering the performance of monthly dose projections.

This TRS is modified by a Note which states that the TRS is not required to be performed if the appropriate system has been utilized to process radioactive gaseous effluents during the previous 92 days. This allowance is appropriate because actual processing of radioactive gaseous effluents demonstrates system OPERABILITY.

REFERENCES

1. 10CFR Part 50.
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual.
3. Technical Specification 5.5.4 - Radioactive Effluent Controls program.

B 3.11.2.6 Radioactive Gaseous Effluent Monitoring Instrumentation

BASES

TRO

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with the procedures in the ODCM (Reference 2) to ensure that the alarm/trip will occur prior to exceeding the release rate limits corresponding to dose rates above background to a member of the public at or beyond the site boundary to ≤ 500 mrem/yr to the total body or to ≤ 3000 mrem/yr to the skin. These release rate limits also restrict the corresponding thyroid dose rate above background to a child via the inhalation pathway to ≤ 1500 mrem/yr. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. (References 3 and 4)

OPERABILITY requires their alarm/trip setpoints set to ensure that the limits of Requirement 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the methodology and parameters in the ODCM.

This section of the TRM is also part of the ODCM (Reference 2).

ACTIONS

The Actions are defined to ensure proper corrective measures are taken in response to the inoperable components.

Low range Noble Gas channel readings from the local vent monitor may be used to meet the requirement for a Noble Gas grab sample and grab sample analysis.

Noble Gas release grab samples are not required to be taken when there are no releases via that pathway. Effluent flow is to be determined by vent flow instrumentation or by a vent flow estimate every 4 hours. Continuous sample collection shall be on the same basis as described in the Bases for TRO 3.11.2.1

Monitoring may be interrupted for up to 30 minutes to perform particulate filter/iodine cartridge changeout required by TRM Table 3.11.2-1 without entering the TRO ACTIONS.

(continued)

B 3.11.2.6 Radioactive Gaseous Effluent Monitoring Instrumentation

BASES (continued)

TRS The TRSs are defined to be performed at the specified Frequency to ensure that the monitoring instrumentation is maintained OPERABLE.

The TRSs shall be performed in accordance with the Technical Specification definition for the test with the following additional requirements:

The CHANNEL FUNCTIONAL TEST for all noble gas activity monitors, Iodine Monitors, and Particulate Monitors shall also demonstrate that 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, and
4. Instrument controls not set in operate mode.

The initial CHANNEL CALIBRATION for all noble gas activity monitors, Iodine Monitors, and Particulate Monitors shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. 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 may be used in lieu of reference standards associated with the initial calibration.

Particulate or iodine sampling required to be in continuous service will be considered to remain and have been in continuous service when its service is interrupted for a period of time not to exceed 1 hour per sampling period. For particulate and iodine sampling, this is a small fraction of the normal minimum analysis frequency.

REFERENCES
1. Technical Specification 5.5.4 - Radioactive Effluent Controls program
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. 10 CFR Part 20
4. 10 CFR Part 50

B 3.11.3 Total Dose

BASES

TRO

This Requirement is provided to meet the dose limitations of 40 CFR 190 that have been incorporated into 10 CFR 20 by 46 CFR 18525. The Requirement requires the preparation and submittal of a Special Report whenever the calculated doses from plant radioactive effluents exceed twice the design objective doses of Appendix I. For sites containing up to 4 reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within the reporting requirement level. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 is considered to be a timely request and fulfills the requirements of 40 CFR 190 until NRC staff action is completed. An individual is not considered a MEMBER OF THE PUBLIC during any period in which he/she is engaged in carrying out any operation that is part of the nuclear fuel cycle. Reference 3

Actions

The Actions are defined to ensure proper corrective measures are taken when requirements are not met.

Calculations required by Action B.1 shall include direct radiation contributions from both reactor units and from outside storage tanks to determine whether the limits of this TRO have been exceeded.

(continued)

B 3.11.3 Total Dose

BASES (continued)

ACTIONS (continued) The Special Report to be issued per Action B.1 shall define the corrective action to be taken to reduce subsequent releases, to prevent recurrence of exceeding the above limits, and include the schedule for achieving conformance with the above limits. This Special Report shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

TRS The TRSs are defined to be performed at the specified Frequency to ensure that requirements are implemented.

TRS 3.11.3.1 cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with TROs 3.11.1.2, 3.11.2.2, and 3.11.2.3. The direct radiation dose is determined from the results of radiation monitoring with TLDs that is conducted by the SSES REMP. The REMP TLDs are processed quarterly. There is no requirement to show compliance with the 40CFR190 dose limits more frequently than an annual basis. Demonstration of compliance with this dose limit considers the combined dose contributions from liquid and gaseous effluents and direct radiation.

REFERENCES
1. Technical Specification 5.5.4 - Radioactive Effluent Controls program
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. 40 CFR 190

B 3.11.4.1 Monitoring Program

BASES

TRO

The radiological environmental monitoring program required by this Requirement provides representative measurements of radiation and of radioactive materials in those environmental exposure pathways and for those radionuclides that lead to the highest potential radiation exposures of MEMBERS OF THE PUBLIC resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. Changes to the radiological environmental monitoring program specified in Table 3.11.4.1-1 may be made based on expected SSES operation and the results of radiological environmental monitoring during SSES operation.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 3.11.4.1-3 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in HASL Procedures Manual, HASL-300 (revised annually); Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968); and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975). (Reference 1)

This section of the TRM is also part of the ODCM (Reference 2).

Actions

The Actions are defined to ensure proper corrective measures are taken when requirements are not met.

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

ACTIONS (continued)

Per Action A.1, the Annual Radiological Environmental Operating Report shall provide a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

The Special Report submitted per Action B.1 shall identify the cause(s) for exceeding the limit(s) and define the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of Requirements 3.11.1.2, 3.11.2.2 and 3.11.2.3.

Include revised figure(s) and table for the ODCM reflecting the new locations for obtaining samples per Action F.1 in the next Annual Radioactive Effluent Release Report.

TRS

The TRSs are defined to be performed at the specified frequency to ensure that the requirements are implemented. Monitoring samples collected per TRS 3.11.4.1.1 shall be from the specific locations given in the table and figure in the ODCM. (Reference 2)

Table 3.11.4.1-1

Sample Locations Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in this Table and in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. (Reference 3) Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued) period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time.

In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. Identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Annual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

Direct Radiation One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation.

Radioiodine and Particulates - Sampling and Collection Frequency

The charcoal cartridges used in the airborne radioiodine sampling conducted as part of the radiological environmental monitoring program are designed and tested by the manufacturer to assure a high efficiency in the capture of radioiodine. Certificates from the manufacturer of the cartridges are provided with each batch of cartridges certifying the percent retention of the radiodine for stated air flows.

Radioiodine and Particulates - Particulate Sample; Waterborne - Surface, Ground, Sediment; Food Products Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

Waterborne - Surface The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in the discharge line.

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued)

Waterborne - Drinking - Sampling and Collection Frequency A composite sample is one in which the quantity (aliquot) of liquid sampled is proportional to the quantity of flowing liquid and in which the method of sampling employed results in a specimen that is representative of the liquid flow. In this program composite samples shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

Waterborne - Ground - Samples and Sample Locations Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

Drinking Water - I-131 Analyses Calculation of the dose projected from I-131 in drinking water to determine if I-131 analyses of the water are required shall be performed for the maximum organ and age group using the methodology and parameters of the ODCM.

Food Products - Sampling and Collection Frequency If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuborous and root food products.

Table 3.11.4.1-3

This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable at 95% confidence level together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating report.

Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13. (Reference 4)

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued) The LLD is defined, for purpose of these Requirements, as the smallest concentration of radioactive material in a sample that will yield a net count (above system background) that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

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

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

Where:

LLD is the *a priori* lower limit of detection as defined above (as picrocuries per unit mass or volume),
s_b is the standard deviation of the background counting rate or of the countingrate of a blank sample as appropriate (as counts per minute),
E is the counting efficiency, as counts per disintegration,
V is the sample size, in units of mass or volume,
2.22 is the number of disintegrations per minute per picrocurie,
Y is the fractional radiochemical yield, when applicable,
λ is the radioactive decay constant for the particular radionuclide, and
Δt for environmental samples is the elapsed time between sample collection (or end of the sample collection period) and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

(continued)

B 3.11.4.1 Monitoring Program

BASES (continued)

TRS (continued

It should be recognized that the LLD is defined as *a priori* (before the fact) limit representing the capability of a measurement system and not as an *a posteriori* (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDS unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report.

REFERENCES

1. HASL Procedures Manual, HASL-300 (revised annually); Curie, L.A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968); and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975)Offsite Dose Calculation Manual.
2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual
3. NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979.
4. Regulatory Guide 4.13

B 3.11.4.2 Land Use Census

BASES

TRO

The Land Use Census shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden of greater than 50m^2 (500ft^2) producing broad leaf vegetation.

This Requirement is provided to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the monitoring program are made if required by the results of this census. The best information from the door-to-door survey, aerial survey or consulting with local agricultural authorities or any combination of these methods shall be used. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 500 square feet provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were used: 1) that 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and 2) a vegetation yield of 2 kg/square meter. (Reference 1 and 2)

Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the site boundary in each of two different direction sectors with the highest predicted D/Qs in lieu of the garden census. Specifications for broad leaf vegetation sampling in Table 3.11.4.1-1 item 4c shall be followed, including analysis of control samples.

This section of the TRM is also part of the ODCM (Reference 3).

Actions

The Actions are defined to ensure proper corrective measures are taken in when requirements are not met.

(continued)

B 3.11.4.2 Land Use Census

BASES (continued)

ACTIONS (continued)	The sampling location(s), excluding the control station location, having the lowest calculated dose, or dose commitment(s) (via the same exposure pathway) may be deleted from the monitoring program after October 31 of the year in which the land use census was conducted.
TRS	The TRSs are defined to be performed at the specified Frequency to ensure that the requirements are implemented. The Land Use Census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report.
REFERENCES	1 10 CFR Part 50 2 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 3 Technical Specification 5.5.1 - Offsite Dose Calculation Manual

B 3.11.4.3 Interlaboratory Comparison Program

BASES

TRO	The Interlaboratory Comparison Program shall be accepted by the Commission. The requirement for participation in an Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid for the purpose of Section IV.B.2 of Appendix I to 10 CFR Part 50. (Reference 1) This part of the TRM is also part of the ODCM (Reference 2)
Actions	The Actions are defined to ensure proper corrective measures are taken in response to the detection of unacceptably large deviations (systematic biases) from known values for the quantities being measured. The corrective actions taken to prevent a recurrence shall be reported to the Commission in the Annual Radiological Environmental Operating Report.
TRS	The TRSs are defined to be performed at the specified Frequency to ensure that the requirements are implemented.
REFERENCES	1. 10 CFR Part 50 2. Technical Specification 5.5.1 - Offsite Dose Calculation Manual