4.0 OPERATING LIMITATIONS

4.0.1 DEFINITIONS

For purposes of the Safety Limits and Limiting Safety Systems Settings, Section 4.0.2; Reactor Coolant Activity, Specification 4.2.2.22; Electrical Power Systems, Section 4.2.3; Power Distribution Limits, Section 4.2.4.2; Waste Disposal, Section 4/5.3.1; Fire Detection Instrumentation, Section 4/5.2.17; Fire Suppression Systems, Section 4/5.2.18; Penetration Fire Barriers, Section 4/5.2.19; Emergency Service Water Supply System, Section 4/5.2.21; and Primary Coolant System Pressure Isolation Valves, Section 4/5.2.22; Technical Specifications only, the following terms are defined and appear in capitalized type so that uniform interpretation may be achieved.

ACTION

ACTION shall be those additional requirements specified as corollary statements to each principle specification and shall be part of the specifications.

AVERAGE PLANAR EXPOSURE

The AVERAGE PLANAR EXPOSURE shall be applicable to a specific planar height and is equal to the sum of the exposure of all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle.

AVERAGE PLANAR LINEAR HEAT GENERATION RATE

The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) shall be applicable to a specific planar height and is equal to the sum of the LINEAR HEAT GENERATION RATES for all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle.

CHANNEL CALIBRATION

A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

CHANNEL CHECK

A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

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DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 shall be that concentration of I-131 μCi/gram, which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present.

$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY

$\bar{E}$ shall be the average, weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling, of the sum of the average beta and gamma energies per disintegration, in MeV, for isotopes other than iodines with half lives greater than 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.

FREQUENCY NOTATION

The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table of Surveillance Frequency Notation.

GASEOUS RADWASTE SYSTEM

A GASEOUS RADWASTE SYSTEM is a system designed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay, holdup or filtering for the purpose of reducing the total radioactivity prior to release to the environment.

IDENTIFIED LEAKAGE

IDENTIFIED LEAKAGE shall be:

a. Leakage into collection systems, such as pump seal or valve packing leaks, that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be PRESSURE BOUNDARY LEAKAGE.

LIMITING CONTROL ROD PATTERN

A LIMITING CONTROL ROD PATTERN shall be a pattern which results in the core being on a thermal hydraulic limit, i.e., operating on a limiting value for APLHGR, LHGR, or MCPR.

LINEAR HEAT GENERATION RATE

LINEAR HEAT GENERATION RATE (LHGR) shall be the power generation in an arbitrary length of fuel rod, usually one foot. It is the integral of the heat flux over the heat transfer area associated with the unit length.

MINIMUM CRITICAL POWER RATIO

The MINIMUM CRITICAL POWER RATIO (MCPR) shall be the smallest CPR which exists in the core.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

An OFFSITE DOSE CALCULATION MANUAL (ODCM) shall be a manual containing the methodology and parameters to be used for the calculation of offsite doses due to radioactive gaseous and liquid effluents and for the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints.

OPERABLE-OPERABILITY

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s) and when all necessary attendant instrumentation, controls, a normal and an emergency electrical power source, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

OPERATIONAL CONDITION - CONDITION

An OPERATIONAL CONDITION, i.e. CONDITION, shall correspond to any one inclusive combination of power level and average reactor coolant temperature specified in Table of OPERATIONAL CONDITIONS.

PARTIAL SCRAM

A PARTIAL SCRAM signal shall cause the electric and hydraulic scram motors for 13 preselected control rod drive mechanisms to be actuated for control rod insertion. Full insertion of PARTIAL SCRAM control rods during POWER OPERATION shall render the reactor subcritical.

PHYSICS TESTS

PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation and (1) described in Chapter 13 of the Safeguards Report, (2) authorized under the provisions of 10 CFR 50.59, or (3) otherwise approved by the Commission.

PRESSURE BOUNDARY LEAKAGE

PRESSURE BOUNDARY LEAKAGE shall be leakage through a non-isolable fault in a Reactor Coolant System component body, pipe wall or vessel wall.

RATED THERMAL POWER

RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant and reactor components of 165 MWt.

REPORTABLE OCCURRENCE

A REPORTABLE OCCURRENCE shall be any of those conditions specified in Specification 6.9.1.7 of Technical Specifications.

SHUTDOWN MARGIN

SHUTDOWN MARGIN shall be the amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all control rods are fully inserted, except for the single control rod of highest reactivity worth which is assumed to be fully withdrawn, and the reactor is in the shutdown condition, cold, i.e. < 80°F, and Xenon free.

SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

STAGGERED TEST BASIS

A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal parts.

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

THERMAL POWER

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant and reactor components.

UNIDENTIFIED LEAKAGE

UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE.

SURVEILLANCE FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 6 months.
A	At least once per 12 months.
R	At least once per 18 months.
S/U	Prior to each reactor startup.
P	Completed prior to each release.
N.A.	Not applicable.

4.2.6.7 During operation in the nuclear instrument power range, at least three of nuclear channels 5, 6, 7, and 8 and their automatic gain control subsystem channels shall be in operation. Whenever a channel is deliberately made inoperative, its scram contacts shall be placed in the trip position.

4.2.6.8 Safety channels directly backed up by an identical channel or channels, performing the same safety function may be bypassed for maintenance. Safety channels in the partial scram circuit may be bypassed for maintenance provided that the reactor shall be brought to a condition under which the channel protection is not required if the bypass cannot be removed within 24 hours.

4.2.6.9 Both reactor forced circulation pumps shall be automatically shut down by a high reactor pressure signal or by a low reactor water level signal.

Bases - The RPTS is a diverse and independent backup except for common current sensing loops to the normal scram system for rapid shutdown of the reactor. To protect the primary system from an ATWS event in which either MSIV closes at power, thus eliminating the main condenser as a heat sink, the recirculation pumps must be shut down to prevent damage to the primary system. A rapid shut down of the recirculation pumps has the effect of causing an increase in the moderator voids in the reactor core. A substantial negative reactivity results and the power and pressure surges that might otherwise occur in the most limiting transient (MSIV closure) are substantially reduced. With the recirculation pumps shut down, the reactor power will be reduced to a steady state power level of less than 20% (based on natural circulation through the core).

4.2.8 Spent Fuel Storage and Handling

4.2.8.1 Fuel elements and control rods shall be inserted or removed from the reactor vessel one at a time.

4.2.8.2 Irradiated fuel elements shall be stored underwater in spent fuel storage racks that are positioned on the bottom of the spent fuel storage well, or in an approved shipping cask.

4.2.8.3 During the handling of irradiated fuel elements that have been operated at power levels greater than 1 Mwt the depth of water in the reactor upper cavity and/or the spent fuel storage well shall be at least 2 ft above the active fuel.

4.2.8.4 Irradiated fuel elements shall have decayed for at least 72 hours prior to placing them in the spent fuel storage well.

4.2.8.5 With the exception of a spent fuel shipping cask, the core spray bundle, the transfer canal shield plug and the other components and fixtures that are normally located and used within the spent fuel storage well, no objects heavier than a fuel assembly shall be handled over the spent fuel storage well.

4/5.3.1 WASTE DISPOSAL

4/5.3.1.1 Radioactive Liquid Effluents

Instrumentation

Limiting Condition for Operation

4.3.1.1.1 The following radioactive liquid effluent monitoring instrumentation channels shall be OPERABLE with:

a. Liquid Radwaste Effluent Line Monitor or Turbine Condenser Cooling Water Monitor, and

b. Liquid Radwaste Effluent Line Flow Meter

APPLICABILITY: At all times when releasing liquid radioactive effluents.

ACTION:

a. With the activity monitors not OPERABLE, effluent releases may be resumed for up to 14 days, provided that at least two independent samples are analyzed in accordance with "5.3.1.1.2" prior to initiating a release. Otherwise, suspend release of radioactive effluents via the pathway.

b. With the flow meter not OPERABLE, effluent releases via this pathway may continue for up to 30 days, provided the flow rate is estimated at least once per 24 hours during the actual releases. Pump curves may be used to estimate flow.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.1.1 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION operations at the frequencies shown below.

a. Liquid Radwaste Effluent Line Monitor

i. Channel Check - P

ii. Source Check - Q

iii. Channel Functional Test - Q(1)

iv. Channel Calibration - R(3)

b. Turbine Condenser Cooling Water Monitor

i. Channel Check - D

ii. Source Check - M

iii. Channel Functional Test Q(1)

iv. Channel Calibration - R(3)

c. Liquid Radwaste Effluent Line Flow Meter

i. Channel Check - D(2)

ii. Channel Calibration - R(4)

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

1. Instrument indicates measured levels above the alarm setpoint.

2. Circuit failure.

3. Instrument indicates a downscale failure.

(2) 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.

(3) The CHANNEL CALIBRATION shall include the use of a known liquid radioactive source positioned in a reproducible geometry with respect to the sensor and emitting beta and gamma radiation with the fluences and energies in the ranges measured by the channel during normal operation.

(4) The CHANNEL CALIBRATION will be in accordance with the manufacturer's recommended procedure.

RADIOACTIVE LIQUID EFFLUENTS

CONCENTRATION

LIMITING CONDITION FOR OPERATION

4.3.1.1.2 The concentration of radioactive material released at any time from the site shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} µCi/ml total activity.

APPLICABILITY: AT ALL TIMES.

ACTION:

With the concentration of radioactive material released from the site exceeding the above limits, immediately restore concentration to within the above limits.

SURVEILLANCE REQUIREMENTS

5.3.1.1.2.a The radioactivity content of each batch of radioactive liquid waste to be discharged shall be determined prior to release by sampling and analysis in accordance with Table 5.3.1.1.2. The results of pre-release analyses shall be used with calculational methods to assure that the concentration at the point of release is maintained within the limits of Specification 4.3.1.1.2.

5.3.1.1.2.b Analyses of composite samples from uniformly mixed batch releases shall be performed in accordance with Table 5.3.1.1.2. The results of the composite sample analyses shall be used with the calculational methods in the ODCM to assure that the concentrations at the point of release were maintained within the limits of Specification 4.3.1.1.2.

TABLE 5.3.1.1.2

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS
Waste Tank Batch Releases[a]	P	P	Principal Gamma Emitters[c]
			I-131
	One Batch/M	M	Dissolved and Entrained Gases
	P	M Composite[b]	H-3
			Gross alpha
	P	Q Composite[b]	Sr-89, Sr-90

a. 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.

b. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste dischargd and in which the method of sampling employed results in a specimen which is representative of the liquid released.

Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

c. The principal gamma emitters for which the LLD specification will apply are exclusively the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Tc-99m, Cs-134, Cs-137, Ce-141, and Ce-144. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.

RADIOACTIVE LIQUID EFFLUENTS

DOSE

LIMITING CONDITION FOR OPERATION

4.3.1.1.3.1 The dose or dose commitment to an individual from radioactive materials in liquid effluents released from the site shall be limited:

a. During any calendar quarter to $\leq$ 1.5 mrem to the total body and to $\leq$ 5 mrem gamma to any organ, and

b. During any calendar year to $\leq$ 3 mrem to the total body and to $\leq$ 10 mrem gamma to any organ.

or

4.3.1.1.3.2

a. During any calendar quarter the activity released in liquid effluents shall be $\leq$ 2.5 Curies, excluding tritium and dissolved nobles gases, and,

b. During any calendar year, the activity released in liquid effluents shall be $\leq$ 5 Curies, excluding tritium and dissolved noble gases.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose and the activity content from the release of radioactive materials in liquid effluents exceeding the above limits, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce the releases of radioactive materials in liquid effluents during the remainder of the current calendar quarter and during the subsequent three calendar quarters, so that the cumulative dose or dose commitment to an individual from such releases during these four calendar quarters is within 3 mrem to the total body and 10 mrem to any organ or that the activity released during these four calendar quarters is within 5 Curies.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.1.3.1 Dose Calculations. Cumulative dose contributions from liquid effluents shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM) at least once per 31 days.

5.3.1.1.3.2 Activity. The cumulative activity released in liquid effluents shall be determined at least once per quarter.

4/5.3.1.2 RADIOACTIVE GASEOUS EFFLUENT

INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

4.3.1.2.1 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 4.3.1.2.1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 4.3.1.2.2 are not exceeded.

APPLICABILITY: As shown in Table 4.3.1.2.1.

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

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION required by Table 4.3.1.2.1.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.2.1 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION operations at the frequencies shown in Table 5.3.1.2.1.

TABLE 4.3.1.2.1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION[A]

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE CONDITIONS	ACTION (See Below)
1. Reactor Containment Building Ventilation Monitor System			
a. Gross Gaseous Activity Monitor	1	*	B
b. Sampler Flow Rate Measurement Device	1	*	C
2. Offgas Storage Tanks Discharge Monitor			
a. Gross Gaseous/Particulate Activity	1	**	D
b. System Flow Rate Measuring Device	1	**	C
3. Stack Monitoring System			
a. Noble Gas Activity Monitor	1	***	D
b. Iodine Sampler	1	***	E
c. Particulate Sampler	1	***	E
d. Sampler Flow Rate Measuring Device	1	***	C

* When Containment Building Ventilation System is in operation.
** During augmented offgas system operation.
*** At all times, unless alternate monitoring is available.

A. For post-accident instrumentation, refer to Section 4.3.2.

B. With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases through this pathway may continue for up to 24 hours.

C. With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated at least once per 24 hours.

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

D. With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided alternate indication is available or samples are continuously collected with auxiliary sampling equipment as required in Table 5.3.1.2.2.

TABLE 5.3.1.2.1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	SURVEILLANCE REQUIREMENT CONDITIONS
1. Reactor Containment Building Ventilation Monitoring System					
a. Gaseous Activity Monitor	D	M	Q(1)	R	*
b. Sampler Flow Rate Measuring Device	D	N.A.	Q(3)	R	*
2. Offgas Storage Tanks Discharge Monitor (After Treatment System)					
a. Noble Gas Activity Monitor	D	M	Q	R	*
b. System Flow Rate Measuring Device	D	N.A.	Q	R	*
3. Stack Monitoring System					
a.1. Gaseous Activity Monitor (Low Range)	D	M	Q(2)	R	*
a.2. Gaseous Activity Monitor (Medium Range)	D	NA	Q(2)	R	*
b. Iodine Sampler	D	M	Q(2)	R	*
c. Particulate Sampler	D	N.A.	Q(2)	R	*
d. Sampler Flow Rate Measuring Device	D	N.A.	Q(3)	R	*

* During applicable conditions per Table 4.3.1.2.1.

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exist:
   a. Instrument indicates measured levels above the alarm setpoint.
   b. Instrument indicates a downscale failure (provides control room annunciation alarm only).

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exist:
   a. Instrument indicates measured levels above the alarm setpoint.
   b. Instrument inicates a downscale failure.

(3) The CHANNEL FUNCTION TEST shall demonstrate that the control room local alarm occurs if the flow instrument indicates measured levels below the minimum and/or above the maximum alarm setpoint.

RADIOACTIVE GASEOUS EFFLUENTS

1. INSTANTANEOUS DOSE RATE

LIMITING CONDITION FOR OPERATION

4.3.1.2.2 The instantaneous dose rate due to radioactive materials released in gaseous effluents from the site shall be limited to the following:

a. The instantaneous dose rate limit for noble gases shall correspond to $\leq$ 500 mrem/yr to the total body and $\leq$ 3000 mrem/year to the skin, and

b. The instantaneous dose rate limit for all radioiodines and for all radioactive materials in particulate form and radionuclides (other than noble gases) with half lives greater than 8 days, shall correspond to $\leq$ 1500 mrem gamma/year to any organ.

APPLICABILITY: At all times.

ACTION:

With the dose rate(s) exceeding the above limits, immediately decrease the release rate to within the above limit(s).

SURVEILLANCE REQUIREMENTS

5.3.1.2.2.1 The dose rate due to radioactive materials, other than noble gases, in gaseous effluents shall be determined to be within the above limits in accordance with the method and procedures of the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 5.3.1.2.2.

5.3.1.2.2.2 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methods and procedures of the ODCM.

TABLE 5.3.1.2.2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis
A. Off-Gas Storage Tank Discharge	M(c) (Grab Sample)	Each Sample	Principal Gamma Emitters
B. Stack Effluents (From Isokinetic Sample Line)	Continuous(b)	W(a) Charcoal Sample	I-131
			I-133
	Continuous(b)	W(a) Particulate Sample	Principal Gamma Emitters and long-lived Beta Emitters
	Continuous(b)	M Particulate Sample	Gross Alpha
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta and Gamma
C. Stack Effluents (From Isokinetic Sample Line)	M Grab Sample	M Marinelli or Bomb	Principal Gamma Emitters
			H-3

TABLE NOTATION:

(a) Filter and cartridge 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).

(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 Specifications 5.3.1.2.2, 5.3.1.2.3, and 5.3.1.2.4.

(c) When augmented offgas system is in operation.

RADIOACTIVE GASEOUS EFFLUENTS

DOSE, NOBLE GASES

LIMITING CONDITION FOR OPERATION

4.3.1.2.3 The air dose due to noble gases at site boundary released in gaseous effluents from the site shall be limited to the following:

a. During any calendar quarter, to $\leq$ 5 mrad for gamma radiation and $\leq$ 10 mrad for beta particle radiation; and

b. During any calendar year, to $\leq$ 10 mrad for gamma radiation and $\leq$ 20 mrad for beta particle radiation.

APPLICABILITY: At all times.

ACTION:

a. With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce the releases of radioactive noble gases in gaseous effluents during the remainder of the current calendar quarter and during the subsequent three calendar quarters so that the cumulative dose during these four calendar quarters is within (10) mrad for gamma radiation and (20) mrad for beta radiation.

b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.2.3 Dose Calculations Cumulative dose contributions for the current calendar quarter and current calendar year shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM) at least once every 31 days.

RADIOACTIVE GASEOUS EFFLUENTS

DOSE, RADIONUCLIDES OTHER THAN NOBLE GASES

LIMITING CONDITION FOR OPERATION

4.3.1.2.4.1 The dose to an individual at the site boundary from radionuclides (other than noble gases) with half-lives greater than 8 days, in gaseous effluents (including radioiodines) released from the site shall be limited to the following:

a. During any calendar quarter to $\leq$ 7.5 mrem to any organ, and
b. During any calendar year to $\leq$ 15 mrem to any organ

or

4.3.1.2.4.2 The total Iodine 131 activity released in gaseous effluents be limited to the following:

a. During any calendar quarter to $\leq$ 0.5 Curies, and
b. During any calendar year to $\leq$ 1.0 Curies

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radionuclides (other than nobles gases) with half lives greater than 8 days (including radioiodines) and the Iodine-131 activity in gaseous effluents exceeding any of the above limits, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the cause(s) for exceeding the limit and defines the corrective actions to be taken to reduce the releases of radionuclides (other than noble gases) with half-lives greater than 8 days (including radioiodines), in gaseous effluents during the remainder of the current calendar quarter and during the subsequent three calendar quarters so that the cumulative dose or dose commitment to an individual from such releases during these four calendar quarters is within 15 mrem to any organ or the Iodine-131 activity is within 1.0 Curies.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.2.4.1 Dose Calculations Cumulative dose contributions for the current calendar quarter and current calendar year shall be determined in accordance with the ODCM at least once every 31 days.

5.3.1.2.4.2 Iodine-131 Activity. The Cumulative Iodine-131 acitivty released for the current calendar quarter and calendar year shall be determined at least once every 31 days.

RADIOACTIVE GASEOUS EFFLUENTS

GASEOUS RADWASTE SYSTEM

LIMITING CONDITION FOR OPERATION

4.3.1.2.5 A GASEOUS RADWASTE SYSTEM shall be in operation.

APPLICABILITY: Whenever the main condenser air ejector system is in operation.

ACTION:

a. With the GASEOUS RADWASTE SYSTEM inoperable for more than 7 days, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which includes the following information:

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

   2. Action(s) taken to restore the inoperable equipment to OPERABLE STATUS.

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

b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.2.5 Ensure there is flow through the GASEOUS RADWASTE SYSTEM every 7 days when the system is required to be in operation.

4/5.3.1.3 RADIOACTIVE EFFLUENTS

TOTAL DOSE

LIMITING CONDITION FOR OPERATION

4.3.1.3.1 The dose equivalent to any member of the public at the site boundary, due to releases of radioactivity and radiation, from LACBWR shall be limited to $\leq$ 25 mrem to the total body or any organ (except the thyroid, which is limited to $\leq$ 75 mrem) over a period of one calendar year.

APPLICABILITY: At all times.

ACTION:

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding the above limits, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Director, Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commisison, Washington, D. C. 20555, within 30 days, which defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the limits of Specification 4.3.1.3.1. This Special Report shall include an analysis which estimates the radiation exposure to a member of the public from LACBWR (including all effluent pathways and direct radiation) for one year period that includes the release(s) covered by this report. If the estimated dose(s) exceeds the limits of Specification 4.3.1.3.1, and if the release condition resulting in violation of 40 CFR 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR 190 and including the specified information of § 190.11(b). Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete. The variance only relates to the limits of 40 CFR 190, and does not apply in any way to the requirements for dose limitation of 10 CFR Part 20, as addressed in other sections of this technical specification.

b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.3.1 Dose Calculations Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Specifications 5.3.1.1.3.1, 5.3.1.2.3, 5.3.1.2.4.1, and in accordance with the Offsite Dose Calculation Manual (ODCM).

WASTE DISPOSAL

4/5.3.1.4 SOLID RADIOACTIVE WASTE

LIMITING CONDITION FOR OPERATION

4.3.1.4.1 Packaging of solid radioactive wastes shall ensure meeting the requirements of 10 CFR Part 20 and of 10 CFR Part 71 prior to shipment of radioactive wastes from the site.

APPLICABILITY: At all times.

ACTION:

a. With the packaging requirements of 10 CFR Part 20 and/or 10 CFR Part 71 not satisfied, suspend shipments of defectively packaged solid radioactive wastes from the site.

b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

5.3.1.4.1 Procedures shall be used to verify the adequate packaging of each type of radioactive waste.

4/5.3.1 WASTE DISPOSAL

BASES

4/5.3.1.1 LIQUID EFFLUENTS

4/5.3.1.1.2 CONCENTRATION

This specification is provided to ensure that the concentration of radioactive materials released in liquid waste effluents from the site will be less than the concentration levels specified in 10 CFR Part 20, Appendix B, Table II, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water outside the site will not result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to an individual and (2) the limits of 10 CFR Part 20.106(e) to the population. The concentration limit for noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2.

4/5.3.1.1.3 DOSE

This specification is provided to implement the requirements of Sections II.A, III.A, IV.A and Annex of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.A of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonably achievable." 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.

BASES

4/5.3.1.2 GASEOUS EFFLUENTS

4/5.3.1.2.2 DOSE RATE

This specification is provided to ensure that the dose rate at any time at the site boundary from gaseous effluents from LACBWR will be within the annual dose limits of 10 CFR Part 20 for unrestricted areas. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an unrestricted area, either within or outside the site boundary, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(b)). For individuals who may at times be within the site boundary, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the site boundary to $\leq$ 500 mrem/year to the total body or to $\leq$ 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to $\leq$ 1500 mrem/year for the nearest cow to the plant.

4/5.3.1.2.3 DOSE, NOBLE GASES

This specification is provided to implement the requirements of Sections II.B, III.A, and IV.A of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.B of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I is to be shown by calculational procedures based on models and data such that the actual exposure of an individual through the appropriate pathways is unlikely to be substantially underestimated.

BASES

4/5.3.1.2.4 DOSE, RADIONUCLIDES OTHER THAN NOBLE GASES

This specification is provided to implement the requirements of Sections II.C, III.A, IV.A and Annex of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated.

4/5.3.1.2.5 GASEOUS RADWASTE SYSTEM

The OPERABILITY of the gaseous radwaste system ensures that the system will be available for use whenever gaseous effluents require treatment prior to release to the environment. The required use of the system provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." This specification implements the requirements of 10 CFR Part 50.36a and General Design Criterion 60 of Appendix A to 10 CFR Part 50.

4/5.3.1.3.1 TOTAL DOSE

This specification is provided to meet the dose limitations of 40 CFR 190. The specification requires the preparation and submittal of a Special Report whenever the calculated doses from plant radioactive effluents exceed the objective doses of 40 CFR 190. The Special Report will describe a course of action which should result in the limitation of dose to a member of the public for one calendar year 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 shall be submitted 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 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 on the site.

4/5.3.1.4 SOLID RADIOACTIVE WASTE

This specification ensures the packaging of solid radioactive waste will comply with 10 CFR 20 and 10 CFR 71.

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5 MAINTENANCE

5.1 GENERAL

5.1.1 Maintenance operations, including refueling operations and routine tests, shall be performed in conformance with these specifications.

5.1.2 Maintenance operations on the reactor coolant system, reactor components, or emergency systems shall be performed as authorized by the Shift Supervisor whenever fuel is in the reactor. Maintenance involving the opening of systems containing radioactive materials shall be conducted under the surveillance of a Health Physics representative.

5.1.3 Maintenance operations which involve the opening of the reactor primary coolant system shall be performed with the reactor shut down and depressurized to atmospheric pressure. The reactor primary coolant auxiliary systems may be serviced during reactor operation if the system is first isolated, depressurized to atmospheric pressure, and cooled to 150°F. The limitations of this paragraph do not apply to the supervised collection of steam or water samples, and supervised venting of process instruments.

	CHANNELS	ACTION	MINIMUM FREQUENCY
		Check	Once per shift when in service.
6.	Intermediate range (Channels 3 and 4)	Test (10^{-10} and 10^{-5} amps; period*)	Prior to each reactor startup if test has not been performed within 30 days.
		Check	Once per shift when in service
7.	Wide range and power range (Channels 5, 6, 7 & 8).	Check by heat balance.	Monthly when in service.
	A. Nuclear Instrumentation and Automatic Gain Control Subsystem.	*Test	Monthly when in service and prior to each reactor startup if test has not been performed within 30 days.
	B. Nuclear Instrumentation and Automatic Gain Control Subsystem.	Check	Once per shift when in service.
	C. Automatic Gain Control Subsystem	Calibration	At each refueling shutdown.
	NOTE: Testing of the Nuclear Instrumentation and Automatic Gain Control Sub-System shall be done concurrently.		
8.	Full scram circuits	Test for hot short by means of builtin test switch.	Once a month
9.	Area Radiation Monitors	Calibration	At each refueling shutdown
		Test	Every two weeks
		Check	Daily
10.	Liquid Radiation Monitors other than Liquid Radwaste Effluent Line Monitor or Turbine Condenser Cooling Water Monitor	Calibration	At each refueling shutdown
		Test	Every two weeks
		Check	Daily
11.	Gas Radiation Monitors, other than C.B. monitor, stack monitor and Offgas Storage Tanks Discharge Monitor	Calibration	At each refueling shutdown
		Test	Every two weeks

	CHANNELS	ACTION	MINIMUM FREQUENCY
12.	Particulate Radiation Monitors, other than Stack and CB monitors	Calibration	At each refueling shutdown
		Test	Every two weeks
		Check	Daily
13.	Portable Radiation Detectors	Calibration	Semi-annually
		Check	Every two weeks
14.	Main Condenser Vacuum	Calibration	At each refueling shutdown
		*Test	Prior to each plant startup if test has not been performed within the last 30 days.
15.	Reactor Building Pressure	Calibration	At each refueling shutdown
16.	Low Main Steam Pressure	Calibration	At each refueling shutdown
17.	Reactor Building Main Steam Isolation Valve	*Test	Prior to each plant startup if test has not been performed within 30 days.
18.	Turbine Building Main Steam Isolation Valve	*Test	Prior to each plant startup if test has not been performed within 30 days.
19.	Reactor Building MCC 1A under-voltage relays	*Test	At each refueling shutdown
20.	2400 V Busses 1A and 1B under-voltage relays	*Test	At each refueling shutdown
21.	CRD accumulators low oil level scram relay	Test	Prior to each plant startup if test has not been performed within 30 days.

TABLE 1 - OPERATING LIMITS

ITEM NO.	CONDITION	CHANNEL OR SENSOR	SET POINT	ACTION	KEYSWITCH BYPASS PROVISIONS
16	reactor building pressure high	reactor building pressure transmitter 1 or 2	$\leq$ 5 psig	(1) initiation of high pressure core spray pumps (2) initiation of alternate core spray pumps (3) closure of ventilation inlet and outlet dampers (4) closure of containment off-gas vent header valve (5) closure of retention tank pump discharge valve (6) closure of shutdown condenser condensate drain valve (7) closure of reactor blowdown through decay heat removal valve (8) closure of containment high pressure service water valve (9) closure of containment demineralized water valve (10) closure of containment heating steam condensate valve	none
17	off-gas holdup tank effluent activity high	activity monitor	$\leq$ gaseous activity levels which correspond to the limitations given in Section 4.3.1.2.2		

TABLE 1 - OPERATING LIMITS - (Cont'd)

ITEM NO.	CONDITION	CHANNEL OR SENSOR	SET POINT	ACTION	KEYSWITCH BYPASS PROVISIONS
18	reactor building ventilation exhaust	activity monitors	$\leq$ activity levels which correspond to the limitations given in Section 4.3.1.2.2.	(1) closure of ventilation inlet and outlet dampers (2) closure of containment off-gas vent header valve	none
19	simultaneous low reactor pressure and low water level	pressure transmitter and water level safety channel 1 & 2	25-30 psig and $\leq$ 12" below nominal indiated level	opening of diaphragm valve allowing water to flow directly from overhead storage tank to core spray nozzles	
20	simultaneous high reactor building pressure and reactor low water level	reactor building pressure transmitter 1 or 2 and reactor water level safety channel 1 or 2	$\leq$ 5 psig and $\leq$ 12" below nominal indicated level	opening of motor operating valves and start of engine driven pumps of alternate core spray system	
21	high reactor pressure or low reactor water level	3 reactor pressure or 3 reactor level transmitters	$\leq$ 1350 psig or $\leq$ 30 inches below nominal indicated level	trip of both recirculation pump breakers	the protective function can be bypassed whenever the reactor is shutdown or recirculation pump operation is required for safety reasons
22	steam safety valves not fully closed	position switches on each of the three inservice safety valves	open-close	none - post accident indication only	none