UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CAROLINA POWER AND LIGHT COMPANY

DOCKET NO. 50-261

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 85
License No. DPR-23

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Carolina Power and Light Company (the licensee) dated November 10, 1980, as supplemented on February 7 and October 25, 1983, and January 13, February 7, and May 9, 1984, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-23 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 85 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented prior to startup from the 1985 refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 4, 1984

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 85 FACILITY OPERATING LICENSE NO. DPR-23

DOCKET NO. 50-261

Revise Appendix A as follows:

Remove Pages	Insert Pages
i thru vi (Table of Contents)	i thru vii (Table of Contents)
1-3 thru 1-4	1-3 thru 1-8
3.5-1 thru 3.5.14	3.5-1 thru 3.5-30
3.9-1 thru 3.9-4	3.9-1 thru 3.9-11
----------	3.16-1 thru 3.16-8
----------	3.17-1 thru 3.17-13
4.1-5	4.1-5
4.10-1 thru 4.10-3	4.10-1 thru 4.10-10
4.18-1	----------
----------	4.19-1 thru 4.19-7
----------	4.20-1 thru 4.20-4
----------	4.21-1 thru 4.21-2
6.5.1	6.5.1
6.5.1a	6.5.1a
6.5.7	6.5.7
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1.6 INSTRUMENTATION SURVEILLANCE

1.6.1 Action

Action shall be that part of a specification which prescribes remedial measures required under designated conditions.

1.6.2 Channel Calibration

Adjustment of channel output such that it responds, with acceptable range and accuracy, to known value of the parameter which the channel measures. Calibration shall encompass the entire channel, including the alarm or trip, and shall be deemed to include the channel functional test.

1.6.3 Channel Check

A qualitative determination of acceptable operability by observation of channel behavior during operation. This determination will include, whenever possible, comparison of the channel with other independent channels measuring the same variable.

1.6.4 Channel Functional Test

Injection of a simulated signal into the channel to verify that it is operable, including alarm and/or trip initiating action.

1.6.5 Source Check

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

1.7 CONTAINMENT INTEGRITY

Containment integrity is defined to exist when:

a. All non-automatic containment isolation valves not required for normal operation are closed and blind flanges are properly installed where required.

b. The equipment door is properly closed and sealed.

c. At least one door in the personnel air lock is properly closed and sealed.

d. All automatic containment isolation trip valves required to be closed during accident conditions are operable or are secured closed except as stated in Specification 3.6.3. Manual valves qualifying as automatic containment isolation valves are secured closed.

e. The uncontrolled containment leakage satisfies Specification 4.4.

1.8 QUADRANT POWER TILT

The quadrant power tilt is defined as the ratio of maximum to average of the upper excore detector currents or the lower excore detector currents, whichever is greater. If one excore is out of service, the three in-service units are used in computing the average.

1.9 FIRE SUPPRESSION WATER SYSTEM

A fire suppression water system shall consist of : a water source; pumps; and distribution piping with associated sectionalizing control or isolation valves.

1.10 STAGGERED TEST BASIS

A Staggered Test Basis shall consist of:

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

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

1.11 GASEOUS RADWASTE TREATMENT SYSTEM

The Gaseous Radwaste Treatment System is the system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system off-gases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

1.12 VENTILATION EXHAUST TREATMENT SYSTEM

The Ventilation Exhaust Treatment System is the system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters prior to their release to the environment. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be Ventilation Exhaust Treatment System components.

1.13 OFFSITE DOSE CALCULATION MANUAL (ODCM)

The Offsite Dose Calculation Manual shall contain the current methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and the methodology to calculate gaseous and liquid effluent monitoring alarm/trip setpoints; and, the requirements of the environmental radiological monitoring program.

1.14 DOSE EQUIVALENT I-131

The Dose Equivalent I-131 shall be that concentration of I-131 (microcurie/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. The thyroid dose conversion factors used for this calculation shall be those listed in NRC Regulatory Guide 1.109, Revision 1, October 1977.

1.15 PROCESS CONTROL PROGRAM (PCP)

The Process Control Program (PCP) shall contain the current formulas, sampling, analyses, tests and determinations to be made to ensure that the processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Part 20, 10 CFR Part 71, and Federal and State regulations and other requirements governing the disposal of the radioactive waste.

1.16 SOLIDIFICATION

Solidification shall be the conversion of wet radioactive wastes into a form that meets shipping and burial ground requirements.

1.17 PURGE - PURGING

Purge or purging is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

1.18 VENTING

Venting is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required during venting. Vent, used in system names, does not imply a venting process.

1.19 SITE BOUNDARY

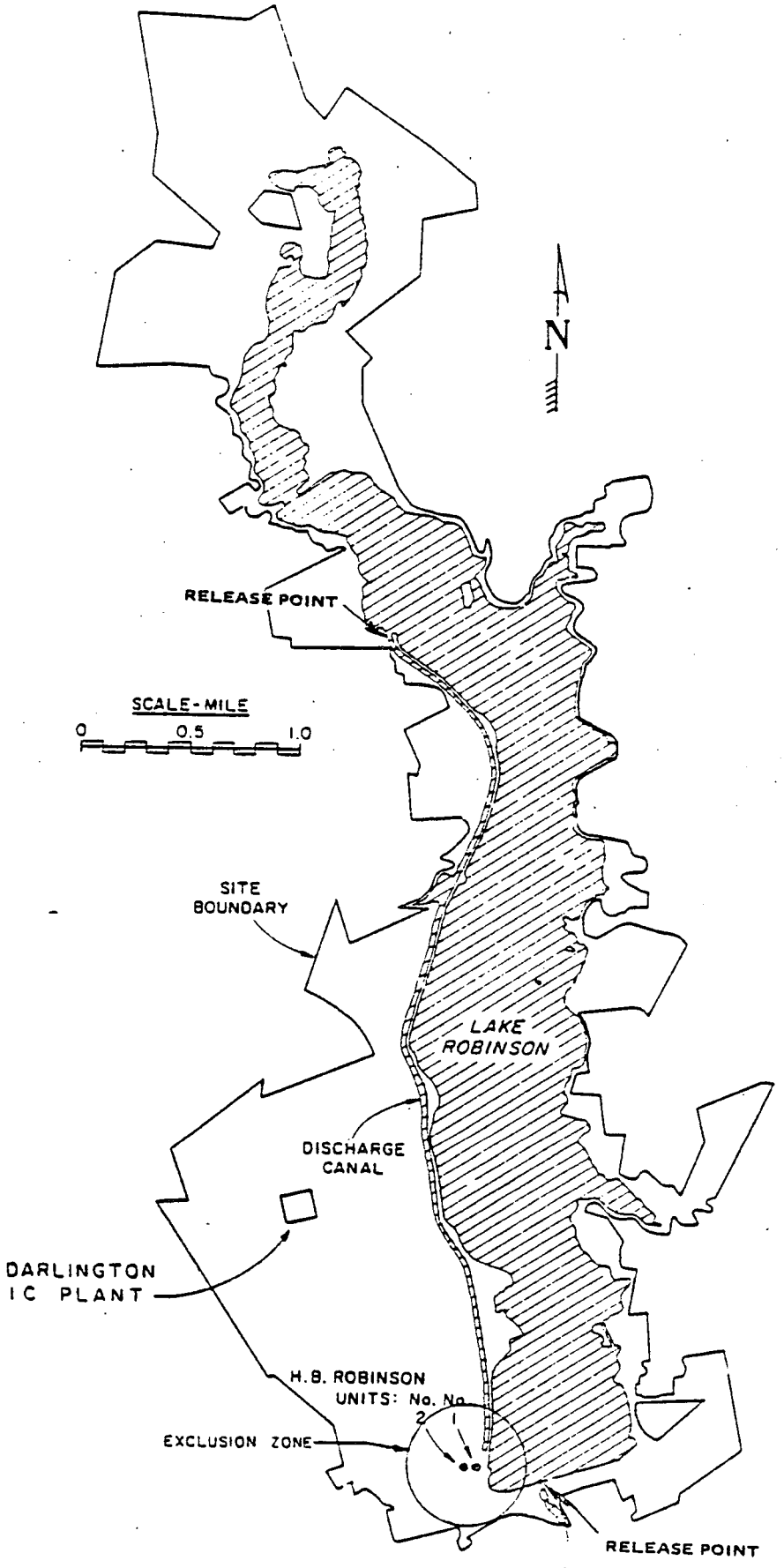
The site boundary shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee, as defined by Figure 1.1-1.

1.20 MEMBER(S) OF THE PUBLIC

Member(s) of the public shall include all individuals who by virtue of their occupational status have no formal association with the plant. This category shall include non-employees of the licensee who are permitted to use portions of the site for recreational, occupational or other purposes not associated with plant functions. This category shall not include non-employees such as vending machine servicemen, or postmen who, as part of their formal job function, occasionally enter an area that is controlled by the licensee for the purposes of protection of individuals from exposure to radiation and radioactive materials.

1.21 UNRESTRICTED AREA

Unrestricted area shall be any area at or beyond the Site Boundary to which access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the Site Boundary used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.



H. B. ROBINSON
UNIT 2
Carolina Power & Light Company

PLANT SITE BOUNDARY
AND EXCLUSION ZONE

FIGURE
1.1-1

3.5 INSTRUMENTATION SYSTEMS

3.5.1 Operational Safety Instrumentation

Applicability

Applies to plant operational safety instrumentation systems.

Objective

To provide for automatic initiation of the Engineered Safety Features in the event that principal process variable limits are exceeded, and to delineate the conditions of the plant instrumentation and safety circuits necessary to ensure reactor safety.

Specification

3.5.1.1 The Engineered Safety Features initiation instrumentation setting limits shall be as stated in Table 3.5-1.

3.5.1.2 For on-line testing or in the event of a subsystem instrumentation channel failure, plant operation at rated power shall be permitted to continue in accordance with Tables 3.5-2 through 3.5-5.

3.5.1.3 In the event the number of channels of a particular subsystem in service falls below the limits given in the column entitled Minimum Operable Channels, or Minimum Degree of Redundancy cannot be achieved, operation shall be limited according to the requirement shown in Column 3 of Tables 3.5-2 through 3.5-4 and Column 2 of Table 3.5-5.

3.5.1.4 The containment ventilation isolation function is only required when containment integrity is required.

3.5.2 Radioactive Liquid Effluent Instrumentation

Applicability

Applies to the radioactive liquid effluent instrumentation system.

Objective

To define the operating requirements for the radioactive liquid effluent instrumentation system.

Specification

3.5.2.1 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.5-6 shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 3.9.1.1 are not exceeded. The alarm/trip setpoints shall be determined in accordance with the ODCM.

3.5.2.2 With a radioactive liquid monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive liquid effluent monitored by the affected channel, change the setpoint so it is acceptably conservative, or declare the channel not operable.

3.5.2.3 With less than the minimum number of radioactive liquid effluent monitoring instrumentation operable, take the action shown in Table 3.5-6.

3.5.2.4 The provisions of Specifications 3.0 and 6.9.2.b(2) are not applicable.

3.5.3 Radioactive Gaseous Effluent Instrumentation

Applicability

Applies to the radioactive gaseous effluent instrumentation system.

Objective

To define the operating requirements for the radioactive gaseous effluent instrumentation system.

Specification

3.5.3.1 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.5-7 shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 3.9.3.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with the ODCM.

3.5.3.2 With a radioactive effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive gaseous effluents, change the setpoint so it is acceptably conservative, or declare the channel not operable.

3.5.3.3 With less than the minimum number of radioactive effluent monitoring instrumentation channels operable take the action shown in Table 3.5-7.

3.5.3.4 The provisions of Specification 3.0 and 6.9.2.b(2) are not applicable.

Basis

Operational Safety Instrumentation

Instrumentation has been provided to sense accident conditions and to initiate operation of the Engineered Safety Features.(1)

Safety Injection System Actuation

Protection against a Loss-of-Coolant or Steam Break accident is brought about by automatic actuation of the Safety Injection System which provides emergency cooling and reduction of reactivity.

The Loss-of-Coolant Accident is characterized by depressurization of the Reactor Coolant System and rapid loss of reactor coolant to the containment. The Engineered Safety Features have been designed to sense these effects of the Loss-of-Coolant Accident by detecting low pressurizer pressure and generate signals actuating the SIS active phase.

The SIS active phase is also actuated by a high containment pressure signal (Hi-Level) brought about by loss of high enthalpy coolant to the containment. This actuation signal acts as a backup to the low pressurizer pressure signal actuation of the SIS and also adds diversity to protection against loss of coolant.

Signals are also provided to actuate the SIS upon sensing the effects of a steam line break accident. Therefore, SIS actuation following a steam line break is designed to occur upon sensing high differential steam pressure between the steam header and steam generator line or upon sensing high steam line flow in coincidence with low reactor coolant average temperature or low steam line pressure.

The increase in the extraction of RCS heat following a steam line break results in reactor coolant temperature and pressure reduction. For this reason, protection against a steam line break accident is also provided by low pressurizer pressure signals actuating safety injection.

Protection is also provided for a steam line break in the containment by actuation of SIS upon high containment pressure.

SIS actuation injects highly borated fluid into the Reactor Coolant System in order to counter the reactivity insertion brought about by cooldown of the reactor coolant which occurs during a steam line break accident.

Containment Spray

The Engineered Safety Features also initiate containment spray upon sensing a high containment pressure signal (Hi-Hi Level). The containment spray acts to reduce containment pressure in the event of a loss of coolant or steam line break accident inside the containment, in order to reduce containment pressure. The containment spray cools the containment directly and limits the release of fission products by absorbing iodine should it be released to the containment.

Containment spray is designed to be actuated at a higher containment pressure (approximately 50% of design containment pressure) than the SIS (10% of design). Since spurious actuation of containment spray is to be avoided, it is initiated only on coincidence of Hi-Hi Level containment pressure sensed by both of the two sets of containment pressure signals provided for its actuation.

Steam Line Isolation

Steam line isolation signals are initiated by the Engineered Safety Features closing all steam line stop valves. In the event of a steam line break, this action prevents continuous, uncontrolled steam release from more than one steam generator by isolating the steam lines on high containment pressure (Hi-Hi-Level) or high steam line flow. Protection is afforded for breaks inside or outside the containment even when it is assumed that there is a single failure in the steam line isolation system.

Feedwater Line Isolation

The feedwater lines are isolated upon actuation of the Safety Injection System in order to prevent excessive cooldown of the reactor coolant system. This mitigates the effect of an accident such as a steam break which, in itself, causes excessive coolant temperature cooldown.

Feedwater line isolation also reduces the consequences of a steam line break inside the containment, by stopping the entry of feedwater.

Setting Limits

a. The Hi-Level containment pressure limit is set at about 10% of design containment pressure. Initiation of Safety Injection protects against Loss-of-Coolant(2) or steam line break(3) accidents as discussed in the safety analysis.

b. The Hi-Hi Level containment pressure limit is set at about 50% of design containment pressure. Initiation of Containment Spray and Steam Line Isolation protects against large Loss-of-Coolant(2) or steam line break accidents,(3) as discussed in the safety analysis.

c. The pressurizer low pressure limit is set substantially below system operating pressure limits. However it is sufficiently high to protect against a Loss-of-Coolant Accident as shown in the safety analysis.(2)

d. The steam line high differential pressure limit is set in the event of a large steam line break accident, as shown in the safety analysis.(3)

e. The high steam line flow limit is set at approximately 40% of the steam flow from no load to 20% and at 110% of full steam flow at full load, with the steam flow differential pressure measurement linearly programmed between

20% load and 100% load in order to protect against large steam line break accidents.[4] The coincident low T_{avg} setting limit for SIS and steam line isolation initiation is set below its hot shutdown value. The coincident steam line pressure setting limit is set below the full load operating pressure. The safety analysis shows that these settings provide protection in the event of a large steam line break.[3]

Instrument Operating Conditions

During plant operations, the complete instrumentation systems will normally be in service. Reactor safety is provided by the Reactor Protection System, which automatically initiates appropriate action to prevent exceeding established limits. Safety is not comprised, however, by continuing operation with certain instrumentation channels out of service since provisions were made for this in the plant design. This specification outlines limiting conditions for operation necessary to preserve the effectiveness of the Reactor Control and Protection System when any one or more of the channels is out of service.

Almost all reactor protection channels are supplied with sufficient redundancy to provide the capability for channel calibration and test at power. Exceptions are backup channels such as reactor coolant pump breakers. The removal of one trip channel on process control equipment is accomplished by placing that channel bistable in a tripped mode; e.g., a two-out-of-three circuit becomes a one-out-of-two circuit. The nuclear instrumenation system channels are not intentionally placed in a tripped mode since the test signal is superimposed on the normal detector signal to test at power. Testing of the NIS power range channel requires (a) bypassing the Dropped Rod protection from NIS, for the channel being tested, (b) defeating the $\Delta T/T_{avg}$ protection CHANNEL SET that is being fed from the NIS channel, and (c) defeating the power mismatch section of T_{avg} control channels when the appropriate NIS channel is being tested. However, the Rod Position System and remaining NIS channels still provide the dropped-rod protection. Testing does not trip the system unless a trip condition exists in a concurrent channel.

Instrumentation to Access Plant Conditions During and Following an Accident

The operability of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1975 and NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations," July 1979.

Radioactive Liquid Effluent Instrumentation

The radioactive liquid effluent monitoring 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 to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The operability and use of this instrumentation are consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

Radioactive Gaseous Effluent Instrumentation

The radioactive gaseous effluent monitoring 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 to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The operability and use of this instrumentation are consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

References

(1) FSAR Section 6.3.5

(2) FSAR Section 15.6.5

(3) FSAR Section 15.1.5

(4) CP&L Letter to the Directorate of Licensing dated October 23, 1973.

TABLE 3.5-1

ENGINEERED SAFETY FEATURE SYSTEM INITIATION INSTRUMENT SETTING LIMITS

NO.	FUNCTIONAL UNIT	CHANNEL ACTION	SETTING LIMIT
1.	High Containment Pressure (HI Level)	Safety Injection*	$\leq$ 5 psig
2.	High Containment Pressure (HI-HI Level)	a. Containment Spray** b. Steam Line Isolation	$\leq$ 25 psig
3.	Pressurizer Low Pressure	Safety Injection*	$\geq$ 1700 psig
4.	High Differential Pressure Between any Steam Line and the Steam Line Header	Safety Injection*	$\leq$ 150 psi
5.	High Steam Flow in 2/3 Steam Lines***	a. Safety Injection* b. Steam Line Isolation	$\leq$ 40% (at zero load) of full steam flow $\leq$ 40% (at 20% load) of full steam flow $\leq$ 110% (at full load) of full steam flow
	Coincident with Low T_{avg} or Low Steam Line Pressure		$\geq$ 541°F T_{avg}**** $\geq$ 600 psig steam line pressure
6.	Loss of Power		
	a. 480 V Emerg. Bus Undervoltage (Loss of Voltage) Time Delay	Trip Normal Supply Breaker	328 Volts $\pm$ 1 Volt .75 $\pm$ .25 sec.

TABLE 3.5-1 (Continued)

ENGINEERED SAFETY FEATURE SYSTEM INITIATION INSTRUMENT SETTING LIMITS

NO.	FUNCTIONAL UNIT	CHANNEL ACTION	SETTING LIMIT
6. (Cont'd)	b. 480V Emerg. Bus Undervoltage (Degraded Voltage) Time Delay	Trip Normal Supply Breaker	412 Volts ± 1 Volt 10.0 second delay ± 0.5 sec.
7.	Containment Radioactivity High	Ventilation Isolation	The alarm is set with a method described in the ODCM.

* Initiates also containment isolation (Phase A), feedwater line isolation, and starting of all containment fans.
** Initiates also containment isolation (Phase B).
*** Derived from equivalent ΔP measurements.
**** These setting limits shall be greater than or equal to 524°F and 450 psig when operating under reduced temperature conditions described in the November 11, 1981 license submittal.

TABLE 3.5-2

REACTOR TRIP INSTRUMENTATION LIMITING OPERATING CONDITIONS

NO.	FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1.	Manual	1	0	Maintain hot shutdown
2.	Nuclear Flux Power Range*	3	2	Maintain hot shutdown
3.	Nuclear Flux Intermediate Range	1	0	Maintain hot shutdown**
4.	Nuclear Flux Source Range	1	0	Maintain hot shutdown***
5.	Overtemperature ΔT	2	1	Maintain hot shutdown
6.	Overpower ΔT	2	1	Maintain hot shutdown
7.	Low Pressurizer Pressure	2	1	Maintain hot shutdown
8.	Hi Pressurizer Pressure	2	1	Maintain hot shutdown
9.	Pressurizer-Hi Water Level	2	1	Maintain hot shutdown
10.	Low Reactor Coolant Flow	2/operable loop	1/operable loop	Maintain hot shutdown
11.	Turbine Trip	2	1	Maintain less than 10% R.P.

TABLE 3.5-2 (Cont'd)

REACTOR TRIP INSTRUMENTATION LIMITING OPERATING CONDITIONS

NO.	FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
12.	Lo Lo Steam Generator Water Level	2	1	Maintain Hot Shutdown
13.	Underfrequency 4 KV System	2	1	Maintain Hot Shutdown
14.	Undervoltage on 4 KV System	2	1	Maintain Hot Shutdown
15.	Control Rod Misalignment Monitor****			
	a. Rod Position Deviation	1	0	Log individual rod position once/hour, and after a load change >10% or after >30 inches of control rod motion
	b. Quadrant Power Tilt Monitor (upper and lower ex-core neutron detectors)	1	0	Log individual upper and lower ion chamber currents once/hour and after a loa change >10% or after >30 inches of contro rod motion

* For zero power physics testing, it is permissible to take one channel out of service.

** When two of four power channels are greater than 10% full power, hot shutdown is not required.

*** When one of two intermediate range channels is greater than 1E-10 amps, hot shutdown is not required.

**** If both rod misalignment monitors (a and b) are inoperable for two hours or more, the nuclear overpower trip shall be reset to 93 percent of rated power in addition to the increased surveillance noted.

R.P. = Rated Power

TABLE 3.5-3

INSTRUMENTATION OPERATING CONDITIONS FOR ENGINEERED SAFETY FEATURES

NO.	FUNCTIONAL UNIT	1 MINIMUM CHANNELS OPERABLE	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1	SAFETY INJECTION			
	a. Manual	1	0	Cold Shutdown
	b. High Containment Pressure (Hi Level)	2	1	Cold Shutdown
	c. High Differential Pressure between any Steam and the Steam Line Header	2	1	Cold Shutdown***
	d. Pressurizer Low Pressure	2	1	Cold Shutdown***
	e. High Steam Flow in 2/3 Steam Lines Coincident with Low T_{avg} or Low Steam Pressure	1/Steam Line 2 T_{avg} Signals 2 Pressure Signals	***** 1 1	Cold Shutdown***

TABLE 3.5-3 (Continued)

INSTRUMENTATION OPERATING CONDITIONS FOR ENGINEERED SAFETY FEATURES

NO.	FUNCTIONAL UNIT	1 MINIMUM CHANNELS OPERABLE	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
2.	CONTAINMENT SPRAY			
	a. Manual*	2	0**	Cold Shutdown
	b. High Containment Pressure* (Hi-Hi Level)	2/set	1/set	Cold Shutdown
3.	LOSS OF POWER			
	a. 480V Emerg. Bus Undervoltage (Loss of Voltage)	2/bus(a)	1/bus(b)	Maintain Hot Shutdown
	b. 480V Emerg. Bus Undervoltage (Degraded Voltage)	2/bus	1/bus	Maintain Hot Shutdown(c)

* Also initiates a Phase B containment isolation.
** Must actuate two switches simultaneously.
*** When primary pressure is less than 2000 psig, channels may be blocked.
**** When primary temperature is less than 547°F, channels may be blocked.(d)
***** In this case, the 2/3 high steam flow is already in the trip mode.
(a) During testing and maintenance of one channel, may be reduced to 1/bus.
(b) During testing and maintenance of one channel, may be reduced to 0/bus.
(c) The reactor may remain critical below the power operating conditions with this feature inhibited for the purpose of starting reactor coolant Pumps.
(d) When operating under the reduced temperature conditions described in the November 11, 1981 license submittal, the channels may be blocked when primary temperature is less than 530°F.

TABLE 3.5-4

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

NO.	FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1.	CONTAINMENT ISOLATION			
	a. Phase A			
	i. Safety Injection	See Item No. 1 of Table 3.5-3		Cold Shutdown
	ii. Manual	1	0	Hot Shutdown
	b. Phase B	See Item No. 2 of Table 3.5-3		
	c. Ventilation Isolation			
	i. High Containment Activity	1	0	Containment shall not be purged.
	ii. Phase A	See Item No. 1.a of Table 3.5-4		

TABLE 3.5-4 (Continued)

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

NO.	FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
2.	STEAM LINE ISOLATION			
	a. High Steam Flow in 2/3 Steam Lines Coincident with Low T_{avg} or Low Steam Pressure	See Item No. 1 of Table 3.5-3		Cold Shutdown
	b. High Containment Pressure	See Item No. 1 of Table 3.5-3		Cold Shutdown
	c. Manual	1/Line	0	Hot Shutdown
3.	FEEDWATER LINE ISOLATION			
	a. Safety Injection	See Item No. 1 of Table 3.5-3		Cold Shutdown

TABLE 3.5-5

(THIS TABLE APPLIES WHEN THE RCS IS > 350°F)

INSTRUMENTATION TO FOLLOW THE COURSE OF AN ACCIDENT

NO.	INSTRUMENT	1 MINIMUM CHANNELS OPERABLE	2 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 CANNOT BE MET
1	Pressurizer Level	2	See Item 9 Table 3.5-2
2	Auxiliary Feedwater Flow Indication (Primary Indication)		Note 1
	SD AFW Pump	1 per S/G	
	MD AFW Pump	1 per S/G	
3	Reactor Coolant System Subcooling Monitor	1	Note 2
4	PORV Position Indicator (Primary)	1	Note 3
5	PORV Blocking Valve Position Indicator (Primary)	1	Note 3
6	Safety Valve Position Indicator (Primary)	1	Note 3

Note 1: The three AFW lines from the MD AFW pumps and the three AFW lines from the SD AFW pump each contain one primary flow indicator (2 AFW flow paths per steam generator for a total of 6 AFW lines). These primary indicators are backed up by the narrow range steam generator level indications. If one or more of the direct AFW flow indicators becomes inoperable when the RCS is > 350°F, restore the indicator(s) to an operable status within 7 days, or prepare and submit a special report to the NRC within the following 14 days detailing the cause(s) of the inoperable indicator(s), the actions being taken to restore the indicator(s) to an operating status, the estimated date for completion of the repairs, and any compensatory action being taken while the indicator(s) is inoperable. The action required when any of the backup indications of AFW flow are inoperable, is described in Table 3.5-2.

(Notes 2 & 3 -- see next page)

TABLE 3.5-3 (Continued)

INSTRUMENTATION TO FOLLOW THE COURSE OF AN ACCIDENT

Note 2 If both channels of the RCS subcooling monitor become inoperable when the RCS is >350°F, restore at least one channel to an operable status within 7 days, or prepare and submit a special report to the NRC within the following 14 days detailing the cause(s) of the inoperable channels, the actions being taken to restore at least one channel to an operable status, the estimated date for completion of the repairs, and any compensatory action being taken while both channels are inoperable.

Note: 3 The Pzr PORVs and Pzr PORV blocking valves both incorporate limit switches for the direct (primary) means of position indication. The backup method of position indication consists of PRT pressure and a temperature element in a common line downstream of the valves. The Pzr safety relief valves incorporate a vibration monitoring system as the primary method of valve position indication. The backup method of position indication consists of a temperature element downstream of each valve and PRT pressure. If the primary method of position indication for either the Pzr PORVs, Pzr PORV blocking valves, or Pzr safety relief valves becomes inoperable when the RCS is >350°F, restore the primary method to an operable status within 7 days, or prepare and submit a special report to the NRC within the following 14 days detailing the cause of the inoperable primary position indication method, the actions being taken to restore it to an operable status, the estimated date for completion of the repairs, and any compensatory action being taken while the primary position indication method is inoperable. If any of the backup methods of position indication for these valves becomes inoperable, it is to be repaired as soon as plant conditions permit.

TABLE 3.5-6

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
1. Liquid Radwaste Effluent Discharge Line		
a. Monitor (RMS-18) provides automatic termination of release upon exceeding alarm/trip setpoint	1	With the number of channels operable less than the MCO requirements: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that prior to initiating a release: 1. Two independent samples are analyzed in accordance with the Surveillance Requirements of Specification 3.9.1.1 and; 2. Two members of the facility staff independently verify the release rate calculations and the discharge line valving.
b. Flow rate measurement device	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may be continued, provided that the flow rate is estimated at least once per 4 hours during actual releases. Pump performance curves generated "in situ" and tank volumes may be used to estimate flow.

*MCO - Minimum Channels Operable

TABLE 3 (Continued)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
2. Steam Generator Blowdown Effluent Line		
a. Monitor (RMS-19) provides automatic termination of blowdown from all three Steam Generators upon exceeding alarm/trip setpoint.	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that grab samples are analyzed for gross radioactivity (beta or gamma) with a lower limit of detection of at least 1.0E-07 μ Ci/ml or are analyzed for principle gamma emitters consistent with Table 4.10-1; 1. Once per 24 hours when the specific activity of the secondary coolant is $\leq$ 0.01 μ Ci/ml Dose Equivalent I-131, or; 2. Once per 12 hours when the specific activity of the secondary coolant is > 0.01 μ Ci/ml Dose Equivalent I-131.
b. Flow rate measurement devices - each Steam Generator has its own blowdown flow rate measuring device.	1 per S/G	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that the flow rate for the affected blowdown line(s) is estimated at least once per 24 hours.

*MCO - Minimum Channels Operable

TABLE 3.5 (Continued)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
3. Discharge Canal Flow	Note 1	With the number of channels operable less than the MCO requirement suspend effluent release via this pathway
4. Tank Level Indicating Devices		With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Liquid additions to the affected tank(s) may continue provided that the liquid level for the affected tanks is estimated during all liquid additions to the affected tank(s).
a. Refueling Water Storage Tank	1	
b. Monitor Tanks		
Tank A	1	
Tank B		
c. Waste Condensate Tanks		
Tank C	1	
Tank D	1	
Tank E	1	
d. Temporary Tanks (Note 2)	1 per Tank	

TABLE 3.5-6 (Continued)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
5. Containment Fan Cooling Water Monitor (Service Water Effluent Line)		
a. Monitor (RMS-16) does not provide automatic termination of release upon exceeding alarm setpoint.	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that, once per 24 hours, grab samples are collected and analyzed for gross radioactivity (beta or gamma) with a lower limit of detection of at least 1.0E-07 μ Ci/ml or are analyzed for principal gamma emitters consistent with Table 4.10-1.
6. Composite Sampler for Settling Ponds	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that, once per 24 hours, grab samples are collected and analyzed for gross radioactivity (beta or gamma) with lower limit of detection of at least 1.0E-07 μ Ci/ml or are analyzed for principal gamma emitters consistent with Table 4.10-1.

*MCO - Minimum Channels Operable

NOTE TO TABLE 3.5-6

Note 1 - Pump curves for Unit 2 operating circulating water pumps may be used to satisfy this MCO. If no Unit 2 circulating water pumps are operating the pump curves for circulating water pumps operating in Unit 1 may be used to satisfy this MCO.

Note 2 - A temporary tank is defined as any tank having a capacity of $\geq$ 100 gallons used for the receipt or transfer of radioactive liquids.

TABLE 3.5-7

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
1. Plant Vent		
a. Radionoble gas monitor (RMS-14) provides automatic termination of Waste Gas Decay Tank releases upon exceeding alarm/trip setpoint.	1	With the number of channels operable less than the MCO requirements: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that prior to initiating a release: 1. Two independent samples are analyzed in accordance with the Surveillance Requirements of Specification 3.9.3.1 and; 2. Two members of the facility staff independently verify the release rate calculations and the discharge line valving.
b. Radionoble gas monitors RMS-14 and RMS-34 monitor all effluents from Auxiliary Building Ventilation System without providing automatic termination of release upon exceeding their respective alarm setpoints.	1 of the two monitors	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that grab samples are collected once per 12 hours and are analyzed for radionoble gases once per 24 hours.

*MCO - Minimum Channels Operable

TABLE 3.5-7 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
1. Plant Vent (Continued)		
c. Radioiodine Sampler (RMS-34)	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent release via this pathway may continue provided that a continuous sample is collected utilizing auxiliary sampling equipment as provided by Table 4.10-2.
d. Particulate Sampler (RMS-34)	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that a continuous sample is collected utilizing auxiliary sampling equipment as required by Table 4.10-2.
e. Sampler flow rate monitor (RMS-34) and Vacuum gauge (RMS-34)	1 of the two moni-tors	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsucessessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided the flow rate is estimated once per 4 hours.

TABLE 3.5-7 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
1. Plant Vent (Continued)		
f. Plant Vent flow rate monitor	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that flow rate is estimated once per 4 hours.
2. Waste Gas Holdup System Explosive Gas Monitoring System	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 14 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. When continuous monitoring is out of service daily grab samples will be taken and analyzed during normal operations and once per 4 hours during degassing operations.
3. Containment Vessel via Plant Vent		
a. Radionoble gas monitor (RMS-12) provides automatic termination of Containment Vessel releases upon exceeding alarm/trip Setpoint.	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and,

TABLE 3.5-7 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
3. Containment Vessel Via Plant Vent (Continued)		b. Effluent releases via this pathway may continue provided that either of the Plant Vent Radionoble Gas Monitors (RMS-14 or RMS-1 is operable; otherwise, suspend all releases via this pathway.
b. Radioparticulate Monitor (RMS-11) provides automatic termination of containment vessel releases exceeding alarm/trip setpoints	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that either of the Plant Vent Radionoble Gas Monitors (RMS-14 or RMS-1 is operable; otherwise, suspend all releases via this pathway.
c. Sampler flow rate monitor (RMS-11)	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that the flow rate is estimated once per 4 hours.
4. Condenser Vacuum Pump Vent		
a. Radionoble gas monitor (RMS-15) diverts effluents from Condenser Vacuum Pump Vent to the Plant Vent upon exceeding alarm/trip setpoint.	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and,

TABLE 3.5-7 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
4. Condenser Vacuum Pump Vent (Continued)		b. Effluent releases via this pathway may continue provided that; 1. Grab samples are collected once per 12 hours and are analyzed within 24 hours for radionoble gases, or; 2. The effluent is diverted to the Plant Vent and RMS-14 is operable.
b. Flow rate measuring devices (one for each Vacuum Pump).	1 for each pump in service	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided the flow rate is estimated once per 4 hours.
5. Fuel Handling Building Lower Level Exhaust Vent		
a. Radionoble gas monitor (RMS-20) trips the exhaust and supply fans for the lower level of the Fuel Handling Building upon exceeding alarm/trip setpoint.	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that grab samples are taken once per 12 hours and analyzed for gross activity within 24 hours.

*MCO - Minimum Channels Operable

TABLE 3.5-[illegible] (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
5. Fuel Handling Building Lower Level Exhaust Vent (Continued)		
b. Sampler flow rate monitor (RMS-20)	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided the flow rate is estimated once per 4 hours.
6. Fuel Handling Building Upper Level Exhaust Vent		
a. Radionoble gas monitor (RMS-21) trips the exhaust and supply fans for the upper level of the Fuel Handling Building upon exceeding alarm/trip setpoint.	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided that: 1. The Plant Vent Radionoble Gas Monitor (RMS-14) is operable, 2. Grab samples are collected once per 12 hours and are analyzed within 24 hours for radionoble gases.

*MCO - Minimum Channels Operable

TABLE 3.5-7 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Release Pathway/Instrumentation	MCO*	Required Action
6. Fuel Handling Building Upper Level Exhaust Vent (Continued)		
b. Sampler flow rate monitor (RMS-21)	1	With the number of channels operable less than the MCO requirement: a. Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, explain in the next Semi-annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner in accordance with Specification 6.9.1.d.4 and, b. Effluent releases via this pathway may continue provided the flow rate is estimated once per 4 hours.

*MCO - Minimum Channels Operable

3.9 RADIOACTIVE EFFLUENTS

3.9.1 Compliance With 10 CFR Part 20 - Radioactive Materials in Liquid Effluents

Applicability

Applies to radioactive material in liquid effluents released from the site to unrestricted areas.

Objective

To define the concentration limits of 10CFR20 for radioactive material in liquid effluents released to unrestricted areas.

Specification

3.9.1.1 The concentration of radioactive material in liquid effluents released at any time from the site to unrestricted areas (see Figure 1.1-1) shall be limited to the concentrations specified in 10CFR20, 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} μ Ci/ml total activity.

3.9.1.2 With the concentration of radioactive material in liquid effluents released from the site to unrestricted areas exceeding the above limits, without delay restore the concentration to within the above limits. In addition, a prompt notification must be made to the Commission in accordance with Specification 6.9.2(a)(10).

3.9.1.3 In the event that the immediate action required by 3.9.1.2 above cannot be satisfied, the facility shall be placed in hot shutdown

within 12 hours and in cold shutdown within the next 30 hours, and entry into the power operating condition shall not be made unless Specification 3.9.1.1 is met.

3.9.1.4 The provisions of Specifications 3.0 and 6.9.2.b(2) are not applicable.

3.9.2 Compliance With 10 CFR Part 50 - Radioactive Materials in Liquid Effluents

Applicability

Applies to radioactive materials in liquid effluents released from the site to unrestricted areas.

Objective

To define the calculated dose limits of 10CFR50 for radioactive materials in liquid effluents released to unrestricted areas.

Specification

3.9.2.1 The dose commitment at all times to a member of the public from radioactive materials in liquid effluents released to unrestricted areas (See Figure 1.1-1) shall be limited:

a. During any calendar quarter to $\leq$1.5 mrem to the total body and to $\leq$5 mrem to any organ, and
b. During any calendar year to $\leq$3 mrem to the total body and to $\leq$10 mrem to any organ.

3.9.2.2 With the calculated dose commitment from the release of radioactive materials in liquid effluents exceeding any of the limits prescribed by Specification 3.9.2.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.3.2.

3.9.3 Compliance With 10 CFR Part 20 - Radioactive Materials in Gaseous Effluents

Applicability

Applies to radioactive materials in gaseous effluents released from the site to unrestricted areas.

Objective

To define the dose rate limits for radioactive materials in gaseous effluents released to unrestricted areas.

Specification

3.9.3.1 The dose rate due to radioactive materials in gaseous effluents released from the site boundary (see Figure 1.1-1) shall be limited to the following:

a. For radionoble gases: $\leq$500 mrem/yr to the total body, $\leq$3000 mrem/yr to the skin, and

b. For I-131, I-133, and tritium, and for all radioactive materials in particulate form, inhalation pathway only, with half lives greater than 8 days: $\leq$1500 mrem/yr to any organ.

3.9.3.2 With the dose rate(s) exceeding the above limits, without delay decrease the release rate to within the above limits. In addition, a prompt notification must be made to the Commission in accordance with Specification 6.9.2(a)(10).

3.9.3.3 In the event that the immediate action required by 3.9.3.2 above cannot be satisfied, the facility shall be placed in hot shutdown

within 12 hours and in cold shutdown within the next 30 hours, and entry into the power operating condition shall not be made until Specification 3.9.3.1 is met.

3.9.4 Compliance With 10 CFR Part 50 - Radionoble Gases

Applicability

Applies to radionoble gases released in gaseous effluents to unrestricted areas.

Objective

To define the air dose limits of 10CFR50 for radionoble gases released in gaseous effluents to unrestricted areas.

Specification

3.9.4.1 The air dose commitment due to radionoble gases released in gaseous effluents to areas at and beyond the site boundary (See Figure 1.1-1) shall be limited, at all times, to the following:

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

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

3.9.4.2 With the calculated air dose commitment from radioactive noble gases in gaseous effluents exceeding any of the limits, prescribed by Specification 3.9.4.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.3.2.

3.9.5 Compliance With 10 CFR Part 50 - Radioiodines, Radioactive Materials in Particulate Form, and Radionuclides Other Than Radionoble Gases

Applicability

Applies to radioiodines, radioactive materials in particulate form, and radionuclides other than radionoble gases released from the site to unrestricted areas.

Objective

To define the dose limits of 10CFR50 for radioiodines, radioactive materials in particulate form, and radionuclides other than radionoble gases released from the site to unrestricted areas.

Specification

3.9.5.1 The dose to a member of the public from I-131, I-133, tritium and radioactive materials in particulate form, with half-lives greater than 8 days in gaseous effluents released to unrestricted areas (See Figure 1.1-1), shall be limited, at all times, to the following:

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

b. During any calendar year, $\leq$15 mrem to any organ.

3.9.5.2 With the calculated dose commitment from the release of I-131, I-133, tritium and radioactive materials in particulate form, with half lives greater than 8 days, in gaseous effluents exceeding any of the limits prescribed by Specification 3.9.5.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.3.2.

3.9.6 Compliance With 40 CFR Part 190 - Radioactive Effluents From Uranium Fuel Cycle Sources

Applicability

Applies to radioactive effluents from uranium fuel cycle sources.

Objective

To define the dose limits of 40CFR190 for radioactive effluents from uranium fuel cycle sources.

Specifications

3.9.6.1 The dose commitment to any member of the public, due to releases of licensed materials and radiation, from uranium fuel cycle sources shall be limited to $\leq$25 mrem to the total body or any organ except the thyroid, which shall be limited to $\leq$ 75 mrem over 12 consecutive months. This specification is applicable to Robinson Unit 2 only for the area within a five mile radius around the Robinson Plant.

3.9.6.2 With the calculated doses from the release of the radioactive materials in liquid or gaseous effluents exceeding twice the limits of Specification 3.9.2.1.a, 3.9.2.1.b, 3.9.4.1.a, 3.9.4.1.b, 3.9.5.1.a, or 3.9.5.1.b, calculations should be made including direct radiation contributions from the reactor units and from outside storage tanks to determine whether the above limits of Specification 3.9.6.1 have been exceeded. If such is the case in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.3.2.d, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR Part 20.405c, 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 same request is complete.

3.9.6.3 The provisions of Specifications 3.0 and 6.9.2.b(2) are not applicable.

Basis

Compliance With 10 CFR Part 20 - Radioactive Materials in Liquid Effluents

This specification is provided to ensure that the concentration of radioactive materials in liquid effluents released from the site to unrestricted areas will be less than the concentrations specified in 10 CFR Part 20, Appendix B, Table II. This limitation provides the additional assurance that the concentrations of radioactive materials in bodies of water outside the site will result in exposures within the limits of 10 CFR Part 20.106(e) to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radionuclide 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.

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 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).

Compliance With 10 CFR Part 50 - Radioactive Materials in Liquid Effluents

This specification is provided to implement the requirements of Sections II.A, and 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.A of Appendix I. The action statement provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I of 10 CFR Part 50 to assure that the release of radioactive material in liquid effluents will be kept "as low as is reasonably achievable." The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculative procedures based on models and data, such that the actual exposure of an individual 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 the 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.

Compliance With 10 CFR Part 20 - Radioactive Materials in Gaseous Effluents

This specification is provided to ensure that the dose rate at any time at the site boundary from gaseous effluents from H. B. Robinson Unit No. 2 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 result in the exposure of individuals outside the site boundary, to annual average concentrations within 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 unrestricted area. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rate equivalents above background to an individual in unrestricted areas to $\leq$500 mrem/year to the total body or to $\leq$3000 mrem/year to the skin.

Compliance With 10 CFR Part 50 - Radionoble Gases

This specification is provided to implement the requirements of Section II.B, III.A and IV.A of Appendix I, 10 CFR Part 50. The limiting condition for operation implementing the guides provides the required operating flexibility and at the same time implements 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 be shown by calculative procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The methods 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 the 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 dose commitments at the site boundary are based upon historical average atmospheric conditions.

Compliance With 10 CFR Part 50 - Radioiodines, Radioactive Materials in Particulate Form, and Radionuclides Other Than Radionoble Gases

This specification is provided to implement the requirements of Section II.C, 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.C of Appendix I. The action statement provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials as gaseous effluents will be kept "as low as reasonably achievable." The surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculative procedures based on models and data, such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The methods established in the ODCM 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", Revison 1, July 1977. The ODCM equations provided for determining the commitment are based upon historical average atmospheric conditions.

Compliance With 40 CFR Part 190 - Radioactive Effluents From Uranium Fuel Cycle Sources

This specification is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20 by 46 FR 18525. The specification requires the preparation and submittal of a Special Report whenever the calculated doses from plant generated radioactive effluents and direct radiation exceed 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems. It is highly unlikely that the resultant dose to a member of the public will exceed dose limits of 40 CFR Part 190 if the reactor remains within twice the dose design objectives of Appendix I, and if direct radiation doses from the

reactor unit and outside storage tanks are kept small. 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 Part 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 8 km must be considered. If the dose to any member of the public is estimated to exceed the requirements of 40 CFR Part 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR Part 190.11 and 10 CFR Part 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Part 20, as addressed in Specifications 3.9.1.1 and 3.9.3.1. 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.

3.16 RADIOACTIVE WASTE SYSTEMS

3.16.1 Liquid Radwaste Treatment System

Applicability

Applies to the liquid radwaste treatment system.

Objective

To define the operating requirements for the liquid radwaste treatment system.

Specification

3.16.1.1 The appropriate portions of the Liquid Radwaste Treatment System shall be maintained and used to reduce the concentrations of radioactive materials in liquid wastes prior to their discharge when the projected dose commitments, due to the release of radioactive liquid effluents to unrestricted areas (See Figure 1.1-1) when averaged over a calendar quarter, would exceed 0.2 mrem to the total body or 0.6 mrem to any organ.

3.16.1.2 With radioactive liquid wastes being discharged without treatment while in excess of the limits of Specification 3.16.1.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.3.2.b.

3.16.2 Liquid Holdup Tanks*

Applicability

Applies to the liquid holdup tanks.

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* Tanks included in this Specification are those outdoor tanks that are not surrounded by liners, dykes, or walls capable of holding the tank contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system. Tanks classed as "Seismic Class 1" are excluded from this Specification.

Objective

To define the operating requirements for the liquid holdup tanks.

Specification

3.16.2.1 The quantity of radioactive material contained in each of the following tanks shall at all times be limited to $\leq$10 curies, excluding tritium and dissolved or entrained noble gases.

a. A monitor tank
b. B monitor tank
c. C Waste Condensate tank
d. D Waste Condensate tank
e. E Waste Condensate tank
f. Any Outside temporary tank*

3.16.2.2 With the quantity of radioactive material in any of the above listed tanks exceeding the above limit, immediately suspend all additions of radioactive material to the tank, within 48 hours reduce the tank contents to within the limit, and the event should be described in the Semiannual Radioactive Effluent Release Report, Specification 6.9.1.d.

3.16.2.3 If Specification 3.16.2.2 is not completed within 48 hours a prompt notification with written followup is required as per Specification 6.9.2.a(10).

3.16.3 Gaseous Radwaste and Ventilation Exhaust Treatment Systems

Applicability

Applies to the gaseous radwaste and ventilation exhaust treatment systems.

* A temporary tank is defined as any tank having a capacity of $\geq$ 100 gallons used for the receipt or transfer of radioactive liquids.

Objective

To define the operating requirements for the gaseous radwaste and ventilation exhaust treatment systems.

Specification

3.16.3.1 The appropriate portions of the Gaseous Radwaste Treatment System and the Ventilation Exhaust Treatment System shall be maintained and used to reduce the concentrations of radioactive materials in gaseous wastes prior to their discharge when the projected dose commitments due to the release of gaseous effluents to unrestricted areas (See Figure 1.1-1) when averaged over a calendar quarter would exceed:

a. 0.6 mrem for gamma radiation and 1.3 mrem for beta radiation due to radionoble gases or,

b. 1.0 mrem to any organ due to radioiodines, radioactive materials in particulate form, and radionuclides other than radionoble gases.

3.16.3.2 With the Gaseous Radwaste Treatment System and/or the Ventilation Exhaust Treatment System not operable and with radioactive gaseous wastes being discharged without treatment while in excess of the limits of Specification 3.16.3.1 above, prepare and submit a report to the Commission in accordance with Specification 6.9.3.2.b.

3.16.4 Waste Gas Decay Tanks (Hydrogen and Oxygen)

Applicability

Applies to the volumetric hydrogen and oxygen concentration limits for the four Waste Gas Decay Tanks.

Objective

To define operating requirements for the Waste Gas Decay Tanks.

Specification

3.16.4.1 The oxygen concentration in the four Waste Gas Decay Tanks should be limited to $\leq$ 4% by volume when the hydrogen concentration in the same tank exceeds 4% by volume. The hydrogen concentration in the four Waste Gas Decay Tanks should be limited to $\leq$ 4% by volume when the oxygen concentration in the same tank exceeds 4% by volume.

3.16.4.1.a When the concentration of oxygen in a Waste Gas Decay Tank is $>$ 4% but $\leq$ 6% by volume and the hydrogen concentration in the same tank is $>$ 4% by volume, or the concentration of hydrogen in a Waste Gas Decay Tank is $>$ 4% but $\leq$ 6% by volume and the oxygen concentration in the same tank is $>$ 4% by volume, restore one or both to $\leq$ 4% by volume within 48 hrs.

3.16.4.1.b When the concentration of oxygen in a Waste Gas Decay Tank is $>$ 6% by volume and the hydrogen concentration in the same tank is $>$ 4% by volume, or the concentration of hydrogen in a Waste Gas Decay Tank is $>$ 6% by volume and the oxygen concentration in the same tank is $>$ 4% by volume, immediately suspend all additions of waste gas to the affected tank and immediately commence efforts to lower the concentration of one or both to $\leq$ 4% by volume.

3.16.4.2 If the requirements of paragraph 3.16.4.1.a cannot be met within the 48 hour limit, submit a special report to the NRC within the following 14 days which outlines the cause of the occurrence, corrective actions taken to date, corrective actions which will be taken, and any compensatory actions being taken to minimize the potential hazard.

3.16.4.3 If the actions taken to comply with paragraph 3.16.4.1.b do not reduce the concentration of hydrogen and/or oxygen in the affected tank to $\leq$ 6% by volume within 24 hours, a prompt notification with written followup is required per specification 6.9.2.a(10). Once the concentration of hydrogen and/or oxygen in the affected tank is $\leq$ 6% by volume, paragraphs 3.16.4.1.a and 3.16.4.2 apply.

3.16.5 Waste Gas Decay Tanks (Radioactive Materials)

Applicability

Applies to the four Waste Gas Decay Tanks.

Objective

To define the operating requirements for the Waste Gas Decay Tanks.

Specification

3.16.5.1 The quantity of radioactivity contained in each Waste Gas Decay Tank shall at all times be limited to $\leq$ 6.0E5 curies noble gases (considered as Xe-133).

3.16.5.2 With the quantity of radioactive materials in any Waste Gas Decay Tank exceeding the above limit, immediately suspend all additions of radioactive material to the tank and within 48 hours reduce the tank contents to within the limit.

3.16.5.3 If Specification 3.16.5.2 is not completed within 48 hours, a prompt notification with written follow-up is required as per Specification 6.9.2.a(10).

3.16.6 Solidification of Wet Radioactive Waste

Applicability

Applies to the solidification of wet radioactive waste.

Objective

To define the requirements for the solidification of wet radioactive waste.

Specification

3.16.6.1 The Solid Radwaste System shall be used in accordance with a Process Control Program (PCP) to process wet radioactive waste to meet shipping and burial ground requirements.

3.16.6.2 With the provisions of the PCP not satisfied, suspend shipments of defectively processed or defectively packaged solid radioactive waste from the site.

3.16.6.3 If any test specimen, as required by the PCP, fails to verify solidification, the solidification of the batch under test shall be suspended until such time as additional test specimens can be obtained, alternative solidification parameters can be determined in accordance with the PCP, and a subsequent test verifies solidification. The PCP shall be modified as required in accordance with Section 6.15, and solidification of the batch may then be resumed using alternative solidification parameters as determined by the PCP.

Bases

Liquid Radwaste Treatment System

The requirements that the appropriate portions of this system be maintained and used when specified provides assurance that the releases of radioactive

materials in liquid effluents will be kept "as low as reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and 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 the dose design objective set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

Liquid Holdup Tanks

The tanks listed in this Specification include all those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system.

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

Gaseous Radwaste and Ventilation Exhaust Treatment Systems

The requirements that the appropriate portions of these systems be maintained and used when specified provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as the dose design objectives set forth in Section II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

Waste Gas Decay Tanks (Hydrogen and Oxygen)

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas holdup system is maintained below the flammability limits of hydrogen and oxygen. (Automatic control features are included in the system to prevent the hydrogen and oxygen concentrations from reaching these flammability limits. These automatic control features include isolation of the source of hydrogen and/or oxygen, automatic diversion to recombiners, or injection of dilutants to reduce the concentration below the flammability limits.) Maintaining the concentration of hydrogen and oxygen below their flammability limits provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50.

Waste Gas Decay Tanks (Radioactive Materials)

The tanks included in this specification are those tanks for which the quantity of radioactivity contained is not limited directly or indirectly by another Technical Specification to a quantity that is less than the quantity that provides assurance that in the event of an uncontrolled release of the tank's contents, the resulting total body exposure to a member of the public at the nearest site boundary will not exceed 0.5 rem in an event of 2 hours duration.

Restricting the quantity of radioactivity contained in each gas storage tank provides assurance that in the event of an uncontrolled release of the tank's contents, the resulting total body exposure to a member of the public at the nearest site boundary will not exceed 0.5 rem. This is consistent with Branch Technical Position ETSB 11-5 in NUREG-0800, July 1981.

Solidification of Wet Radioactive Waste

This specification ensures that the packaging of wet radioactive wastes meets the requirements of 10 CFR Part 20 and 10 CFR Part 71 prior to their shipment from the site for disposal.

3.17 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

3.17.1 Monitoring Program

Applicability

Applies to the radiological environmental monitoring program.

Objective

To define the requirements for implementation of the radiological environmental monitoring program.

Specification

3.17.1.1 The Radiological Environmental Monitoring Program shall be conducted as specified in Table 3.17-1.

3.17.1.2 With the radiological environmental monitoring program not being conducted as specified in Table 3.17-1, in lieu of a Licensee Event Report, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by Specification 6.9.1.e, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

3.17.1.3 With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 3.17-2 when averaged over any calendar quarter, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.3.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines 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 Specifications 3.9.2.1, 3.9.4.1, and 3.9.5.1. When more than one of the radionuclides in Table 3.17-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \ldots \geq 1.0$$

When radionuclides other than those in Table 3.17-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose* to a member of the public is equal to or greater than the calendar year limits of Specifications 3.9.2.1, 3.9.4.1, and 3.9.5.1. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report.

3.17.1.4 With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 3.17-1, identify locations for obtaining replacement samples and add them to the radiological environmental monitoring program within 30 days. The specific locations from which samples were unavailable may then be deleted from the monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.d, identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

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* The methodology and parameters used to estimate the potential annual dose to a member of the public shall be indicated in this report.

3.17.1.5 The provisions of Specifications 3.0 and 6.9.2.b(2) are not applicable.

3.17.1.6 Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, or to malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period.

3.17.2 Land Use Census

Applicability

Applies to the land use census.

Objective

To define the requirements for the conduct of the land use census.

Specification

3.17.2.1 A land use census shall be conducted and shall identify the location of the nearest milk animal, the nearest residence and the nearest garden of greater than 500 square feet producing fresh leafy vegetables in each of the 16 meteorological sectors within a distance of five miles.

3.17.2.2 With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 4.10.4.1, in lieu of a Licensee Event Report, identify the new location(s) in the next Semiannual Radioactive Effluent Release report, pursuant to Specification 6.9.1.d.6.

3.17.2.3 With the land use census identifying a location which yields an annual calculated dose or dose commitment of a specific pathway which is 20% greater than that at a current sampling location:

(a) add the new location(s) to the radiological environmental monitoring program within 30 days and,

(b) if desired, delete the sampling location having the lowest calculated dose or dose commitments via the same exposure pathway, excluding the control station location, from the monitoring program after October 31 of the year in which the land use census was conducted, and

(c) identify the new location(s) in the next Semiannual Radioactive Effluent Release Report, Specification 6.9.1.d.4, including a revised figure(s) and table for the ODCM reflecting the new location(s).

3.17.3 Interlaboratory Comparison Program

Applicability

Applies to the interlaboratory comparison program of like media.

Objective

To ensure precision and accuracy of laboratory analyses.

Specification

3.17.3.1 Analyses shall be performed on radioactive materials supplied by EPA as a part of an Interlaboratory Comparison Program of like media within the environmental program as per Table 3.17-1.

3.17.3.2 With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the

Commission in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.e.

3.17.3.3 The provisions of Specifications 3.0 and 6.9.2.b(2) are not applicable.

3.17.3.4 The Interlaboratory Comparison Program shall be described in the ODCM. A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.e.

Basis

Monitoring Program

The radiological environmental monitoring program required by this specification provides representative measurements of radiation and of radioactive materials in those 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 implements Section IV.B.2 of Appendix I to 10 CFR Part 50 and 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 the modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring. The initally specified monitoring program will be effective for at least the first three years of commercial operation. Following this period, program changes may be initiated based on operational experience.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLD). The LLDs required by Table 3.17-3 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 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).

Land Use Census

This specification 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 the census. 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, Revision 1 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.

Interlaboratory Comparison Program

The requirement for participation in an approved 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 valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR Part 50.

TABLE 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[a]	33 routine monitoring stations with two or more dosimeters or with one instrument for measuring and recording dose rate continuously, placed as follows: an inner ring of stations, one in each of the 16 meteorological sectors in the general area of the site boundary; an outer ring of stations, one in each of the 16 meteorological sectors in the 6- to 8-km range from the site; area to serve as a control[b] station.	Quarterly	Gamma dose quarterly.
2. AIRBORNE			
Radioiodine and Particulates	Samples from 5 locations 3 samples from close to the 3 site boundary locations, in different sectors, of the highest calculated annual average groundlevel D/Q. 1 sample from the vicinity of a community having the highest calculated annual average groundlevel D/Q. 1 sample from a control[b] location, as for example 15-30 km distant and in the least prevalent wind direction.	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading.	Radioiodine Cannister: I-131 analysis weekly. Particulate Sampler: Gross beta radioactivity analysis following filter change;[c] Gamma isotopic analysis[d] of composite (by location) quarterly.

TABLE 3.17-1 (Continued)
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[e]	1 sample upstream control location[b] 1 sample downstream	Composite sample over 1-month period[f]	Gamma isotopic analysis[d] monthly. Composite for tritium analysis quarterly.
b. Ground[g]	2 samples	Quarterly	Gamma isotopic[d] and tritium analysis quarterly.
c. Sediment from shoreline	1 sample from downstream area with existing or potential recreational value	Semiannually	Gamma isotopic analysis[d] semiannually.
4. INGESTION			
a. Milk	1 sample from milking animals within 5 km distance having the highest dose potential. If there are none, then, 1 sample from milking animals between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per year[h]. 1 sampling from milking animals at a control location[b] 15-30 km distant and in the least prevalent wind direction.	Semimonthly when animals are on pasture, monthly at other times	Gamma isotopic[d] and I-131 analysis semimonthly when animals are on pasture; monthly at other times.
b. Fish	1 sample of recreationally important species in vicinity of plant discharge area including at least one free swimmer and one bottom feeder. 1 sample of comparable species in areas not influenced by plant discharge to serve as control location.[b]	Semiannually	Gamma isotopic analysis[d] on edible portions semiannually.

TABLE 3. (Continued)

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
c. Food Products	1 sample of each principal class of food products from any area that is irrigated by water in which liquid plant wastes have been discharged.	At time of harvest[i]	Gamma isotopic analyses[d] on edible portion
	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[d] and I-131 analysis.
	1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in the least prevalent wind direction if milk sampling is not performed.	Monthly when available	Gamma isotopic[d] and I-131 analysis.

TABLE NOTATION

[a]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.

[b]The purpose of this sample is to obtain background information.

TABLE NOTATION

[c]Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron 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.

[d]Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

[e]The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in an area beyond but near the mixing zone.

[f]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 sample aliquots 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.

[g]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.

[h]The dose shall be calculated for the maximum organ and age group, using the methodology and parameters in the ODCM.

[i]If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attenion shall be paid to including samples of tuborous and root food products.

TABLE 3.17-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Radionuclide	Water (pCi/l)	Airborne (pCi/m^3)	Fish (pCi/Kg,wet)	Milk (pCi/l)	Food Products (pCi/Kg,wet)
H-3	3E+04				
Mn-54	1E+03		3E+04		
Fe-59	4E+02		1E+04		
Co-58	1E+03		3E+04		
Co-60	3E+02		1E+04		
Zn-65	3E+02		2E+04		
Zr-Nb-95	4E+02				
I-131	2E+00	9E-01		3E+00	1E+02
Cs-134	3E+01	1E+01	1E+03	6E+01	1E+03
Cs-137	5E+01	2E+01	2E+03	7E+01	2E+03
Ba-La-140	2E+02			3E+02	

TABLE 3.17-3

MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a]

Analysis	Water (pCi/l)	Airborne (pCi/m^3)	Fish (pCi/Kg,wet)	Milk (pCi/l)	Food Products (pCi/Kg,wet)	Sediment (pCi/Kg,dry)
gross beta	4E+00	1E-02				
H-3	3E+03					
Mn-54	1.5E+01		1.3E+02			
Fe-59	3E+01		2.6E+02			
Co-58,60	1.5E+01		1.3E+02			
Zn-65	3E+01		2.6E+02			
Zr-Nb-95	1.5E+01					
I-131[b]	1E+00	7E-02		1E+00	6E+01	
Cs-134	1.5E+01	5E-02	1.3E+02	1.5E+01	6E+01	1.5E+02
Cs-137	1.8E+01	6E-02	1.5E+02	1.8E+01	8E+01	1.8E+02
Ba-La-140	1.5E+01			1.5E+01		

TABLE 3.17-3 (Continued)

TABLE NOTATION

[a]The LLD is defined, for purposes of these specifications, 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:

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

Where:

LLD is the "a priori" lower limit of detection as defined above, as picocuries 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 is the number of disintegrations per minute per picocurie,

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.

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. Analysis shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable 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 pursuant to Specification 6.9.1.e.

[b]LLD for drinking water samples. If no drinking water pathway exists, the LLD of gamma isotopic analysis may be used.

TABLE 4.1-1 (Continued)

	Channel Description	Check	Calibrate	Test	Remarks
9.	Analog Rod Position	S (1,2)	R	M	(1) With step counters (2) Following rod motion in excess of six inches when the computer is out of service
10.	Rod Position Bank Counters	S (1,2)	N.A.	N.A.	(1) Following rod motion in excess of six inches when the computer is out of service (2) With analog rod position
11.	Steam Generator Level	S	R	M	
12.	Charging Flow	N.A.	R	N.A.	
13.	Residual Heat Removal Pump Flow	N.A.	R	N.A.	
14.	Boric Acid Tank Level	D (1)	R	N.A.	(1) Bubbler tube rodded weekly
15.	Refueling Water Storage Tank Level	W	R	N.A.	
16.	Boron Injection Tank Level	W	R	N.A.	
17.	Volume Control Tank Level	N.A.	R	N.A.	
18.	Containment Pressure	D	R	B/W (1)	(1) Containment isolation valve signal
19.	Deleted by Amendment No.				
20.	Boric Acid Makeup Flow Channel	N.A.	R	N.A.	

4.10 RADIOACTIVE EFFLUENTS

4.10.1 Radioactive Liquid Effluents

Applicability

Applies to the monitoring of radioactive liquid effluents.

Objective

To ascertain that radioactive liquid effluent releases are being maintained as low as reasonably achievable and within allowable limits.

Specification

4.10.1.1 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 4.10-1. The results of pre-release analyses shall be used with the calculative methods in the ODCM to assure that the concentration at the point of release to the unrestricted area is maintained within the limits of Specification 3.9.1.1.

4.10.1.2 Analyses of samples composited from batch releases shall be performed in accordance with Table 4.10-1. The results of the post-release analyses shall be used with the calculative methods in the ODCM to assure that the concentrations at the point of release were maintained within the limits of Specification 3.9.1.1.

4.10.1.3 The concentration of radioactive materials in liquid effluents discharged from continuous release points shall be determined by collection and analysis of samples in accordance with Table 4.10-1. The results of the analyses shall be used with the

calculative methods in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Specification 3.9.1.1.

4.10.1.4 Dose Calculations: Cumulative dose commitments for the current calendar quarter and calendar year from liquid effluents shall be determined in accordance with the ODCM once per 31 days.

4.10.2 Radioactive Gaseous Effluents

Applicability

Applies to the monitoring of radioactive gaseous effluents.

Objective

To ascertain that radioactive gaseous effluent releases are being maintained as low as reasonably achievable and within allowable limits.

Specifications

4.10.2.1 The dose rate due to radioactive materials in gaseous effluents shall be determined to be within the limits of Specification 3.9.3.1 in accordance with the methods and procedures of the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.10-2.

4.10.3 Radionoble Gases

Applicability

Applies to the determination of cumulative doses from radionoble gases.

4.10.5 Radioactive Effluents From Uranium Fuel Cycle Sources

Applicability

Applies to the determination of cumulative doses from radioactive effluents from uranium fuel cycle sources.

Objective

To ascertain that cumulative doses from radioactive effluents from uranium fuel cycle sources are maintained as low as reasonably achievable and within allowable limits.

Specification

4.10.5.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Specifications 3.9.2.1, 3.9.4.1, and 3.9.5.1 in accordance with the methodology and parameters in the ODCM. For the purposes of this Surveillance Requirement, it may be assumed that fuel cycle sources are 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. In addition, an individual is not considered a member of the public during any period in which he/she is engaged in carrying out any operation which is part of the nuclear fuel cycle.

4.10.5.2 Cumulative dose contributions from direct radiation from the reactor units and from radwaste storage tanks shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in Specification 3.9.6.2.

TABLE 4.10-1 (continued)

TABLE NOTATION

a. The LLD is defined, for purposes of these specifications, 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:

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

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,

2.22×10^6 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.

TABLE 4.10-1 (continued)

TABLE NOTATION

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.

b. A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses each batch shall be isolated and thoroughly mixed whenever possible, to assure representative sampling. Residual liquids in systems such as feedwater heaters and lines cannot be thoroughly mixed for representative samples of their respective system. Grab samples from these systems will be accepted as representative of their respective system.

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

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

e. A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a system that has an input flow during the continuous release.

f. Grab sample of continuous flows taken for compositing purposes will be taken in volumes proportional to the existing flow rate of the system in a manner described in the ODCM.

TABLE 4.10-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Type of Release	Sampling Frequency	Minimum Analysis Frequency	Required Activity Analysis	Required LLD[a] µCi/ml
Waste Gas Decay Tanks	P	P	Principal Gamma Emitters[c]	1E-04
Containment Pressure Reliefs and Containment Purges	W[e] Grab Sample[b]	W[e] on Grab Sample	Principal Gamma Emitters[c]	1E-04
			Tritium	1E-06
Continuous Releases	M[e,g,h] Grab Sample for Radionoble Gases and Tritium	M[e] on Grab Sample	Principal Gamma Emitters[c]	1E-04
1. Plant Vent			Tritium	1E-06
2. Condenser Air Ejector Vent if S/G Activity is $>1 \times 10^{-4}$ µCi/cc condenser off-gas is routed to plant vent	Continuous[d] Radioiodine Sample	W[f]	I-131 I-133 on Sample	1E-12 1E-10
	Continuous[d] Particulate Sample	W[f] on Sample	Principal Gamma Emitters[c]	1E-11
	Continuous[d] Particulate Samples to be Composited	Q on Composite	Sr-89, Sr-90	1E-11
		M on Composite	Alpha	1E-11
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta and Gamma	2E-5 µCi/cc

TABLE 4.10-2 (Continued)

TABLE NOTATION

a. Lower Limit of Detection (LLD) is an "a priori" limit representing the capability of a measurement system. LLD is calculated in accordance with methodology established in the ODCM and Table 4.10-1, Note a.

b. Containment pressure reliefs and purges can be made during the week without sampling by correcting the weekly sample analysis results with the ratio of the Containment Radionoble Gas Monitor (RMS-12) and the Containment Particulate Monitor (RMS-11) readings at the time of sampling to the desired time of the pressure relief.

c. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions, I-131 for halogen emissions, and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measureable and identifiable, together with the above nuclides, shall also be identified and reported.

d. 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. In addition, these continuous samples are not required for the Condenser Vacuum Pump Vent.

e. Sampling and analysis shall also be performed following shutdown, startup, or a power change exceeding 15 percent of rated power within one hour unless (1) analysis shows that the dose equivalent I-131 concentration in the primary coolant has not increased more than a factor of 3; and (2) the noble gas activity monitor shows that effluent activity has not increased by more than a factor of 3.

TABLE NOTATION

f. Samples shall be changed once per 7 days and analyses shall be completed within 48 hours after changing (or after removal from sampler). Sampling and analyses shall also be performed once per 24 hours for 7 days following shutdown, start-up or thermal power level change exceeding 15% of rated thermal power in one hour and if I-131 Dose Equivalent in the RCS is greater than 0.1 μCi/cc. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10. The analyses shall be performed within 48 hours.

g. Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.

h. Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.

4.19 RADIOACTIVE EFFLUENT INSTRUMENTATION

4.19.1 Radioactive Liquid Effluent Instrumentation

Applicability

Applies to the radioactive liquid effluent instrumentation system.

Objective

To ascertain that the radioactive liquid effluent instrumentation system is functioning properly in order to accurately monitor radioactive liquid effluent releases.

Specification

4.19.1.1 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, source check, channel calibration, and channel functional test operations at the frequencies shown in Table 4.19-1.

4.19.2 Radioactive Gaseous Effluent Instrumentation

Applicability

Applies to the radioactive gaseous effluent instrumentation system.

Objective

To ascertain that the radioactive gaseous effluent instrumentation system is functioning properly in order to accurately monitor radioactive gaseous effluent releases.

Specification

4.19.2.1 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, source check, channel calibration, and channel functional test operations at the frequencies shown in Table 4.19-2.

TABLE 4.19-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pathway/Instruments	Channel Check	Source Check	Channel Calibration	Channel Functional Test
1. Liquid Radwaste Effluent Line				
a. Monitor (RMS-18)	D	P	R (Note 3)	Q (Note 4)
b. Flow rate measurement device	(Note 1)	N.A.	R	N.A.
2. Steam Generator Blowdown Effluent Line				
a. Monitor (RMS-19)	D	M	R (Note 3)	Q (Note 4)
b. Flow rate measurement devices for measuring flow of sample to RMS-19	(Note 2)	N.A.	N.A.	N.A.
c. Flow rate measuring devices for each steam generator blowdown line	(Note 2)	N.A.	R	N.A.
3. Containment Fan Cooling Water Monitor (Service Water Effluent Line)				
a. Monitor (RMS-16)	D	M	R (Note 3)	Q (Note 5)
4. Tank Level Indicating Devices				
a. Refueling Water Storage Tank	D*	N.A.	R	Q
b. Monitor Tanks A & B	D*	N.A.	R	Q
c. Waste Condensate Tanks C D & E	D*	N.A.	R	Q

* During liquid additions to the tank

NOTES TO TABLE 4.19-1

Note 1 - The channel check shall consist of verifying indication of flow at least once during each batch type release or shall consist of verifying indication of flow at least once per 24 hours for continuous type releases.

Note 2 - The channel check shall consist of verifying indication of flow at least once during each batch type release or shall consist of verifying indication of flow at least once per 24 hours for continuous releases, except during steam generator drain at cold shutdown.

Note 3 - The channel calibration shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities or otherwise NBS traceable.

Note 4 - The Channel Functional Test shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Power failure.
3. Instrument controls not set in operate mode.

Note 5 - 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. Power failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

NOTATION

P	Completed prior to making a radioactive materials release
D	At least once per 24 hours
W	At least once per 7 days
N.A.	Not applicable
M	At least once per 31 days
R	At least once per 18 months
Q	At least once per 92 days

TABLE 4.19-2

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	Pathway/Instruments	Channel Check	Source Check	Channel Calibration	Channel Functional Test
1.	Plant Vent				
	a. Radionoble gas monitor (RMS-14)	P	P (Note 5)	R	Q (Note 6)
	b. Radionoble gas monitor (RMS-34)	D	M	R(Note 2)	Q
	c. Radioiodine monitor (RMS-34)	W	M	R(Note 3)	Q
	d. Radioparticulate monitor (RMS-34)	W	M	R	Q
	e. Sampler flow rate monitor (RMS-34)	D(Note. 1)	N.A.	R	Q
	f. Plant Vent flow rate monitor	D(Note 1)	N.A.	R	N.A.
2.	Containment Vessel via Plant Vent				
	a. Radioparticulate Monitor (RMS-11)	D	D	R(Note 2)	Q
	b. Radionoble gas monitor (RMS-12)	D	P (Note 4)	R(Note 2)	Q
	c. Sampler flow rate monitor (RMS-12)	D	N.A.	R	Q
3.	Condenser Vacuum Pump Vent				
	a. Radionoble gas monitor (RMS-15)	D	M	R(Note 2)	Q (Note 6)
	b. Flow rate measuring devices - one for each Vacuum Pump	D(Note 1)	N.A.	N.A.	N.A.
4.	Fuel Handling Building Lower Level Exhaust Vent				
	a. Radionoble gas monitor (RMS-20)	D	M	R(Note 2)	Q
	b. Sampler flow rate monitor (RMS-20)	D(Note 1)	N.A.	N.A.	N.A.

TABLE 4.19-2 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	Pathway/Instruments	Channel Check	Source Check	Channel Calibration	Channel Functional Test
5.	Fuel Handling Building Upper Level Exhaust Vent				
	a. Radionoble gas monitor (RMS-21)	D	M	R(Note 2)	Q
	b. Sampler flow rate monitor (RMS-21)	D(Note 1)	N.A.	N.A.	N.A.
6.	Waste Gas Holdup System				
	a. Hydrogen Monitor	D	N.A.	Q (Note 8)	N.A.
	b. Oxygen Monitor	D	N.A.	Q (Note 8)	N.A.

NOTES TO TABLE 4.19-2

Note 1 - The channel check shall consist of verifying indication of flow whenever plant conditions dictate that flow is supposed to be present.

Note 2 - The channel calibration shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities or otherwise NBS traceable.

Note 3 - The channel calibration shall consist of changing the filter and cartridge at the frequency indicated and performing appropriate analyses with NBS traceable calibrated analytical equipment.

Note 4 - Prior to each containment release.

Note 5 - Prior to each Waste Gas Decay Tank release.

Note 6 - The Channel Functional Test shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Power failure.
3. Instrument controls not set in operate mode.

Note 7 - 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. Power failure.
3. Instrument indicates a downscale failure.
4. Instrument controls not set in operate mode.

Note 8 - The Channel Calibration shall include the use of standard gas samples containing a nominal 3% oxygen, balance nitrogen and 4% hydrogen, balance nitrogen or as recommended by manufacturer.

4.20 RADIOACTIVE WASTE SYSTEMS

4.20.1 Liquid Radwaste Treatment System

Applicability

Applies to the liquid waste treatment system.

Objective

To ascertain that the concentration of radioactive materials in the liquid waste treatment system is maintained as low as reasonably achievable and within allowable limits.

Specification

4.20.1.1 Dose commitments from liquid releases shall be projected at least once per 31 days, in accordance with the ODCM to ensure the provisions of Specification 3.16.1.1 are satisfied when the Liquid Radwaste Treatment System is not in use.

4.20.2 Liquid Holdup Tanks*

Applicability

Applies to liquid holdup tanks.

Objective

To ascertain that the quantity of radioactive material contained in the liquid holdup tanks is maintained as low as reasonably achievable and within allowable limits.

*Tanks included in this Specification are those outdoor tanks that are not surrounded by liners, dykes, or walls capable of holding the tank contents and that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system. Tanks classed as "Seismic Class I" are excluded from this Specification.

Specification

4.20.2.1 The quantity of radioactive material contained in each of the tanks listed in Specification 3.16.2.1 shall be determined to be within the limits specified in Specification 3.16.2.1 by either analyzing a representative sample of the tank's content at least once per 7 days when radioactive materials are being added to the tank or sampling the evaporator output when adding it to the tank.

4.20.3 Gaseous Radwaste and Ventiliation Exhaust Treatment System

Applicability

Applies to the gaseous radwaste and ventilation exhaust treatment system.

Objective

To ascertain that the concentration of radioactive materials in the gaseous radwaste and ventilation exhaust treatment systems is maintained as low as reasonably achievable and within allowable limits.

Specification

4.20.3.1 Dose commitments due to gaseous releases shall be projected at least once per 31 days, in accordance with the ODCM to ensure the provisions of Specification 3.16.3.1 are satisfied.

4.20.4 Waste Gas Decay Tanks (Hydrogen and Oxygen)

Applicability

Applies to the Waste Gas Decay Tanks.

Objective

To ascertain that the concentration of hydrogen and oxygen in the Waste Gas Decay Tanks is maintained as low as reasonably achievable and within allowable limits.

Specification

4.20.4.1 The concentration of hydrogen and oxygen in the Waste Gas Decay Tanks shall be determined to be within the limits specified in Specification 3.16.4.1 by monitoring the waste gases in the Waste Gas Decay Tanks with the hydrogen and oxygen monitors or monitoring procedures required operable by Table 3.5-7 of Specification 3.5.3.1.

4.20.5 Waste Gas Decay Tanks (Radioactive Material)

Applicability

Applies to the Waste Gas Decay Tanks.

Objective

To ascertain that the quantity of radioactive material in the Waste Gas Decay Tanks is maintained as low as reasonably achievable and within allowable limits.

Specification

4.20.5.1 With the primary coolant activity $\geq$100 μCi/ml the quantity of radioactive material contained in each Waste Gas Decay Tank shall be determined to be within the limit specified in Specification 3.16.5.1 once per 24 hours when radioactive materials are being added to the tank.

4.20.6 Solidification of Wet Radioactive Waste

Applicability

Applies to the solidification of wet radioactive waste.

Objective

To ascertain that wet radioactive waste is solidified to meet the requirements of 10CFR20, 10CFR71, and burial ground requirements.

Specification

4.20.6.1 The PCP shall be used to verify the solidification of one representative test specimen from every tenth batch of wet radioactive waste.

4.20.6.2 If the initial test specimen from a batch of waste fails to verify solidification, the Process Control Program shall provide for the collection and testing of representative test specimens from each consecutive batch of the same type of wet waste until at least 3 consecutive initial test specimens demonstrate solidification. The Process Control Program shall be modified as required, as provided in Specification 6.15, to assure solidification of subsequent batches of waste.

4.21 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

4.21.1 Monitoring Program

Applicability

Applies to the radiological environmental monitoring program.

Objective

To ascertain that radiological environmental monitoring samples are collected and analyzed in accordance with the radiological environmental monitoring program.

Specification

4.21.1.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.17-1 from the locations defined in the ODCM and shall be analyzed pursuant to the requirements of Tables 3.17-2 and 3.17-3.

4.21.2 Land Use Census

Applicability

Applies to the land use census.

Objective

To ascertain that the land use census is conducted in accordance with the radiological environmental monitoring program.

Specification

4.21.2.1 The land use census shall be conducted once per 12 months during the growing season, by door-to-door survey, aerial survey, by consulting local agriculture authorities or by broad leaf vegetation sampling of at least three different kinds of vegetation. This sampling 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 3.17-1.4c shall be followed, including analysis of control samples.

4.21.3 Interlaboratory Comparison Program

Applicability

Applies to the Interlaboratory Comparison Program of like media.

Objective

To ensure precision and accuracy of laboratory analyses.

Specification

4.21.3.1 Analyses shall be performed on radioactive materials supplied by EPA as a part of Interlaboratory Comparison Program of like media within the environmental program as per Table 3.17-1 and pursuant to Specifications 3.17.3.2, 3.17.3.3, and 3.17.3.4.

6.5 REVIEW AND AUDIT

6.5.1 The license organization's review and approval process shall assure that the nuclear safety of the facility is maintained.

6.5.1.1 Procedures, Tests, and Experiments

6.5.1.1.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Rev. 2, February 1978.

b. Refueling operations.

c. Surveillance and test activities of safety-related equipment.

d. Security Plan implementing procedures.

e. Emergency Plan implementing procedures.

f. Fire Protection Program implementing procedures.

g. Radiological Environmental Monitoring Program implementing procedures.

h. Offsite Dose Calculation Manual implementing procedures.

i. Process Control Program implementation procedure.

j. Quality Assurance Program for effluent and environmental monitoring (using the guidance in Regulatory Guide 4.15, December 1977).

6.5.1.1.2 A safety analysis shall be prepared for all procedures, tests, and experiments covering the activities identified in 6.5.1.1.1 and procedures that affect nuclear safety. The analysis shall include a written determination of whether or not the procedure, test, or experiment is a change in the facility as described in the FSAR, involves a change to the Technical Specification, or constitutes an unreviewed safety question as defined in 10CFR50.59(a)(2). This analysis constitutes a first party safety review and may be accomplished by the individual who prepared the document.

6.5.1.6.5 A quorum of the PNSC shall consist of the Chairman, and three members, of which two may be alternates.

6.5.1.6.6 The PNSC activities shall include the following:

a. Perform an overview of Specifications 6.5.1.1, and 6.5.1.2 to assure that processes are effectively maintained.

b. Performance of special reviews, investigations, and reports thereon requested by the Manager - Corporate Nuclear Safety.

c. Annual review of the Security Plan and Emergency Plan.

d. Perform reviews of Specifications 6.5.1.1.6, 6.5.1.2.4, 6.5.1.3.1, and 6.5.1.4.1.

e. Perform review of all events requiring 24 hour notification to the NRC.

f. Review of facility operations to detect potential nuclear safety hazards.

g. Review of every unplanned onsite release of radioactive material to the environs including the preparation and forwarding of reports covering evaluation, recommendations and dispostion of the corrective action to prevent recurrences to the Vice President - Nuclear Operations, Manager - Corporate Nuclear Safety and the Manager - Corporate Ouality Assurance.

h. Review of changes to the Process Control Program and the Offsite Dose Calculation Manual.

6.5.1.6.7 In the event of disagreement between the recommendations of the Plant Nuclear Safety Committee and the actions contemplated by the General Manager, the course determined by the General Manager to be more conservative will be followed. The Vice President - Nuclear Operations and the Manager - Corporate Nuclear Safety will be notified within the 24 hours of the disagreement and subsequent actions.

6.5.1.6.8 The PNSC shall maintain written minutes of each meeting that, at a minimum, document the results of all PNSC activities performed under the provisions of these Technical Specifications; and copies shall be provided to the Vice President - Nuclear Operations, and to the Manager - Corporate Nuclear Safety.

(4) The verification of compliance and implementation of the requirements of the Ouality Assurance Program to meet the criteria of Appendix B, 10CFR50, at least once per 24 months.

(5) The Emergency Plan and implementing procedures at least once per 12 months.

(6) The Security Plan and implementing procedures at least once per 12 months.

(7) The Facility Fire Protection Program and implementing procedures at least once per 24 months.

(8) Any other area of facility operation considered appropriate by the Corporate Ouality Assurance Performance Evaluation Unit; the Executive Vice President - Power Supply and Engineering & Construction; or the Senior Vice President - Power Supply.

(9) The Radiological Environmental Monitoring Program and the results thereof at least once per 12 months.

(10) The Offsite Dose Calculation Manual and implementing procedure at least once per 24 months.

(11) The Process Control Program and implementing procedures for solidification of radioactive wastes at least once per 24 months.

(12) The performance of activities required by the Ouality Assurance Program to meet the criteria of Regulatory Guide 4.15, December 1977 at least once per 12 months.

e. Distribute reports and other records to appropriate managers.

6.5.3.3 a. Audit personnel shall be independent of the area audited. Selection for auditing assignments is based on experience or training that establishes that their qualifications are commensurate with the complexity or special nature of the activities to be audited. In selecting auditing personnel, consideration shall be given to special abilities, specialized technical training, prior pertinent experience, personal characteristics, and education.

b. Oualified outside consultants or other individuals independent from those personnel directly involved in plant operation shall be used to augment the audit teams when necessary. Individuals performing the audits may be members of the audited organization; however, they shall not audit activities for which they have immediate responsibility, and while performing the audit, they shall not report to a management representative who has immediate responsibility for the activity audited.

6.5.3.4 Results of plant audits are approved by the Principal QA Specialist - Performance Evaluation Unit, and transmitted to the Executive Vice President - Power Supply and Engineering & Construction; the Senior Vice President - Power Supply; Vice President - Nuclear Operations; General Manager; and the Vice President - Corporate Nuclear Safety & Research; and others, as appropriate within 30 days after the completion of the audit.

6.5.3.5 The Corporate Ouality Assurance Audit Program shall be conducted in accordance with written, approved procedures.

c. Monthly Operating Report

Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis. The report formats set forth in Appendices B, C, and D to Regulatory Guide 1.16 shall be completed in accordance with the instructions provided. The completed forms should be submitted by the tenth of the month following the calendar month covered by the report to the Director, Office of Management and Program Analysis, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, with a copy to the appropriate NRC regional Office.

d. Semiannual Radioactive Effluent Release Report

Routine radioactive effluent release reports covering the operation of the unit during the previous 6 months shall be submitted within 60 days after January 1 and July 1 of each year. Those portions of the report due within 60 days of January 1, and July 1, shall include:

1. A summary of the quantities of radioactive liquid and gaseous effluent and solid waste released from the Unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants" (Revision 1, June, 1974) with data summarized on a quarterly basis following the format of Appendix B thereof.

2. The Radioactive Effluent Release Report to be submitted within 60 days after January 1 of each year shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing on magnetic tape of wind speed, wind direction, atmospheric stability, and precipitation (if measured), or in the form of joint

frequency distributions of wind speed, wind direction, and atmospheric stability.* This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to members of the public due to their activities inside the site boundary (Figure 1.1-1) during the report period. All assumptions used in making these assessments, i.e., specific activity, exposure time and location shall be included in these reports. The meteorological conditions concurrent with the time of release of radioactive materials in gaseous effluents, as determined by sampling frequency and measurement, shall be used for determining the gaseous pathway doses. [For ORs: approximate and conservative approximate methods are acceptable.] The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the Offsite Dose Calculation Manual (ODCM).

3. The Radioactive Effluent Release Report to be submitted 60 days after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed member of the public from reactor releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation.

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* In lieu of submission with the first half year Radioactive Effluent Release Report, the licensee has the option of retaining this summary of required meteorological data on site in a file that shall be provided to the NRC upon request.

4. The Radioactive Effluent Release Reports shall include the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period:

   a. Container volume,

   b. Total curie quantity (specify whether determined by measurement or estimate),

   c. Principal radionuclides (specify whether determined by measurement or estimate),

   d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),

   e. Type of container (e.g., LSA, Type A, Type B, Large Quantity), and

   f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

5. The Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to unrestricted areas of radioactive materials in gaseous and liquid effluents made during the reporting period.

6. The Radioactive Effluent Release Reports shall include any changes made during the reporting period to the Process Control Program (PCP) and to the Offsite Dose Calculation Manual (ODCM), as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Specification 3.17.2.2.

7. Changes to the radioactive waste systems (liquid, gaseous, and solid) shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the Plant Nuclear Safety Committee (PNSC).* The discussion of each change shall contain:

   a. A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR Part 50.59;

   b. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information;

   c. A detailed description of the equipment, components and processes involved and the interfaces with other plant systems;

   d. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

   e. An evaluation of the change, which shows the expected maximum exposures to an individual in the unrestricted area and to the general population that differ from those previously estimated in the license application and amendments thereto;

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* The licensee may chose to submit the information called for in this Specification as part of the annual FSAR update.

f. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made;

g. An estimate of the exposure to plant operating personnel as a result of the change; and

h. Documentation of the fact that the change was reviewed and found acceptable by the PNSC.

8. Changes to the radioactive waste systems (liquid, gaseous, and solid) shall become effective upon review and acceptance by the PNSC.

e. Annual Radiological Environmental Operating Report

Routine radiological environmental operating reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year. With the radiological environmental monitoring program not being conducted as specified in Table 3.17-1, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence shall be included.

The Annual Radiological Environmental Operating Reports shall include summaries, interpretations, and analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operations on the environment. The reports shall also include the results of land use censuses required by Specification 3.17.2.

The Annual Radiological Environmental Operating Reports shall include the results of analysis of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the Table and Figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements in the format of the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; at least two legible maps* covering all sampling locations keyed to a table giving distances and directions from the centerline of the reactor, the results of licensee participation in the Interlaboratory Comparison Program, required by Specification 3.17.3; discussion of all deviations from the sampling schedule of Table 3.17-1; and discussion of all analyses in which the LLD required by Table 3.17-3 was not achievable.

*One map shall cover stations near the site boundary; a second shall be the more distant stations.

6.9.2 Reportable Occurrences

The Reportable Occurrences of Specifications 6.9.2.a and 6.9.2.b below, including corrective actions and measures to prevent recurrence, shall be reported to the NRC. Supplemental reports may be required to fully describe final resolution of the occurrence. In case of corrected or supplemental reports, a Licensee Event Report (LER) shall be completed and reference made to the original report date.

a. Prompt Notification With Written Followup

The types of events listed below shall be reported within 24 hours by telephone and confirmed by telegraph, mailgram, or facsimile transmission to the Regional Administrator of the NRC Regional Office or his designee no later than the first working day following the event, with a written followup report within 14 days. The written followup report shall include as a minimum, a completed copy of the LER form.

Information provided on the LER shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

(1) Failure of the reactor protection system, or other systems subject to limiting safety system settings to initiate the required protective function by the time a monitored parameter reaches the setpoint specified as the limiting safety system setting in the Technical Specifications or failure to complete the required protective function.

Note: Instrument drift discovered as a result of testing need not be reported under this item (but see 6.9.2.a(5), 6.9.2.a(6), and 6.9.2.b(1) below.

(2) Operation of the unit or affected systems when any parameter or operation subject to a LCO is less conservative than the least conservative aspect of the LCO established in the Technical Specifications.

Note: If specified action is taken when a system is found to be operating between the most conversative and least conservative aspects of a LCO listed in the Technical Specifications, the LCO is not considered to have been violated and no report need be submitted under this section (but see 6.9.2.b(2) below).

(3) Abnormal degradation discovered in fuel cladding, reactor coolant pressure boundary or primary containment.

Note: Leakage of valve packing or gaskets within the limits for identified leakage set forth in Technical Specifications need not be reported under this section.

(4) Reactivity anomalies involving disagreement with predicted value of reactivity balance under steady state conditions during power operation greater than or equal to 1% $\Delta k/k$; a calculated reactivity balance indicating a shutdown margin less conservative than specified in the Technical Specifications; short-term reactivity increases that correspond to a reactor startup rate greater than 5 dpm, or if subcritical, an unplanned reactivity insertion of more than 0.5% $\Delta k/k$; or any unplanned criticality.

(5) Failure or malfunction of one or more components which prevents or could prevent, by itself, the fulfillment of the functional requirements of systems required to cope with accidents analyzed in the SAR.

(6) Personnel error or procedural inadequacy which prevents or could prevent, by itself, the fulfillment of the functional requirements of systems required to cope with accidents analyzed in the SAR.

Note: For 6.9.2.a(5) and 6.9.2.a(6) reduced redundancy that does not result in loss of system function need not be reported under this section (but see 6.9.2.b(2) and 6.9.2.b(3) below).

(7) Conditions arising from natural or man-made events that, as a direct result of the event, require plant shutdown, operation of safety systems, or other protective measures required by Technical Specifications.

(8) Errors discovered in the transient or accident analyses or in the methods used for such analyses as described in the SAR or in the bases for the Technical Specifications that have or could have permitted reactor operation in a manner less conservative than assumed in the analyses.

(9) Performance of structures, systems or components that require remedial action or corrective measures to prevent operation in a manner less conservative than assumed in the accident analyses in the FSAR or Technical Specifications bases or discovery during plant life of conditions not specifically considered in the FSAR or Technical Specifications that require remedial action or corrective measures to prevent the existence or development of an unsafe condition.

Note: This item is intended to provide for reporting of potentially generic problems.

(10) Offsite releases of radioactive materials in liquid and gaseous effluents which exceed the limits of Specifications 3.9.1.1, 3.9.3.1, and for tank contents which exceed the limits of Specifications 3.16.2.1 and 3.16.4.3.

b. Thirty-day Written Reports. The reportable occurrences discussed below shall be the subject of written reports to the Regional Administrator of the NRC Regional Office within thirty days of occurrence of the event. The written report shall include, as a minimum, a completed copy of the LER form, used for entering data into the NRC's computer-based file of information concerning licensee events. Information provided on the LER form shall be supplemented, as needed, by additonal narrative material to provide complete explanation of the circumstances surrounding the event.

(1) Reactor protection system or engineered safety feature instrument settings which are found to be less conservative than those established by the Technical Specifications but which do not prevent the fulfullment of the functional requirements of affected systems (but see 6.9.2.a(1) and 6.9.2.a(2) above).

(2) Conditions leading to operation in a degraded mode permitted by a limiting condition for operation or plant shutdown required by a limiting condition for operation (but see 6.9.2.a(2) above).

Note: Routine surveillance testing, instrument calibration or preventive maintenance which require system configurations described in 6.9.2.b(1) and 6.9.2.b(2) above need not be reported except where test results themselves reveal a degraded mode as described above.

(3) Observed inadequacies in the implementation of administrative or procedural controls which threaten to cause reduction of degree of redundancy provided in reactor protection systems or engineered safety feature system (but see 6.9.2.a(6) above).

(4) Abnormal degradation of systems other than those specified in 6.9.2.a(3) above designed to contain radioactive material resulting from the fission process.

Note: Sealed sources or calibration sources are not included under this item. Leakage of valve packing or gaskets within the limits for identified leakage set forth in Technical Specifications need not be reported under this item.

6.9.3 Special Reports

6.9.3.1 Special reports shall be submitted to the Regional Administrator of the NRC Regional Office of within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification:

	Area	Reference	Submittal Date
a.	Containment Leak Rate	4.4	Upon completion of each test

b.	Containment Sample Tendon Surveillance	4.4	Upon completion of the inspection at 25 years of operation
c.	Post-operational Containment Structural Test	4.4	Upon completion of the test at 20 years of operation
d.	Fire Protection System	3.14	As specified by limiting condition for operation
e.	Overpressure Protection System Operation	3.1.2.1.e	Within 30 days of operation
f.	Auxiliary Feedwater Pumps	3.4	Within 30 days after becoming inoperable

6.9.3.2 Special Radiological Effluent Reports

The special radiological effluent reports discussed below shall be the subject of written reports to the Regional Administrator of the NRC Regional Office within thirty days of the occurrence of the event in lieu of a Licensee Event Report (LER).

a. Exceeding any of the limits prescribed by Specification 3.9.2.1, 3.9.4.1, and/or 3.9.5.1. This report shall include the following information(1):

1. The cause for exceeding the limit(s)

2. The corrective action(s) to be taken to reduce the releases of radioactive materials in the affected effluents (i.e. liquid, radionoble gas, and/or

radioiodines, particulates, etc.) within the Specification and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

3. If any of the limits of Specification 3.9.2.1 were exceeded, the report must include a statement that no drinking water source exists that could be affected or include the results of radiological impact on finished drinking water supplied with regards to the requirements of 40CFR141 Safe Drinking Water Act.

b. Exceeding any of the limits prescribed by Specification 3.16.1.1 and/or 3.16.3.1. This report shall include the following information:

1. Identification of equipment or subsystem that rendered the affected radwaste treatment system not operable.

2. The corrective action(s) taken to restore the affected radwaste treatment system to an operable status.

3. A summary description of the action(s) taken to prevent a similar recurrence.

c. Exceeding the reporting level for environmental sample media as specified in Specifications 3.17.1.3. This report shall include the following information:

1. An evaluation of any environmental factor, release condition or other aspect which may have caused the reporting level to be exceeded.

2. A description of action(s) taken or planned to reduce the levels of licensed materials in the affected environmental media to below the reporting level.

d. Exceeding the limits prescribed by Specification 3.9.6.1. This report shall be made in lieu of any other report and shall include the following information:

1. The corrective action(s) to be taken to reduce subsequent releases to prevent recurrence of exceeding the limits prescribed by Specification 3.9.6.1.

2. An analysis which estimates the dose commitment to a member of the general public from uranium fuel cycle source including all effluent pathways and direct radiation, for a 12 month period that includes releases covered by this report.

3. If the release conditions resulting in violation of 40CFR190 has not already been corrected, include a request for a variance in accordance with the provisions of 40CFR190 and include the specified information of 40CFR190.11(b).

b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories.

c. Records of facility radiation and contamination surveys.

d. Records of radiation exposure for all individuals entering radiation control areas.

e. Records of gaseous and liquid radioactive material released to the environs.

f. Records of transient or operational cycles for those facility components designed for a limited number of transients or cycles.

g. Records of training and qualification for current members of the plant staff.

h. Records of in-service inspections performed pursuant to these Technical Specifications.

i. Records of Quality Assurance activities required by the QA program.

j. Records of review performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10CFR50.59.

k. Records of meetings of the PNSC and of the independent reviews performed by the Corporate Nuclear Safety Section.

l. Records of data results required by the radiological environmental monitoring program.

6.14 ENVIRONMENTAL QUALIFICATION

6.14.1 By no later than June 30, 1982 all safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of: Division of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors" (DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment" December 1979. Copies of these documents are attached to the Order for Modification of License No. DPR-23 dated October 24, 1980.

6.14.2 By no later than December 1, 1980, complete and auditible records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Thereafter, such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.

6.15 PROCESS CONTROL PROGRAM (PCP)

6.15.1 The PCP shall be approved by the Commission prior to implementation.

6.15.2 Licensee initiated changes to the PCP:

A. Shall be submitted to the Commission in the Annual Report for the period in which the change(s) was/were made. This submittal shall contain:

1. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information;

2. A determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes.

3. Documentation of the fact that the change has been reviewed and found acceptable by the PNSC.

B. Shall become effective upon review and acceptance by the PNSC.

6.16 OFFSITE DOSE CALCUATION MANUAL

6.16.1 The ODCM shall be approved by the Commission prior to implementation.

6.16.2 Licensee initiated changes to the ODCM:

A. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made effective. This submittal shall contain:

1. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information. Information submitted should consist of a package of those pages of the ODCM to be changed with each page numbered and provided with an approval and date box, together with appropriate analyses or evaluations justifying the change(s);

2. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations; and

3. Documentation of the fact that the change has been reviewed and found acceptable by the PNSC.

B. Shall become effective upon review and acceptance by the PNSC.

6.17 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS*

6.17.1 Licensee initiated major changes to the radioactive waste systems (liquid, gaseous, and solid):

1. Shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the PNSC. The discussion of each change shall contain:

   a. A summary of the evaluation that led to the determination that the change could be made in accordance with 10CFR50.59.

   b. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information;

   c. A detailed description of the equipment, components, and processes involved and the interfaces with other plant systems;

   d. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

   e. An evaluation of the change, which shows the expected maximum exposures to an individual in the unrestricted area and to the general population that differ from those previously estimated in the license application and amendments thereto;

f. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made;

g. An estimate of the exposure to plant operating personnel as a result of the change; and

h. Documentation of the fact that the change was reviewed and found acceptable by the PNSC.

2. Shall become effective upon review and acceptance by the PNSC.

*Licensee may chose to submit the information called for in this Specification as part of the annual FSAR Update.