RADIOLOGICAL EFFLUENT CONTROLS

LASALLE STATION
Units 1 and 2

1.0 USE AND APPLICATION

1.1 DEFINITIONS

----------NOTE----------
The defined terms of this section appear in capitalized type and are applicable throughout these Offsite Dose Calculation Manual (ODCM) Controls and Bases.

Term	Definition
ACTION	ACTION shall be that part of a control that prescribes remedial measures required under designated conditions.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, display, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated. For specific calibration requirements refer to surveillance requirements section for the applicable instrumentation.
CHANNEL CHECK	A CHANNEL CHECK shall be a qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.
CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY, including required alarm, interlock, display, and trip functions, and channel failure trips. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

(continued)

1.1 DEFINITIONS (continued)

CONTINUOUS SAMPLING	Uninterrupted sampling with the exception of sampling interruptions of short duration for required surveillances.
DOSE EQUIVALENT I-131	That concentration of I-131 (microcuries/gram) that 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 Table III of TID -14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites"; Table E-7 of Regulatory Guide 1.109, Rev. 1, NRC, 1977; or ICRP 30, Supplement to Part 1, pages 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity."
GASEOUS RADWASTE TREATMENT SYSTEM	Any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.
MEMBERS OF THE PUBLIC	Any individual, except when that individual is receiving an occupational dose.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Technical Specifications with fuel in the reactor vessel.
OCCUPATIONAL DOSE	The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation and/or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the public.

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1.1 DEFINITIONS (continued)

OFFSITE DOSE CALCULATION MANUAL (ODCM)	The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Radiological Environmental Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Program and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Radioactive Effluent Release Reports.
OPERABLE - OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified function(s) are also capable of performing their related support function(s).
POSITION INDICATION VERIFICATION	POSITION INDICATION VERIFICATION shall be the comparison of the physical position of the Blowdown Flow Control Valve (0WL005) actuator shaft in percent open to the remote (0ZI-WL002A) Blowdown Flow Control Valve position indication in percent open. JAN 2015
PROCESS CONTROL PROGRAM (PCP)	The PCP shall contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes shall be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71, State regulations, burial ground requirements, and other requirements governing the disposal of solid radioactive waste.
PURGE – PURGING	PURGE or PURGING shall be 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.
RATED THERMAL POWER (RTP)	The applicable unit's RTP shall be a total reactor core heat transfer rate to the reactor coolant as defined in Technical Specifications.

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1.1 DEFINITIONS (continued)

RADIOLOGICAL EFFLUENT CONTROL STANDARDS (RECS)	A compilation of the various regulatory requirements, surveillance and bases, commitments and/or components of the radiological effluent and environmental monitoring programs for LaSalle Station. To assist in the understanding of the relationship between effluent regulations, ODCM equations, RECS and related Technical Specification requirements, Table 1-1 provides a matrix that relates these various components, as well as the Radiological Environmental Monitoring Program fundamental requirements.
SITE BOUNDARY	That line beyond which the land is not owned, leased, or otherwise controlled by licensee as defined in ODCM Part II Figure 1-3.
SOLIDIFICATION	SOLIDIFICATION shall be the conversion of radioactive wastes from liquid systems to a homogeneous (uniformly distributed), monolithic, immobilized solid with definite volume and shape, bounded by a stable surface of distinct outline on all sides (free-standing).
SOURCE CHECK	A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source (This could be an external source or known radioactive process stream).
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
UNRESTRICTED AREA	UNRESTRICTED AREA means an area, access to which is neither limited nor controlled by the licensee.
VENTILATION EXHAUST TREAT-MENT SYSTEM	A VENTILATION EXHAUST TREATMENT SYSTEM shall be any 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 for the purpose of removing iodines or particulates from the gaseous exhaust system prior to the release to the environment (such a system is not considered to have any effect on noble gas effluents). Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

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1.1 DEFINITIONS (continued)

VENTING — VENTING shall be 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.

DEFINITIONS PECULIAR TO ESTIMATING DOSE TO MEMBERS OF THE PUBLIC USING THE ODCM COMPUTER PROGRAM:

a. ACTUAL — Refers to using known release data to project the dose to the public for the previous time period. These data are stored in the database and used to demonstrate compliance with the reporting requirements of RECS.

b. PROJECTED — Refers to using known release data from the previous time period or estimated release data to forecast a future dose to the public. This data is NOT incorporated into the database.

Table 1-1 (Page 1 of 2)

COMPLIANCE MATRIX

Regulation	Dose Component Limit	ODCM Equation	RECS	Technical Specification
10 CFR 50 Appendix I	1. Gamma air dose and beta air dose due to airborne radioactivity in effluent plume.	4-4 4-5	12.4.2	5.5.4.h
	a. Whole body and skin dose due to airborne radioactivity in effluent plume are reported only if certain gamma and beta air dose criteria are exceeded.	4-2 4-8	N/A	N/A
	b Projected doses due to gaseous release, when averaged over 31 days, exceed 0.3 mrem to any organ.	N/A	12.4.5	5.5.4.f
	c Projected doses due to liquid release, when averaged over 31 days, exceed 0.06 mrem to the total body or 0.2 mrem to any organ.	N/A	12.3.3	5.5.4.f
	2. CDE for all organs and all four age groups due to iodines and particulates in effluent plume. All pathways are considered.	4-14	12.4.3	5.5.4.i
	3. CDE for all organs and all four age groups due to radioactivity in liquid effluents.	3-3	12.3.2	5.5.4.d
10 CFR 20	1. TEDE, totaling all deep dose equivalent components (direct, ground and plume shine) and CDE (all pathways, both airborne and liquid-borne). CDE evaluation is made for adult only using FGR 11 database.	5-3	12.4.9	5.5.4.c
40 CFR 190 (now by reference, also part of 10 CFR 20)	1. Whole body dose (DDE) due to direct dose, ground and plume shine from all sources at a station.	5-2	12.4.7	5.5.4.j
	2. Organ doses (CDE) to an adult due to all pathways.	3-3 4-8		
Technical Specifications	1. "Instantaneous" whole body (DDE), skin (SDE), and thyroid (CDE) dose rates due to radioactivity in airborne effluents. For the thyroid dose, only inhalation is considered.	4-9 4-10 4-6	12.4.1	5.5.4.g
	2. "Instantaneous" concentration limits for liquid effluents.	3-5	12.3.1	5.5.4.b
	3. Radioactive Effluent Release Report	N/A	12.6.2	5.6.3

(continued)

Table 1-1 (Page 2 of 2)

COMPLIANCE MATRIX

Regulation	Dose Component Limit	ODCM Equation	RECS	Technical Specification
10CFR50 Appendix I Section IV.B.2	1. Implement environmental monitoring program.	N/A	12.5.1	N/A
10CFR50 Appendix I Section IV.B.3	1. Land Use Census	N/A	12.5.2	N/A
10CFR50 Appendix I Section IV.B.2	1. Interlaboratory Comparison Program	N/A	12.5.3	N/A
10CFR50 Appendix I Section IV.B.2 and Technical Specifications	1. Annual Radiological Environmental Operating Report	N/A	12.6.1	5.6.2

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE	The purpose of this section is to explain the meaning of logical connectors. Logical connectors are used in ODCM to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in ODCM are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.
BACKGROUND	Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentations of the logical connectors. When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.
EXAMPLES	The following examples illustrate the use of logical connectors.

(continued)

EXAMPLES
(continued)

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control not met.	A.1 Verify . . . AND A.2 Restore . . .	

In this example, the logical connector AND is used to indicate that, when in Condition A, both Required Actions A.1 and A.2 must be completed.

(continued)

EXAMPLES
(continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control not met.	A.1 Trip . . . OR A.2.1 Verify . . . AND A.2.2.1 Reduce . . . OR A.2.2.2 Perform . . . OR A.3 Align	

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2 and A.3 are alternate choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Action may be chosen. If A.2 is chose, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	ODCM Radiological Effluent Controls (RECs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with a REC state Conditions that typically describe the ways in which the requirements of the REC can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Times.
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the REC. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the REC Applicability. If situations are discovered that require entry into more than one Condition at a time within a single REC (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition. Once a Condition has been entered, subsequent divisions, subsystem, components or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition. (continued)

DESCRIPTION (continued)

However, when a subsequent division, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:

a. Must exist concurrent with the first inoperability; and

b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours; or

b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extension does not apply to those RECs that have exceptions that allow completely separate re-entry into the Condition (for each division, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual RECs.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Condition A and B in Example 1.3-3 may not be extended.

EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are in to be in MODE 3 within 12 hours AND in MODE 4 within 36 hours. A total of 12 hours is allowed for reaching MODE 3 and a total of 36 hours (not 48 hours) is allowed for reaching MODE 4 from the time that Condition B was entered. If MODE 3 is reached within 6 hours, the time allowed for reaching MODE 4 is the next 30 hours because the total time allowed for reaching Mode 4 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 4 is the next 36 hours.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One monitor inoperable.	A.1 Restore monitor to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

When a monitor is declared inoperable, Condition A is entered. If the monitor is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Action B.1 and B.2 start. If the inoperable monitor is restored to OPERABLE status after Condition B is entered, Condition A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a monitor pump is declared inoperable while the first monitor is still inoperable, Condition A is not re-entered for the second monitor. REC 12.0.3 is entered, since the ACTIONS do not include a Condition from more than one inoperable monitor. The Completion Time clock for Condition A does not stop after REC 12.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

While in REC 12.0.3, if one of the inoperable monitors is restored to OPERABLE status and the Completion Time for Condition A has not expired, REC 12.0.3 may be exited and operation continued in accordance with Condition A.

(continued)

EXAMPLES EXAMPLE 1.3-2 (continued)

While in REC 12.0.3, if one of the inoperable monitors is restored to OPERABLE status and the Completion Time for Condition A has expired, REC 12.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

On restoring one of the monitors to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first monitor was declared inoperable. This Completion Time may be extended if the monitor restored to OPERABLE status was the first inoperable monitor. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second monitor being inoperable for > 7 days.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the Control
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours AND 10 days from discovery to meet Control
C. One Function X subsystem inoperable. AND One Function Y subsystem inoperable.	C.1 Restore Function X subsystem to OPERABLE status. OR C.2 Restore Function Y subsystem to OPERABLE status.	72 hours 72 hours

(continued)

EXAMPLES EXAMPLE 1.3-3 (continued)

When one Function X subsystem and one Function Y subsystem are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each subsystem, starting from the time each subsystem was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second subsystem was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the REC was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the REC. The separate Completion Time modified by the phrase "from discovery of failure to meet the Control" is designed to prevent indefinite continued operation while not meeting the REC. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the associated Condition was entered.

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EXAMPLES (continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required instruments inoperable.	A.1 Restore instruments(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

A single Completion Time is used for any number of instruments inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per instrument basis. Declaring subsequent instruments inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the instruments has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first instrument was declared inoperable. The Completion Time may be extended if the instrument restored to OPERABLE status was the first inoperable instrument. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent instrument being inoperable for > 4 hours.

If the Completion Time of 4 hours (plus the extension) expires while one or more instruments are still inoperable, Condition B is entered.

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EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each inoperable instrument.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more instruments inoperable.	A.1 Restore instrument(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable instrument, and Completion Times tracked on a per instrument basis. When an instrument is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent instruments are declared inoperable, Condition A is entered for each instrument and separate Completion Times start and are tracked for each instrument.

If the Completion Time associated with an instrument in Condition A expires, Condition B is entered for that instrument. If the Completion Times associated with subsequent instruments in Condition A expire, Condition B is entered separately for each instrument and separate Completion Times start and are tracked for each instrument. If a instrument that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that instrument.

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

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EXAMPLES (continued)

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	Perform RSR 12.x.x.x. OR Reduce THERMAL POWER to ≤ 50% RTP.	Once per 8 hours 8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per RSR 12.0.2 to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be completed within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by RSR 12.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

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EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated.	1 hour AND Once per 8 hours thereafter
	AND	
	A.2 Restore subsystem to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	AND	
	B.2 Be in MODE 4.	36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by RSR 12.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE

The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION

Each ODCM Radiological Effluent Surveillance Requirement (RSR) has a specified Frequency in which the Surveillance must be met in order to meet the associated ODCM REC. An understanding of the correct application of the specified Frequency is necessary for compliance with the RSR.

The "specified Frequency" is referred to throughout this section and each of the Requirements of Section 12.0, ODCM Surveillance Requirement (RSR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each RSR, as well as certain Notes in the Surveillance column that modify performance requirements.

Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by RSR 12.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both. Example 1.4-4 discusses these special situations.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated REC is within its Applicability, represent potential RSR 12.0.4 conflicts. To avoid these conflicts, the RSR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With a RSR satisfied, RSR 12.0.4 imposes no restriction.

The use of "met" or "performed" in these instances conveys specified meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to

(continued)

1.0 USE AND APPLICATION

1.4 Frequency

DESCRIPTION (continued)

specifically determine the ability to meet the acceptance criteria. RSR 12.0.4 restrictions would not apply if both the following conditions are satisfied:

a. The Surveillance is not required to be performed; and

b. The Surveillance is not required to be met or, even if required to be met, is not known to be failed.

EXAMPLES

The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the REC (REC not shown) is MODES 1, 2, and 3.

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK	12 hours

Example 1.4-1 contains the type of RSR most often encountered in the ODCM. The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the interval specified in the Frequency is allowed by RSR 12.0.2 for operational flexibility. The measurement of this interval continues at all times, event when the RSR is not required to be met per RSR 12.0.1 (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the REC). If the interval specified by RSR 12.0.2 is exceeded while the unit is in a MODE or other specified condition in the Applicability of the REC,

(continued)

EXAMPLES

EXAMPLE 1.4-1 (continued)

and the performance of the Surveillance is not otherwise modified (refer to Examples 1.4-3 and 1.4-4), then RSR 12.0.3 becomes applicable.

If the interval as specified by RSR 12.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the REC for which performance of the RSR is required, the Surveillance must be performed within the Frequency requirements of RSR 12.0.2 prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of RSR 12.0.4.

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours after $\geq$ 25% RTP AND 24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time reactor power is increased from a power level < 25% RTP to $\geq$ 25% RTP, the Surveillance must be performed within 12 hours.

(continued)

EXAMPLES EXAMPLE 1.4-2 (continued)

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the extension allowed by RSR 12.0.2.

"Thereafter" indicates future performances must be established per RSR 12.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If reactor power decreases to < 25% RTP, the measurement of both intervals stops. New intervals start upon reactor power reaching 25% RTP.

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
----------NOTE---------- Not required to be performed until 12 hours after ≥ 25% RTP. ----------	
Perform channel adjustment.	7 days

The interval continues whether or not the unit operation is < 25% RTP between performances.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches ≥ 25% RTP to perform the Surveillance. The Surveillance is still considered to be within the "specified Frequency." Therefore, if the Surveillance were not performed within the 7 day interval (plus the extension allowed by RSR 12.0.2), but operation was < 25% RTP,

(continued)

EXAMPLES

EXAMPLE 1.4-3 (continued)

it would not constitute a failure of the RSR or failure to meet the REC. Also, no violation of RSR 12.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of RSR 12.0.3 would apply.

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
----------NOTE---------- Only required to be met in MODE 1. ----------	
Verify leakage rates are within limits.	24 hours

Example 1.4-4 specifies that the requirements of this Surveillance do not have to be met until the unit is in MODE 1. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by RSR 12.0.2), but the unit was not in MODE 1, there would be no failure of the RSR nor failure to meet the REC. Therefore, no violation of RSR 12.0.4 occurs when changing MODES, even with the 24 hour Frequency exceeded, provided the MODE change was not made into MODE 1. Prior to entering MODE 1 (assuming again that the 24 hour Frequency were not met), RSR 12.0.4 would require satisfying the RSR.

1.0 USE AND APPLICATION

1.5 REC and RSR Implementation

The ODCM provides those limitations upon plant operations which are part of the licensing basis for the station but do not meet the criteria for continued inclusion in the Technical Specifications.

It also provides information which supplements the Technical Specifications by implementing the requirements of Technical Specification Sections 5.5.1, 5.5.4, 5.6.2, and 5.6.3.

RECs and RSRs are implemented the same as Technical Specifications (see 12.0 Applicability). However, RECs and RSRs are treated as plant procedures and are not part of the Technical Specifications. Therefore the following exceptions apply:

a. Violations of the Action or Surveillance requirements in a REC are not reportable as conditions prohibited by, or deviations from, the Technical Specifications per 10 CFR 50.72 or 10 CFR 50.73.

b. Power reduction or plant shutdowns required to comply with the Actions of a REC are not reportable per 10 CFR 50.72 or 10 CFR 50.73.

2.0 through 11.0 NOT USED

INTENTIONALLY BLANK

Sections 2.0 through 11.0 are not used
in the ODCM in order to maintain the
Original ODCM numbering convention

12.0 ODCM RADIOLOGICAL EFFLUENT CONTROL (REC) APPLICABILITY

REC 12.0.1	RECs shall be met during the MODES or other specified conditions in the Applicability, except as provided in REC 12.0.2.
REC 12.0.2	Upon discovery of a failure to meet a REC, the Required Actions of the associated Conditions shall be met, except as provided in REC 12.0.5. If the REC is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
REC 12.0.3	When a REC is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, action shall be initiated within 1 hour to: a. Implement appropriate compensatory actions as needed; b. Verify that the plant is not in an unanalyzed condition or that a required safety function is not compromised by the inoperabilities; and c. Within 12 hours, obtain Shift Operations Superintendent or designee approval of the compensatory actions and the plan for exiting REC 12.0.3. Exceptions to this REC are stated in the individual RECs. Where corrective measures are completed that permit operation in accordance with the REC or ACTIONS, completion of the actions required by REC 12.0.3 is not required. REC 12.0.3 is only applicable in MODES 1, 2, and 3.
REC 12.0.4	When a REC is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified

(continued)

12.0 REC APPLICABILITY

REC 12.0.4 (continued)	condition in the Applicability for an unlimited period of time. This REC shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. Exceptions to this REC are stated in the individual RECs. REC 12.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.
REC 12.0.5	Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to REC 12.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
REC 12.0.6	RECs, including associated ACTIONS, shall apply to each unit individually, unless otherwise indicated. Whenever the REC refers to a system or component that is shared by both units, the ACTIONS will apply to both units simultaneously.

12.0 ODCM RADIOLOGICAL EFFLUENT SURVEILLANCE REQUIREMENT (RSR) APPLICABILITY

RSR 12.0.1

RSRs shall be met during the MODES or other specified conditions in the Applicability for individual RECs, unless otherwise stated in the RSR. Failure to meet a RSR, whether such failure is experienced during the performance of the RSR or between performances of the RSR, shall be failure to meet the REC. Failure to perform a RSR within the specified Frequency shall be failure to meet the REC except as provided in RSR 12.0.3. RSRs do not have to be performed on inoperable equipment or variables outside specified limits.

RSR 12.0.2

The specified Frequency for each RSR is met if the RSR is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this RSR are stated in the individual RSRs.

RSR 12.0.3

If it is discovered that a RSR was not performed within its specified Frequency, then compliance with the requirement to declare the REC not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the RSR. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

If the RSR is not performed within the delay period, the REC must immediately be declared not met, and the applicable Condition(s) must be entered.

When the RSR is performed within the delay period and the RSR is not met, the REC must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

12.0 RSR APPLICABILITY (continued)

RSR 12.0.4	Entry into a MODE or other specified condition in the Applicability of a REC shall not be made unless the REC's RSRs have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. RSR 12.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.
RSR 12.0.5	RSRs shall apply to each unit individually, unless otherwise indicated.

12.1 NOT USED

INTENTIONALLY BLANK

12.2 INSTRUMENTATION

12.2.1 Radioactive Liquid Effluent Monitoring Instrumentation.

REC 12.2.1 The Radioactive Liquid Effluent Instrumentation channels in Table R12.2.1-1 shall be OPERABLE with their alarm/trip setpoints to ensure that the limits of REC 12.3.1 are not exceeded.

APPLICABILITY: When pump flow is present in the system. For Blowdown, when the Blowdown Flow Control Valve is >0% open and the Blowdown line is not otherwise isolated.

ACTIONS

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

1. Separate Condition entry is allowed for each instrument channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required instrument channels inoperable due to its alarm/trip setpoint less conservative than required.	A.1 Suspend the release of radioactive liquid effluents monitored by the instrument channel. OR	Immediately
	A.2 Enter the Condition referenced in Table R12.2.1-1 for the instrument channel.	Immediately
B. One or more required instrument channels inoperable for reasons other than Condition A.	B.1 Enter the Condition referenced In Table R12.2.1-1 for the instrument channel.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. As required by Required Action A.2 or B.1 and referenced in Table R12.2.1-1.	C.1 Perform RSR 12.3.1.1 on at least two independent samples of the tanks contents. AND	Prior to each release
	C.2 Verify the release rate calculations and discharge valve line-up independently with at least two qualified members of the technical staff. AND	Prior to each release
	C.3 Return instrument channel to OPERABLE status. OR	30 days
	C.4 Place Administrative Control Clearance order to Lock-Closed 0WF201, RW DSCH Tank River DSCH Valve, to remove the ability to conduct a Liquid Radwaste Discharge.	30 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Suspend release of radioactive effluents via this pathway.	Immediately
E. As required by Required Action A.2 or B.1 and referenced in Table R12.2.1-1.	E.1 Analyze affected effluent grab samples for principal gamma emitters and I-131 at an LLD as specified in Table R12.3.1-2. AND	Once per 8 hours
	E.2 Restore the instrument channel to OPERABLE status.	30 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. As required by Required Action A.2 or B.1 and referenced in Table R12.2.1-1.	F.1 ----------NOTE---------- Pump curves for instrument 3.a, or known valve positions for instrument 3.b, may be used to estimate flow. ---------- Estimate the flow rate for the release in progress via the affected pathway.	Once per 4 hours
	F.2 With remote position indication for 0WL005 (BDFCV) not available, verify valve position locally.	Prior to each release.
G. ----------NOTE---------- Required Action G.1 shall be completed if this Condition is entered. ---------- Required Action C.3 or C.4, or E.2 and associated Completion Time not met.	G.1 Explain why the inoperability was not corrected in a timely manner in the next Radioactive Effluent Release Report.	In accordance with Technical Specification 5.6.3.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
RSR 12.2.1.1	Perform SOURCE CHECK.	Prior to each release
RSR 12.2.1.2	Perform CHANNEL FUNCTIONAL TEST.	Prior to each Release
RSR 12.2.1.3	Perform CHANNEL CHECK.	24 hours
RSR 12.2.1.4	Perform SOURCE CHECK.	31 days
RSR 12.2.1.5	Perform CHANNEL FUNCTIONAL TEST. Except for Instrument 3.b, the test shall also demonstrate that the instrument indicates measured levels above the alarm/trip setpoint and that the control room alarm annunciates and the affected pathway automatically isolates, as applicable, under the following conditions: a. Loss of power, b Downscale failure, or c. Controls not set in Operate or High Voltage mode.	92 days
RSR 12.2.1.6	Perform CHANNEL CALIBRATION. (No longer applicable per E.C. #360580)	N/A
RSR 12.2.1.7	Perform CHANNEL CALIBRATION	24 months
RSR 12.2.1.8	Perform POSITION INDICATION VERIFICATION	12 months

Table R12.2.1-1 (page 1 of 2)
Radioactive Liquid Effluent Monitoring Instrumentation

INSTRUMENT	REQUIRED CHANNELS PER IINSTRUMENT	CONDITION REFERENCED FROM REQUIRED ACTION A.2 AND B.1	SURVEILLANCE REQUIREMENTS
1. Gamma Scintillation Monitor providing Alarm and Automatic Termination of Release			
a. Liquid Radwaste Effluents Line	1	C	RSR 12.2.1.1 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]
2. Gamma Scintillation Monitors providing Alarm but not providing Automatic Termination of Release			
a. Service Water Effluent Line (Unit 1)	1	E	RSR 12.2.1.4 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]
b. Service Water Effluent Line (Unit 2)	1	E	RSR 12.2.1.4 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]
c. RHR Service Water (Line A) Effluent Line (Unit 1)	1	E	RSR 12.2.1.4 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]
d. RHR Service Water (Line B) Effluent Line (Unit 1)	1	E	RSR 12.2.1.4 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]
e. RHR Service Water (Line A) Effluent Line (Unit 2)	1	E	RSR 12.2.1.4 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]
f. RHR Service Water (Line B) Effluent Line (Unit 2)	1	E	RSR 12.2.1.4 RSR 12.2.1.3 RSR 12.2.1.5 RSR 12.2.1.7[(a)]

(continued)

[(a)] The initial CHANNEL CALIBRATION shall be performed using one or more of the reference radioactive standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, the initial reference radioactive standards or radioactive sources that have been related to the initial calibration shall be used, in order to demonstrate linearity of the original calibration. This transfer calibration, combined with signal inputs, satisfies channel calibration and functional test requirements as implemented by station procedures.

Table R12.2.1-1 (page 2 of 2)
Radioactive Liquid Effluent Monitoring Instrumentation

INSTRUMENT	REQUIRED CHANNELS PER IINSTRUMENT	CONDITION REFERENCED FROM REQUIRED ACTION A.2 AND B.1	SURVEILLANCE REQUIREMENTS
3. Flow Rate Measurement Devices			
a. Liquid Radwaste Effluent Line	1	F	RSR 12.2.1.2 RSR 12.2.1.3 RSR 12.2.1.7
b. 0WL005 BDFCV Position Indication	1	F	RSR 12.2.1.8

12.2 INSTRUMENTATION

12.2.2 Radioactive Gaseous Effluent Monitoring Instrumentation

REC 12.2.2 The Radioactive Gaseous Effluent Instrumentation channels in Table R12.2.2-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of REC 12.4.1 are not exceeded.

APPLICABILITY: According to Table R12.2.2-1

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required instrument channels inoperable due to its alarm/trip setpoint less conservative than required.	A.1 Suspend the release of radioactive gaseous effluents monitored by the instrument channel. OR A.2 Enter the Condition referenced in Table R12.2.2-1 for the instrument channel.	Immediately Immediately
B. One or more required instrument channels inoperable for reasons other than Condition A.	B.1 Enter the Condition referenced in Table R12.2.2-1 for the instrument channel.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. As required by Required Action A.2 or B.1 and referenced in Table R12.2.2-1.	C.1 Place instrument channel in trip.	1 hour
D. As required by Required Action A.2 or B.1 and referenced in Table R12.2.2-1.	D.1 Obtain grab samples. AND D.2 Analyze grab samples for noble gas emitters. AND D.3 Restore instrument channel to OPERABLE status.	Once per 8 hours Within 24 hours following each grab sample 30 days
E. As required by Required Action A.2 or B.1 and referenced in Table R12.2.2-1.	E.1 Obtain grab samples. AND E.2 Analyze grab samples for noble gas emitters at an LLD as specified in Table R12.4.1-1. AND E.3 Restore instrument channel to OPERABLE status.	Once per 8 hours Within 24 hours following each grab sample 30 days
F. As required by Required Action A.2 or B.1 and referenced in Table R12.2.2-1.	F.1 Establish CONTINUOUS SAMPLING with auxiliary sampling equipment as required in Table R12.4.1-1. AND F.2 Restore instrument channel to OPERABLE status.	4 hours 30 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action A.2 or B.1 and referenced in Table R12.2.2-1.	G.1 Estimate flow rate. AND G.2 Restore instrument channel to OPERABLE status.	Once per 4 hours 30 days
H. As required by Required Action A.2 or B.1 and referenced in Table R12.2.2-1.	H.1 Verify offgas treatment system not bypassed. AND H.2.1 Verify at least one Instrument 1.a channel OPERABLE. OR H.2.2 Verify Required Actions for Condition D are met. AND H.3 Obtain and analyze grab samples. AND H.4 Restore instrument channel to OPERABLE status.	Immediately Immediately Immediately Once per 24 hours. 30 days
I. ----------NOTE---------- Required Action I.1 shall be completed if this Condition is entered. ---------- Required Action and associated Completion Time of Required Action D.3, E.3, F.2, or G.2 or H.4 not met.	I.1 Explain in the next Radioactive Effluent Release Report why the inoperability was not corrected within the time specified.	In accordance with Technical Specification 5.6.3.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
RSR 12.2.2.1	Perform CHANNEL CHECK.	24 hours
RSR 12.2.2.2	Perform SOURCE CHECK.	24 hours
RSR 12.2.2.3	----------NOTE---------- For Instruments 4.b and 4.c, not required to be performed until 7 days after Standby Gas Treatment is placed in operation. ---------- Perform CHANNEL CHECK.	7 days
RSR 12.2.2.4	Perform SOURCE CHECK.	31 days
RSR 12.2.2.5	Perform CHANNEL FUNCTIONAL TEST. For Instruments 3.a (log monitor only) and 1.a, the test shall also demonstrate that the control room alarm annunciates and the automatic isolation capability of the affected pathway, as applicable, under the following conditions: a. Upscale, b. Inoperative, or c. Downscale	92 days
RSR 12.2.2.6	Perform CHANNEL FUNCTIONAL TEST. The test shall also demonstrate that the instrument indicates measured levels above the alarm setpoint and that the control room alarm annunciates on a Loss of Counts condition.	92 days
RSR 12.2.2.7	Perform CHANNEL CALIBRATION	24 months

Table R12.2.2-1 (page 1 of 2)
Radioactive Gaseous Effluent Monitoring Instrumentation

	INSTRUMENT[a]	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER INSTRUMENT	CONDITION REFERENCED FROM REQUIRED ACTION A.2 AND B.1	SURVEILLANCE REQUIREMENTS
1.	Main Condenser Offgas Treatment System Effluent Monitoring System				
a.	Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (Post-Treat)	(b)	2	C, if only one required channel inoperable D, if both required channels inoperable	RSR 12.2.2.1 RSR 12.2.2.2 RSR 12.2.2.5 RSR 12.2.2.7[e]
2.	Main Stack Monitoring System				
a.	Noble Gas Activity Monitor (Low or Mid Range WRGM)	(c)	1	E	RSR 12.2.2.1 RSR 12.2.2.4 RSR 12.2.2.6 RSR 12.2.2.7[d]
b.	Iodine Sampler (Grab Sampler)	(c)	1	F	RSR 12.2.2.3
c.	Particulate Sampler (Grab Sampler)	(c)	1	F	RSR 12.2.2.3
d.	Effluent System Flow Rate Monitor	(c)	1	G	RSR 12.2.2.1 RSR 12.2.2.5 RSR 12.2.2.7
e.	Sampler Flow Rate Monitor (Low/Mid/Hi)	(c)	1	G	RSR 12.2.2.1 RSR 12.2.2.5 RSR 12.2.2.7

(Continued)

(a) Equipment Part Numbers (EPN) are provided in Table R12.2.2-2.
(b) During effluent releases via this pathway.
(c) At all times.
(d) The initial CHANNEL CALIBRATION shall be performed using one or more of the referenced radioactive standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATIONS, the initial reference radioactive standards or radioactive sources that have been related to the initial calibration shall be used.
(e) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference radioactive standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, the initial calibration shall be used, in order to demonstrate linearity of the original calibration. This transfer calibration, combined with signal inputs, satisfies channel calibration and functional test requirements as implemented by station procedures.

Table R12.2.2-1 (page 2 of 2)
Radioactive Gaseous Effluent Monitoring Instrumentation

	INSTRUMENT[a]	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER INSTRUMENT	CONDITION REFERENCED FROM REQUIRED ACTION A.2 AND B.1	SURVEILLANCE REQUIREMENTS
3.	Condenser Air Ejector Radioactivity Monitor (Prior to Input to Holdup System)				
	a. Noble Gas Activity Monitor	(f)	1	H	RSR 12.2.2.1 RSR 12.2.2.4 RSR 12.2.2.5 RSR 12.2.2.7[d]
4.	Standby Gas Treatment (SGT) Monitoring System				
	a. Noble Gas Activity Monitor (Low or Mid Range WRGM)	(g)	1	E	RSR 12.2.2.1 RSR 12.2.2.4 RSR 12.2.2.6 RSR 12.2.2.7[d]
	b. Iodine Sampler (Grab Sampler)	(g)	1	F	RSR 12.2.2.3
	c. Particulate Sampler (Grab Sampler)	(g)	1	F	RSR 12.2.2.3
	d. Effluent System Flow Rate Monitor	(g)	1	G	RSR 12.2.2.1 RSR 12.2.2.5 RSR 12.2.2.7
	e. Sampler Flow Rate Monitor (Low/Mid/Hi)	(g)	1	G	RSR 12.2.2.1 RSR 12.2.2.5 RSR 12.2.2.7

(a) Equipment Part Numbers (EPN) are provided in Table R12.2.2-2.
(d) The initial CHANNEL CALIBRATION shall be performed using one or more of the referenced radioactive standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATIONS, the initial reference radioactive standards or radioactive sources that have been related to the initial calibration shall be used.
(f) During operation of the main condenser air ejector.
(g) During operation of SGT.

Table R12.2.2-2 (page 1 of 2)
Radioactive Gaseous Effluent Monitoring Instrumentation Applicability

INSTRUMENT	EPNS OF APPLICABLE EQUIPMENT
A. Unit 1 Applicable Instruments	
1. Main Condenser Offgas Treatment System Effluent Monitoring System	
a. Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release	1D18-N903A, K901A, K601A, R601 1D18-N903B, K901B, K601B, R601
2. Main Stack Monitoring System	
a. Noble Gas Activity Monitor (Low or Mid Range WRGM)	0D18-N514, R517, R518 Low Range 0D18-N515, R517, R518 Mid Range
b. Iodine Sampler (Grab Sampler)	
c. Particulate Sampler (Grab Sampler)	
d. Effluent System Flow Rate Monitor	0FT-VR019, 0FY-VR019 AND 019A, 0FR-VR019, 0D18-K510, 0D18-R518
e. Sampler Flow Rate Monitor (Low/Mid/Hi)	0D18-N527, 0D18-N528, 0D18-R518 Low 0D18-N530, 0D18-N531, 0B18-R518 Mid/Hi
3. Condenser Air Ejector Radioactivity Monitor (Prior to Input to Holdup System)	
a. Noble Gas Activity Monitor	1D18-N002, K613, R604, or 1D18-N012, K600, R605
4. Standby Gas Treatment (SGT) Monitoring System	
a. Noble Gas Activity Monitor (Low/Mid Range WRGM)	0D18-N511, R515, R516 Low Range 0D18-N512, R515, R516 Mid Range
b. Iodine Sampler (Grab Sampler)	
c. Particulate Sampler (Grab Sampler)	
d. Effluent System Flow Rate Monitor	1FT-VG009, 1FY-VG009, 1FR-VG-009
e. Sampler Flow Rate Monitor (Low/Mid/Hi)	0D18-N521, 0D18-N522, 0D18-R516 Low 0D18-N524, 0D18-N525, 0B18-R516 Mid/Hi

(Continued)

Table R12.2.2-2 (page 2 of 2)
Radioactive Gaseous Effluent Monitoring Instrumentation Applicability

INSTRUMENT	EPNS OF APPLICABLE EQUIPMENT
B. Unit 2 Applicable Instruments	
1. Main Condenser Offgas Treatment System Effluent Monitoring System	
a. Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release	2D18-N903A, K901A, K601A, R601 2D18-N903B, K901B, K601B, R601
2. Main Stack Monitoring System	
a. Noble Gas Activity Monitor (Low or Mid Range WRGM)	0D18-N514, R517, R518 Low Range 0D18-N515, R517, R518 Mid Range
b. Iodine Sampler (Grab Sampler)	
c. Particulate Sampler (Grab Sampler)	
d. Effluent System Flow Rate Monitor	0FT-VR019, 0FY-VR019 AND 019A, 0FR-VR019, 0D18-K510, 0D18-R518
e. Sampler Flow Rate Monitor (Low/Mid/Hi)	0D18-N527, 0D18-N528, 0D18-R518 Low 0D18-N530, 0D18-N531, 0B18-R518 Mid/Hi
3. Condenser Air Ejector Radioactivity Monitor (Prior to Input to Holdup System)	
a. Noble Gas Activity Monitor	2D18-N002, K613, R604, or 2D18-N012, K600, R605
4. Standby Gas Treatment (SGT) Monitoring System	
a. Noble Gas Activity Monitor (Low/Mid Range WRGM)	0D18-N511, R515, R516 Low Range 0D18-N512, R515, R516 Mid Range
b. Iodine Sampler (Grab Sampler)	
c. Particulate Sampler (Grab Sampler)	
d. Effluent System Flow Rate Monitor	2FT-VG009, 2FY-VG009, 2FR-VG-009
e. Sampler Flow Rate Monitor (Low/Mid/Hi)	0D18-N521, 0D18-N522, 0D18-R516 Low 0D18-N524, 0D18-N525, 0B18-R516 Mid/Hi

12.3 LIQUID EFFLUENTS

12.3.1 Liquid Effluent Concentration

REC 12.3.1 The concentration of radioactive material released from the site to areas at or beyond the SITE BOUNDARY shall be limited to:

a. 10 times the concentration specified in 10 CFR 20.1001-20.2402 Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases; and

b. the values listed in Table R12.3.1-1 for total activity concentration for all dissolved or entrained noble gases.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Concentration of radioactive material released to areas at or beyond the SITE BOUNDARY not within limits.	A.1 Initiate action to restore the concentration to within limits.	Immediately
B. Requirements of RSR 12.3.1.4 not met.	B.1 Enter Condition A of Technical Requirements Manual Section 3.7.d.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
RSR 12.3.1.1	Determine radioactivity content of each radioactive liquid waste batch by sampling and analysis in accordance with Table R12.3.1-2.	In accordance with the Radioactive Liquid Waste Sampling and Analysis Program.
RSR 12.3.1.2	Perform post-release analysis of samples composited from batch releases in accordance with Table R12.3.1-2.	In accordance with the Radioactive Liquid Waste Sampling and Analysis Program.
RSR 12.3.1.3	Determine radioactivity concentration of liquids discharged from continuous release points by sampling and analysis in accordance with Table R12.3.1-2.	In accordance with the Radioactive Liquid Waste Sampling and Analysis Program.

(Continued)

SURVEILLANCE REQUIREMENTS

RSR 12.3.1.4	----------NOTE---------- Not required to be performed until 7 days after the start of addition if tank(s) is empty at the beginning of the addition. ---------- Verify the quantity of radioactive material of each outside temporary tank is low enough to ensure that in the event of an uncontrolled release of the tanks contents, the resulting concentration would be less than the REC limits.	7 days when radioactive material is being added to the tank(s). AND Once within 7 days after each completion of addition of radioactive material to the tank(s).

Table R12.3.1-1

ALLOWABLE CONCENTRATION (AC) OF DISSOLVED OR ENTRAINED NOBLE GASES RELEASED FROM THE SITE TO UNRESTRICTED AREAS IN LIQUID WASTE

NUCLIDE	ALLOWABLE CONCENTRATION (μCi/ml)*
Kr-85m	2×10^{-4}
Kr-85	5×10^{-4}
Kr-87	4×10^{-5}
Kr-88	9×10^{-5}
Ar-41	7×10^{-5}
Xe-131m	7×10^{-4}
Xe-133m	5×10^{-4}
Xe-133	6×10^{-4}
Xe-135m	2×10^{-4}
Xe-135	2×10^{-4}

* Computed from Equation 20 of ICRP Publication 2 (1959), adjusted for infinite cloud submersion in water, and R = 0.01 rem/week, density = 1.0 g/cc and Pw/Pt = 1.0.

Table R12.3.1-2 (Page 1 of 4)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLING FREQUENCY[g]	MINIMUM ANALYSIS FREQUENCY[g]	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD)[a] (μCi/ml)
A. Batch Waste Release Tanks[d]	Prior to each release, Each Batch	Prior to each release, Each Batch	Principal Gamma Emitters[f]	$5x10^{-7}$
			I-131	$1x10^{-6}$
	Prior to each release, Each Batch	31 days Composite [b]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	Prior to each release, Each Batch	92 days Composite [b]	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$
	Prior to each release, One Batch per 31 days	31 days	Dissolved & Entrained Gases (Gamma Emitters)	$1x10^{-5}$
B. Plant Continuous Releases[e] Cooling Pond Blowdown	CONTINUOUS[c]	7 days Composite [c]	I-131	$1x10^{-6}$
			Principal Gamma Emitters[f]	$5x10^{-7}$
	31 days Grab Sample	31 days	Dissolved & Entrained Gases (Gamma Emitters)	$1x10^{-5}$
	CONTINUOUS[c]	31 days Composite[c]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	CONTINUOUS[c]	92 days Composite[c]	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$

Table R12.3.1-2 (Page 2 of 4)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM TABLE NOTATION

a. The LLD is the smallest concentration of radioactive material in a sample 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:

$$LLD = \frac{4.66 S_b}{E \cdot V \cdot 2.22x10^6 \cdot Y \cdot e^{(-\lambda \Delta t)}}$$

Where:

LLD = the a priori lower limit of detection (microcurie per unit mass or volume),

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

$$= \frac{\sqrt{B}}{t}$$

B = background sum (counts)
t = count time (minutes)

E = the counting efficiency (counts per transformation),

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

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

Y = the fractional radiochemical yield, when applicable,

λ= the radioactive decay constant for the particular radionuclide and for composite samples, and

Δt = the elapsed time between the midpoint of sample collection and the time of counting (for plant effluents, not environmental samples). For batch samples taken and analyzed prior to release, Δt is taken to be zero.

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

Alternate LLD Methodology

An alternate methodology for LLD determination follows and is similar to the above LLD equation:

$$LLD = \frac{(2.71 + 4.65\sqrt{B}) \cdot Decay}{E \cdot q \cdot b \cdot Y \cdot t \cdot (2.22x10^6)}$$

Table R12.3.1-2 (Page 3 of 4)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM TABLE NOTATION

Where:

B = background sum (counts)

E = counting efficiency

q = sample quantity (mass or volume)

b = abundance (if applicable)

Y= fractional radiochemical yield or collection efficiency (if applicable)

t= count time (minutes)

2.22×10^6 = number of disintegrations per minute per microcurie

$2.71 + 4.65\sqrt{B} = k^2 + (2k\sqrt{2}\sqrt{B})$, and k = 1.645

(k=value of the t statistic from the single-tailed t distribution at a significance level of 0.95 and infinite degrees of freedom. This means that the LLD result represents a 95% detection probability with a 5% probability of falsely concluding that the nuclide is present when it is not or that the nuclide is not present when it is.)

Decay = $e^{\lambda\Delta t}[\lambda RT/(1-e^{-\lambda RT})][\lambda T_d/(1-e^{-\lambda T_d})]$ if applicable

λ = radioactive decay constant (units consistent with Δt, RT and T_d)

Δt = "delta t", or the elapsed time between sample collection or the midpoint of sample collection and the time the count is started, depending on the type of sample (units consistent with λ)

RT = elapsed real time, or the duration of the sample count (units consistent with λ)

T_d = sample deposition time, or the duration of analyte collection onto the sample media (units consistent with λ)

The LLD may alternately be determined using installed radioanalytical software, if available. In addition to determining the correct number of channels over which to total the background sum, utilizing the software's ability to perform decay corrections (i.e. during sample collection, from sample collection to start of analysis, and during counting), this alternate method will result in a more accurate determination of the LLD.

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

Table R12.3.1-2 (Page 4 of 4)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM TABLE NOTATION

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

c. To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

d. A batch release is the discharge of liquid waste of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed to assure representative sampling.

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

f. 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 that are measurable and identifiable, at the 95% confidence level, together with the above nuclides, shall also be identified and reported.

g. The provisions of RSR 12.0.2 and RSR 12.0.3 are applicable to the Radioactive Liquid Waste Sampling and Analysis Program.

12.3 LIQUID EFFLUENTS

12.3.2 Dose from Liquid Effluents

REC 12.3.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each reactor unit, from the site shall be limited to:

a. ≤ 1.5 mrem to the total body and ≤ 5.0 mrem to any organ during any calendar quarter; and

b. ≤ 3.0 mrem to the total body and ≤ 10.0 mrem to any organ during any calendar year.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Required Action A.1 shall be completed if this Condition is entered. ---------- Calculated dose not within limits.	A.1 Submit a Report, pursuant to 10CFR50, Appendix I, Section IV.A, to the NRC that identifies causes for exceeding limits, radiological impact on finished drinking water supplies at the nearest downstream drinking water source and defines actions to be taken to reduce releases of radioactive materials in liquid effluents during the remainder of the current calendar quarter and during the subsequent three calendar quarters so that the cumulative dose or dose commitment is within the limits of REC 12.3.2.b.	30 days following the end of the quarter in which the release occurred
B. Calculated dose exceeds two times (2x) the limits.	B.1 Enter Condition A of REC 12.4.7.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
RSR 12.3.2.1	----------NOTE---------- Only required to be performed if liquid releases have occurred since the last performance of this RSR. ---------- Calculate cumulative dose contributions from liquid effluents in accordance with the ODCM.	31 days

12.3 LIQUID EFFLUENTS

12.3.3 Liquid Radwaste Treatment Systems

REC 12.3.3. The Liquid Radwaste Treatment System shall:

a. Be OPERABLE; and

b. Be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses due to the liquid effluent, from each reactor unit, from the site would exceed 0.06 mrem to the total body or 0.2 mrem to any organ when averaged over 31 days.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Liquid Radwaste Treatment System inoperable.	A.1 Restore Liquid Radwaste Treatment System to OPERABLE status.	31 days
B. ----------NOTE---------- Required Action B.1 shall be completed if this Condition is entered. ---------- Untreated liquid waste release in progress. <u>AND</u> Projected dose not within limits.	B.1 Submit a report to the NRC that includes inoperable equipment or subsystem identification and reason, action taken to restore the inoperable equipment to OPERABLE status, and a summary description of the action(s) taken to prevent recurrence.	30 days
C. ----------NOTE---------- Required Action C.1 shall be completed if this Condition is entered. ---------- Required Action and Associated Completion time of Condition A not met.	C.1 Submit a report to the NRC that includes inoperable equipment or subsystem identification and reason, action taken to restore the inoperable equipment to OPERABLE status, and a summary description of the action(s) taken to prevent recurrence.	30 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
RSR 12.3.3.1	----------NOTE---------- Only required to be performed if liquid releases are planned and RSR has not been performed in the last 38 days 18 hours. ---------- Determine projected doses due to liquid releases in accordance with the ODCM methods.	31 days
RSR 12.3.3.2	----------NOTE---------- Not required to be performed if Liquid Radwaste Treatment System has been used to process radioactive liquid effluents in the last 115 days. ---------- Operate the Liquid Radwaste Treatment System equipment for at least 30 minutes.	92 days if a portable (vendor supplied) waste treatment system is being used. AND 180 days if a portable (vendor-supplied) waste treatment system is not being used.

12.4 GASEOUS EFFLUENTS AND TOTAL DOSE

12.4.1 Gaseous Effluent Dose Rates

REC 12.4.1 The dose rate at or beyond the SITE BOUNDARY due to radioactive materials in gaseous effluents released from the site shall be limited to the following:

a. For noble gases, ≤ 500 mrem/year to the total body and ≤ 3000 mrem/year to the skin; and

b. For iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives > 8 days, ≤ 1500 mrem/year to any organ via the inhalation pathway.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Dose rate not within limits.	A.1 Initiate action to decrease release rates to maintain dose rates within limits.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
RSR 12.4.1.1	Verify the dose rates due to noble gases, iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives > 8 days in gaseous effluents is within limits utilizing the methodology and parameters of the ODCM limits by obtaining and analyzing representative samples in accordance with Table R12.4.1-1.	In accordance with the Radioactive Gaseous Waste Sampling and Analysis Program