DOCKET NOS. 50-245

ENCLOSURE 2

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

PROPOSED RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS

REVISION 1

SEPTEMBER, 1979

D.D. MAJOR CHANGES TO RADIOACTIVE WASTE SYSTEMS

The RADIOACTIVE WASTE SYSTEMS are those liquid, gaseous and solid waste systems which are required to maintain control over radioactive material in order to meet the LCO's set forth in these specifications.

MAJOR CHANGES to these systems shall include the following:

1) Major changes in process equipment, components, structures and effluent monitoring instrumentation from those described in the FSAR (e.g., deletion of evaporators and installation of demineralizers; use of fluidized bed calciner/ incineration in place of cement solidification systems);

2) Major changes in the design of radwaste treatment systems (liquid, gaseous and solid) that could significantly alter the characteristics and/or quantities of effluents released or volumes of solid waste stored or shipped offsite from those previously considered in the FSAR (e.g., use of asphalt system in place of cement);

3) Changes in system design which may invalidate the accident analysis as described in the FSAR (e.g., changes in tank capacity that would alter the curies released); and

4) Changes in system design that could potentially result in a significant increase in occupational exposure of operating personnel.

E.E. OFFSITE DOSE CALCULATION MANUAL (ODCM)

An OFFSITE DOSE CALCULATION MANUAL (ODCM) shall be a manual containing the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints. Requirements of the ODCM are provided in Specification 6.14.

F.F. GASEOUS RADWASTE TREATMENT SYSTEM

A GASEOUS RADWASTE TREATMENT SYSTEM is 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.

G.G. VENTILATION EXHAUST TREATMENT SYSTEM

A VENTILATION EXHAUST TREATMENT SYSTEM is 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 stream 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.

H.H. PROCESS CONTROL PROGRAM (PCP)

A PROCESS CONTROL PROGRAM shall contain sampling, analysis, and formulation determination by which SOLIDIFICATION of radioactive wastes from liquid systems is accomplished.

I.I. SOLIDIFICATION

SOLIDIFICATION shall be the conversion of radioactive wastes from liquid systems to an immobilized solid with definite volume and shape, bounded by a stable surface of distinct outline on all sides.

J.J. 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.

K.K. 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.

3.8 RADIOACTIVE MATERIALS

3.8.A RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION - Limiting Condition for Operation

3.8.A.1 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.8-1 shall be OPERABLE with applicable alarm/trip setpoints set to ensure that the limits of Specification 3.8.C.1 are not exceeded. The setpoints shall be determined in accordance with procedures as described in the ODCM.

Applicability: As shown in Table 3.8-1.

Action:

1. With the number of channels less than the minimum channels operable requirement, take the action shown in Table 3.8-1.

2. In the event a limiting condition for operation and/or associated action requirement cannot be satisfied, this shall not require unit shutdown or prevent a change in operational modes.

3. Restore the inoperable monitor to OPERABLE status within the time frame specified in the Action Statement or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the reasons for the inoperability and the plans for returning the monitor to OPERABLE status. Releases need not be terminated after the time frame specified in the Action Statement, provided the specified actions are continued.

4.8.A RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION - Surveillance

4.8.A.1.1 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.8-1.

TABLE 3.8-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Alarm	Instrument	Minimum # Operable	Alarm Setpoints Required	Applicability	Action
1.	Gross Radioactivity Monitors Providing Automatic Termination of Release				
	a. Liquid Radwaste Effluent Line	(1)	Yes	*	a
2.	Gross Radioactivity Monitors Not Providing Automatic Termination of Release				
	a. Service Water Effluent Line	(1)	Yes	*	b
3.	Flow Rate Measurement Devices				
	a. Liquid Radwaste	(1)	No	*	c
	b. Dilution Water Flow	**	No	*	NA

* - At all times - which means that channels shall be OPERABLE and in service on a continuous, uninterrupted basis, except that outages are permitted, within the time frame of the specified action statement, for the purpose of maintenance and performance of required tests, checks and calibrations.

** - Dilution water flow is determined by the use of condenser cooling water and service water pump status.

NA - Not Applicable.

TABLE 3.8-1

(Continued)

ACTION STATEMENTS

Action a

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may continue for up to 14 days provided that prior to initiating a release:

1. At least two independent samples are analyzed in accordance with Specification 4.8.C.1.1.3 and;

2. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valving;

Action b

With the numbers of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided that once per 24 hours grab samples are collected and analyzed for gross radioactivity (beta or gamma) at a lower limit of detection of at least $5X10^{-7}$ uCi/ml.

Action c

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated once per 4 hours during actual releases.

TABLE 4.8-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	Instrument	Channel Check	Channel Calibration	Channel Functional
1.	Gross Radioactivity Monitors Providing Automatic Termination of Release			
	a. Liquid Radwaste Effluent Line	D (1)	R (2)	Q (3)
2.	Gross Radioactivity Monitors Not Providing Automatic Termination of Release			
	a. Service Water Effluent Line	D (1)	R (2)	Q (3)
3.	Flow Rate Measurement Devices			
	a. Liquid Radwaste Effluent Line	D (1)	R	Q (5)
	b. Dilution Water Flow	D (4)	NA	NA

D = Daily

R = Once every 18 months

Q = Once every 3 months

NA = Not Applicable

TABLE 4.8-1
(Continued)

TABLE NOTATION

(1) Channel check need only be performed daily when discharges are made from this pathway. The channel check should be done when the discharge is in progress.

(2) Calibration shall include the use of a radioactive solid source, the activity of which can be traced to an NBS source. The radioactive source shall be in a known, reproducible geometry.

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

1. Instrument indicates measured levels above the alarm/trip setpoint*.

2. Instrument indicates a downscale failure or circuit failure.

3. Instrument controls not set in operate mode.

* Automatic isolation shall also be demonstrated for the liquid radwaste effluent line.

(4) Pump status shall be checked daily.

(5) The quarterly functional test for the liquid radwaste flow monitor shall consist only of a comparison of the calculated volumes discharged by using the measured flow rate versus the tank level decrease. This surveillance is not required if no waste was discharged during the quarter.

3.8.B Radioactive Gaseous Effluent Monitoring Instrumentation - Limiting Condition for Operation

3.8.B.1 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.8-2 shall be OPERABLE with applicable alarm/trip setpoints set to ensure that the limits of Specification 3.8.D.1 are not exceeded. The setpoints shall be determined in accordance with procedures as described in the ODCM.

Applicability: As shown in Table 3.8-2.

Action:

1. With the number of channels less than the minimum channels operable requirement, take the action shown in Table 3.8-2.

2. In the event of a limiting condition for operation and/or associated action requirement cannot be satisfied, this shall not require unit shutdown or prevent a change in operational modes.

3. Restore the inoperable monitor to OPERABLE status within the time frame specified in the Action Statement or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the reasons for the inoperability and the plans for returning the monitor to OPERABLE status. Releases need not be terminated after the time frame specified in the Action Statement, provided the specified actions are continued.

4.8.B Radioactive Gaseous Effluent Instrumentation - Surveillance

4.8.B.1.1 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.8-2.

TABLE 3.8-2

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

	Instrument	Minimum # Operable	Alarm Setpoints	Applicability	Action
1.	Main Condenser Augmented Offgas Treatment System Explosive Gas Monitor				
	(a) Hydrogen Monitor	(1)	Yes	**	a
2.	Condenser Air Ejector Noble Gas Activity Monitor				
	(a) SJAE Off-Gas Monitor	(2)	Yes	*	b
3.	MP1 Main Stack				
	(a) Noble Gas Activity Monitor	(1)	Yes	*	c
	(b) Iodine Sampler	(1)	No	*	d
	(c) Particulate Sampler	(1)	No	*	d
	(d) Stack Flow Rate Monitor	(1)	No	*	e
	(e) Sampler Flow Rate Monitor	(1)	Yes	*	e

* - At all times which means that channels shall be OPERABLE and in service on a continuous, uninterrupted basis, except that outages are permitted, within the time frame of the specified action statement, for the purpose of maintenance and performance of required tests, checks and calibrations.

** - During augmented off-gas treatment system (recombiner) operation.

TABLE 3.8-2

(Continued)

ACTION STATEMENTS

Action a

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, operation of the main condenser augmented offgas treatment system may continue for up to 30 days provided gas samples are collected once per 12 hours and analyzed for hydrogen within the ensuing 4 hours.

Action b

With one monitor inoperable, releases via this pathway may continue provided the inoperable monitor is placed in the tripped position. With both monitors inoperable, releases may continue for up to 72 hours provided the augmented offgas system is not bypassed and the main stack monitor is operable, otherwise, be in at least HOT STANDBY within 12 hours.

Action c

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for 30 days provided grab samples are taken once per 12 hours and these samples are analyzed for gross activity within 24 hours.

Action d

With the number of samplers OPERABLE less than required by the Minimum number OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided samples are continuously collected with auxiliary sampling equipment for periods of seven (7) days and analyzed for principle gamma emitters with half lives greater than 8 days within 48 hours after the end of the sampling period.

TABLE 3.8-2

(Continued)

ACTION STATEMENTS

Action e

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated once per 4 hours.

TABLE 4.8-2

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Channel Check	Channel Calibration	Channel Functional
1. Main Condenser Augmented Off-Gas Treatment System Explosive Gas Monitor			
(a) Hydrogen Monitor	D (1)	Q (2)	M
2. Condenser Air Ejector Noble Gas Activity Monitor			
(a) SJAE Off-Gas Monitor	D (3)	R (4)	Q (5)
3. M1 Main Stack			
(a) Noble Gas Activity Monitor	D (3)	R (6)	Q (7)
(b) Iodine Sampler	NA	NA	NA
(c) Particulate Sampler	NA	NA	NA
(d) Stack Flow Rate Monitor	D (3)	R	Q (7)
(e) Sampler Flow Rate Monitor	D	R	NA

D = Daily

Q = Once every 3 months

M = Once every month

R = Once every 18 months

NA = Not Applicable

1021 250

TABLE 4.8-2

(Continued)

TABLE NOTATION

(1) Channel check daily only when the augmented off-gas treatment system is in operation.

(2) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent hydrogen, balance nitrogen; and

2. Four volume percent hydrogen, balance nitrogen.

(3) Channel check daily only when there exist releases via this pathway.

(4) Calibration shall include the use of a known source whose strength has been determined through the use of a condenser R meter traceable to the NBS. The source and detector should be in a known reproducible geometry.

(5) The channel functional test shall also demonstrate the following:

1. Automatic isolation of the off-gas line occurs within 15 minutes if any of the following conditions exist:

a. Both monitors indicate measured levels above the trip set-point.

b. One monitor indicates measured levels above the trip setpoint, and the other indicates a downscale trip.

2. Control room alarm annunciation occurs if any of the following conditions exist:

a. Either monitor indicates measured levels above the alarm/trip setpoint.

b. Either monitor indicates a downscale failure.

c. Instrument controls are not set in the operate mode.

TABLE 4.8-2

(Continued)

TABLE NOTATION

(6) Calibration shall include the use of radioactive gases whose strength is determined by a detector which has been calibrated to an NBS source. These gases shall be in a known reproducible geometry.

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

1. Instrument indicates measured levels above the alarm/trip setpoint.*

2. Instrument indicates a downscale failure.

3. Instrument controls not set in operate mode.

* - Not applicable for stack flow rate monitor.

3.8.C Radioactive Liquid Effluents - Limiting Conditions for Operations

3.8.C.1 Liquid Effluents Concentration

3.8.C.1.1 The concentration of radioactive material released from the site (see Figure 3.8-1) shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} uCi/ml total activity.

APPLICABILITY: At all times.

ACTION:

With the concentration of radioactive material released from the site exceeding the above limits, restore the concentration within the above limits within 15 minutes and provide prompt notification to the Commission pursuant to Specification 6.9.1.8.

4.8.C Radioactive Liquid Effluents - Surveillance Requirements

4.8.C.1 Liquid Effluents Concentration

4.8.C.1.1.1 The instantaneous concentration of radioactive material in liquid effluents released from the site shall be monitored in accordance with Table 3.8-1.

4.8.C.1.1.2 The liquid effluent continuous monitors having provisions for automatic termination of liquid releases, as required by Table 3.8-1 shall be used to limit the concentration of radioactive material released at any time from the site to the values given in Specification 3.8.C.1.1.

4.8.C.1.1.3 Sampling and analysis shall be performed in accordance with Table 4.8-3 to assure that the limits of Specification 3.8.C.1.1 are met.

TABLE 4.8-3

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

	Liquid Release Type	Sampling Frequency	Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (uC/ml)[a]
A.	Batch Tanks:				
	Waste Sample Tanks Floor Drain Sample Tank Decon Solution Tank	Prior to Each Batch Release	Prior to Each Batch Release	Principal Gamma Emitters	(Note b)
				I-131	1×10^{-6}
				Dissolved and Entrained Gases	1×10^{-5}
		Prior to Each Batch Release	Monthly Composite [c]	H-3	1×10^{-5}
				P-32, Fe-55	1×10^{-6}
				Gross Alpha	1×10^{-7}
				Sr-89, Sr-90	5×10^{-8}

1021 254

TABLE 4.8-3

(Continued)

TABLE NOTATIONS

a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability with 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 lower limit of detection as defined above (as uCi per unit mass or volume)

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

E is the counting efficiency (as counts per transformation)

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

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

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δt is the elapsed time between midpoint of sample collection and midpoint of time of counting

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.

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interferring nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors will be identified and recorded on the analysis sheet for the particular sample.

TABLE 4.8-3

(Continued)

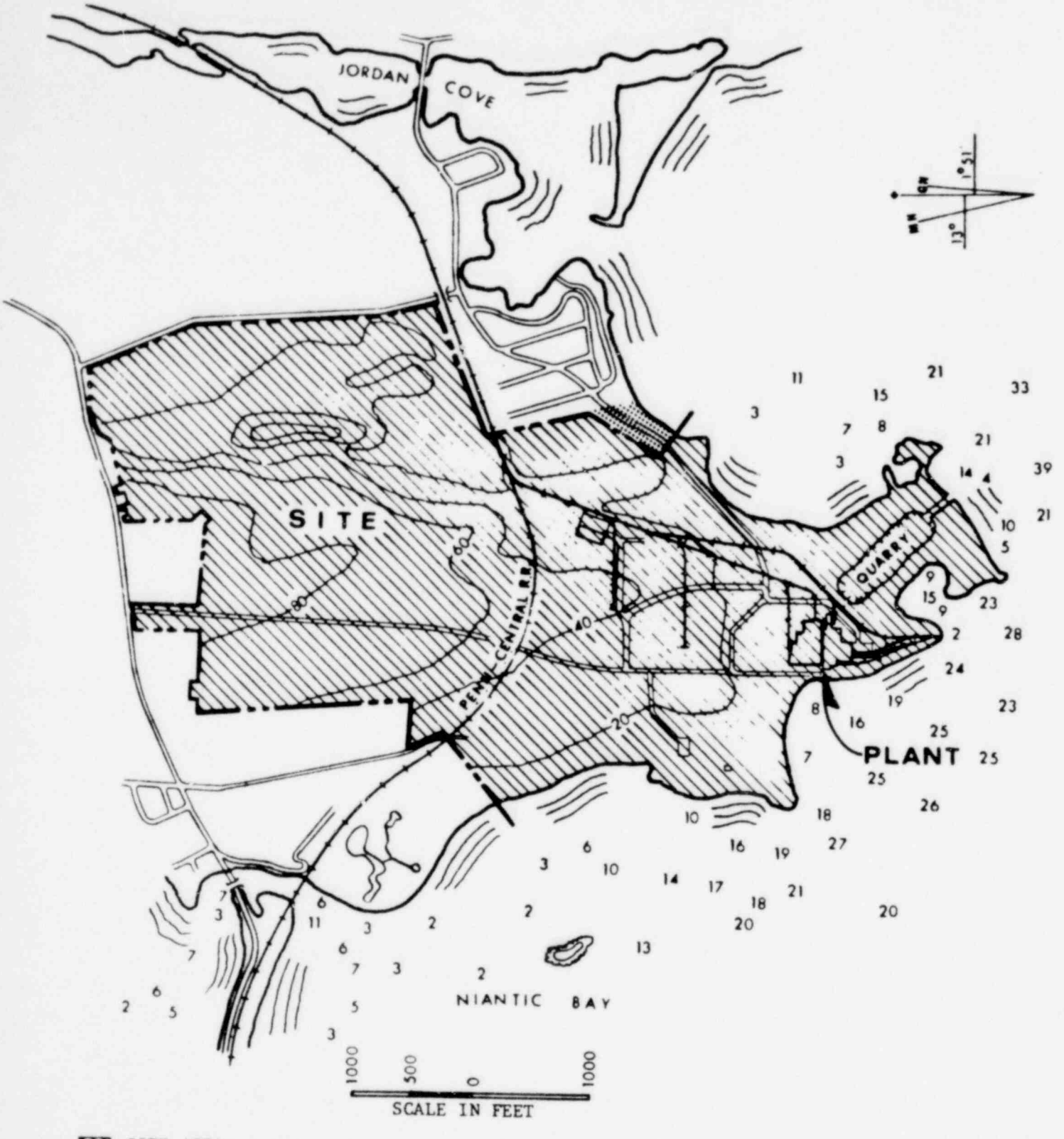
TABLE NOTATIONS

b. The LLD will be 5×10^{-7}. The principal gamma emitters for which this LLD applies are exclusively the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, and Cs-137.

This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level. When unusual circumstances result in LLD's higher than required, the reasons shall be documented on the particular analysis sheet.

c. 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.

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



Millstone Nuclear Power Station

Fig. 3.8-i

3.8.C.2 Liquid Effluents - Dose

3.8.C.2.1 The dose or dose commitment to an individual from radioactive materials in liquid effluents from Unit 1 released from the site (See Figure 3.8-1) 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.

APPLICABILITY: At all times.

ACTION:

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

4.8.C.2 Liquid Effluent - Dose

4.8.C.2.1.1 Dose Calculations. Cumulative dose contributions from liquid effluents shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM) once per 31 days.

3.8.C.3 Liquid Effluents - Waste Treatment

3.8.C.3.1 The following subsystems of the liquid radwaste treatment system shall be operable:

Waste concentrator A or B, and Waste Demineralizaer A or B

These subsystems shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected dose due to liquid effluent releases from the site from Unit 1 (see Figure 3.8-1) when averaged over 31 days would exceed 0.06 mrem to the total body or 0.2 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the liquid radwaste system inoperable for more than 31 consecutive days or, with radioactive liquid waste being discharged without all applicable treatment by those subsystems identified above, and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which includes the following information:

   1. Identification of the appropriate equipment or subsystems not OPERABLE and the reason for inoperability.

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

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

4.8.C.3 Liquid Effluents - Waste Treatment

4.8.C.3.1.1 Doses due to liquid releases from the site from Unit 1 shall be projected once per 31 days.

4.8.C.3.1.2 The appropriate liquid radwaste subsystems as identified above shall be demonstrated OPERABLE once per 92 days unless the appropriate liquid radwaste subsystem has been utilized to process radioactive liquid effluents during the previous 92 days.

3.8.D Radioactive Gaseous Effluents - Limiting Conditions for Operation

3.8.D.1 Gaseous Effluents - Dose Rate

3.8.D.1.1 The instantaneous dose rate offsite (see Figure 3.8-1) due to radioactive materials released in gaseous effluents from the site shall be limited to the following values:

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

b. The dose rate limit for Iodine-131 and Iodine-133, for all radioactive materials in particulate form with half lives greater than 8 days and for radionuclides other than noble gases with half lives greater than 8 days shall be $\leq$ 1500 mrem/yr to any organ.

APPLICABILITY: At all times.

ACTION:

With the dose rate(s) exceeding the above limits, decrease the release rate to comply with the limit(s) given in Specification 3.8.D.1.1 within 15 minutes and provide prompt notification to the Commission pursuant to Specification 6.9.1.8.

4.8.D Radioactive Gaseous Effluents - Surveillance Requirements

4.8.D.1 Gaseous Effluents - Dose Rate

4.8.D.1.1 The instantaneous release rate corresponding to the above dose rate shall be determined in accordance with the methodology in the ODCM.

4.8.D.1.2 The instantaneous release rates shall be monitored in accordance with the requirements of Table 3.8-2.

4.8.D.1.3 Sampling and analysis shall be performed in accordance with Table 4.8-4 to assure that the limits of specification 3.8.D.1.1 are met.

TABLE 4.8-4

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (uCi/cc)[a]
A. Drywell Purge	Prior to Purge -Gaseous Grab Sample	Prior to Purge	Principal Gaseous Gamma Emitters	(Note b)
			H-3	1×10^{-5}
B. Steam Jet Air Ejector Discharge	Monthly[c] -Gaseous Grab Sample	Monthly[c]	Principal Gaseous Gamma Emitters	(Note b)
C. Main Stack	Monthly -Gaseous Grab Sample	Monthly	Principal Gaseous Gamma Emitters	(Note b)
			H-3	1×10^{-5}
	Continuous[d]	Weekly Charcoal Sample[f]	I-131	1×10^{-12}
			I-133[e]	1×10^{-10}
	Continuous[d]	Weekly[f] Particulate Sample	Principal Gamma Emitters Half Lives Greater than 8 Days	(Note b)
	Continuous[d]	Monthly Composite Particulate Sample	Gross Alpha	1×10^{-11}
			Sr 89, Sr 90	1×10^{-11}
	Continuous[d]	Noble Gas Monitor	Noble Gases- Gross Activity	1×10^{-6}

3/4-8-21

1021 261

TABLE 4.8-4

(Continued)

TABLE NOTATION

a. The lower limit of detection (LLD) is defined in Table Notation a of Table 4.8-3.

b. For gaseous samples, the LLD will be 1×10^{-4} uCi/cc and for particulate samples, the LLD will be 1×10^{-11} uCi/cc. The principal gamma emitters for which this LLD applies are exclusively the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135 and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, and Cs-137, for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level for that nuclide. When unusual circumstances result in LLD's higher than required, the reasons shall be documented on the particular analysis sheet.

c. Analyses shall also be done within 24 hours following an increase, as indicated by the steam jet air ejector off-gas monitor, of greater than 50%, after factoring out increases due to changes in THERMAL POWER level.

d. The ratio of the sample flow rate to the sampled stream flow rate shall be known.

e. I-133 will not be analyzed for on each charcoal sample. Instead, at least once per month, the ratio of I-133 to I-131 will be determined from a charcoal sample changed after approximately 24 hours of sampling. This ratio, along with the routine I-131 activity determination will be used to determine the release rate of I-133.

f. Samples shall be changed at least once per 7 days and analyses shall be completed within 40 hours after changing. Sampling and analysis shall also be performed once per 24 hours for at least 7 days following each shutdown, startup or thermal power level change exceeding 15% of rated thermal power in one hour. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10.

3.8.D.2 Gaseous Effluents Dose, Noble Gases

3.8.D.2.1 The air dose offsite (see Figure 3.8-1) due to noble gases released in gaseous effluents from Unit 1 shall be limited to the following:

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

b. During any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation;

APPLICABILITY: At all times.

ACTION:

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

4.8.D.2 Gaseous Effluents - Dose, Noble Gases

4.8.D.2.1.1 Dose Calculations - Cumulative dose contributions for the total time period shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM) once every 31 days.

3.8.D.3 Gaseous Effluents - Dose, Radioiodines, Radioactive Material In Particulate Form, and Radionuclides Other Than Noble Gases

3.8.D.3.1 The dose to an individual from Iodine-131, Iodine-133, radioactive materials in particulate form with half lives greater than eight days, and radionuclides other than noble gases with half-lives greater than 8 days in gaseous effluents released offsite from Unit 1 (see Figure 3.8.1) shall be limited to the following:

a. During any calendar quarter to ≤ 7.5 mrem;

b. During any calendar year to ≤ 15 mrem;

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioiodines, radioactive materials in particulate form, or radionuclides other than noble gases in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the cause(s) for exceeding the limit and defines the corrective actions to be taken to reduce the releases during the remainder of the current calendar quarter and during the subsequent three calendar quarters so that the average dose or dose commitment to an individual from such releases during these four calendar quarters is within 15 mrem to any organ.

4.8.D.3 Gaseous Effluents - Dose, Radioiodines, Radioactive Material In Particulate Form, and Radionuclides Other Than Noble Gases

4.8.D.3.1.1 Dose Calculations - Cumulative dose contributions for the total time period shall be determined in accordance with the ODCM once every 31 days.

3.8.D.4 Gaseous Effluents - Waste Treatment

3.8.D.4.1 The following subsystems of the gaseous radwaste treatment system shall be OPERABLE:

Recombiner Train A or B (includes preheater, recombiner, condenser, jet-compressor, and after-condenser), Charcoal Bed Train A or B, and the stack HEPA filter.

The following subsystems of the ventilation exhaust system shall be OPERABLE: Radwaste ventilation HEPA filters.

The gaseous radwaste treatment system shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent doses due to Unit 1 gaseous effluent releases offsite (see Figure 3.8-1) when averaged over 31 days exceeds 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation. The ventilation exhaust treatment system shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent doses due to Unit 1 gaseous effluent releases offsite (see Figure 3.8-1) when averaged over 31 days exceeds 0.3 mrem to any organ.

APPLICABILITY: At all times for the ventilation exhaust treatment system. Whenever the main condenser air ejector is in operation for the gaseous radwaste treatment system.

ACTION:

a. With the gaseous radwaste treatment system and/or the ventilation exhaust treatment system inoperable for more than 31 consecutive days or, with gaseous waste being discharged for more than 31 days without all appropriate treatment by the subsystems identified above and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which includes the following information:

   1. Identification of the appropriate equipment of subsystems not OPERABLE and the reason for inoperability.

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

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

4.8.D.4 Gaseous Effluents - Waste Treatment

4.8.D.4.1.1 Doses due to Unit 1 gaseous releases offsite shall be projected once per 31 days.

4.8.D.4.1.2 The appropriate subsystems as identified above shall be demonstrated OPERABLE once per 92 days unless the appropriate subsystem has been utilized to process radioactive gaseous effluents during the previous 92 days. This surveillance is not required if there is no waste to be processed.

3.8.D.5 Radioactive Effluents - Total Dose

3.8.D.5.1 The dose or dose commitment to a real individual from all uranium fuel cycle sources is limited to ≤ 25 mrem to the total body or any organ (except the thyroid, which is limited to ≤ 75 mrem) over a period of 12 consecutive months.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioactive materials in liquid or gaseous effluents exceeding the limits of Specifications 3.8.C.2, 3.8.D.2, or 3.8.D.3, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 and limit the subsequent releases such that the dose or dose commitment to a real individual from all uranium fuel cycle sources is limited to < 25 mrem to the total body or any organ (except thyroid, which is limited to < 75 mrem) over 12 consecutive months. This Special Report shall include an analysis which demonstrates that radiation exposures to all real individuals from all uranium fuel cycle sources (including all effluent pathways and direct radiation) are less than the 40 CFR Part 190 Standard. Otherwise, obtain a variance from the Commission to permit releases which exceed the 40 CFR Part 190 Standard.

4.8.D.5 Radioactive Effluents - Total Dose

4.8.D.5.1.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with the ODCM.

3.8.D.6 EXPLOSIVE GAS MIXTURE

3.8.D.6.1 The concentration of hydrogen in the main condenser offgas treatment system, downstream of the recombiners, shall be limited to $\leq$ 4% by volume.

APPLICABILITY: At all times

ACTION:

a. With the concentration of hydrogen downstream of the recombiners exceeding the limit, restore the concentration to within the limit within 48 hours or terminate use of the augmented off-gas treatment system.

4.8.D.6 EXPLOSIVE GAS MIXTUPE

4.8.D.6.1.1 The concentration of hydrogen shall be determined to be within the above limits by continuously monitoring the waste gases with the hydrogen monitors required OPERABLE by Table 3.8-2.

3.8.D.7 STEAM JET AIR EJECTOR NOBLE GAS ACTIVITY

3.8.D.7.1 In the main condenser off-gas system, the noble-gas in-process activity rate shall not exceed 1.47×10^6 uCi/sec averaged over 15 minutes as measured at the off-gas monitor.

APPLICABILITY: At all times

ACTION:

With the noble gas activity exceeding the above limit, reduce the activity rate to within the limit within 72 hours or be in at least HOT STANDBY within the next 12 hours.

4.8.D.7 STEAM JET AIR EJECTOR NOBLE GAS ACTIVITY

4.8.D.7.1.1 The noble-gas in-process activity rate shall be continuously monitored by the steam jet air ejector off-gas monitor required OPERABLE in Table 3.8-2.

4.8.D.7.1.2 The noble-gas in-process activity rate shall be determined to be within the above limit by performance of the steam jet air ejector sampling required in Table 4.8-4.

3.8.E SOLID WASTE PROGRAM

3.8.E.1 The solid radwaste system shall be OPERABLE and used, as applicable in accordance with a PROCESS CONTROL PROGRAM, for the SOLIDIFICATION and packaging of radioactive wastes to ensure meeting the requirements of 10 CFR Part 20 and of 10 CFR Part 71 prior to shipment of radioactive wastes from the site.

APPLICABILITY: At all times

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

b. With the solid radwaste system inoperable for more than 31 days, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days pursuant to Specification 6.9.2 a Special Report which includes the following information:

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

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

3. A description of the alternative used for SOLIDIFICATION and packaging of radioactive wastes, and

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

4.8.E SOLID WASTE PROGRAM

4.8.E.1.1 The solid radwaste system shall be demonstrated OPERABLE at least once per 92 days by:

a. Operating the solid radwaste system at least once in the previous 92 days in accordance with the PROCESS CONTROL PROGRAM, or

b. Verification of the existence of a valid contract for SOLIDIFICATION to be performed by a contractor in accordance with a PROCESS CONTROL PROGRAM.

This surveillance is not required if solid waste was not required to be processed during the previous 92 days.

4.8.E.1.2 THE PROCESS CONTROL PROGRAM shall be used to verify the SOLIDIFICATION of at least one representative test specimen from at least every tenth batch of each type of wet radioactive waste.

a. If any test specimen 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 PROCESS CONTROL PROGRAM, and a subsequent test verifies SOLIDIFICATION. SOLIDIFICATION of the batch may then be resumed using the alternative SOLIDIFICATION parameters determined by the PROCESS CONTROL PROGRAM.

b. 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.

3.8.F Radiological Environmental Monitoring

3.8.F.1 Monitoring Program

3.8.F.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.8-5 from the locations given in the ODCM. (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.)

APPLICABILITY: At all times.

ACTION:

a. If the radiological environmental monitoring program is not being conducted as specified in Table 3.8-5 prepare and submit to the Commission, in the Annual Radiological Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

b. If the level of radioactivity in an environmental sampling medium at one or more of the locations specified in Table 3.8-5 exceeds the report levels of Table 6.9-1 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days from the end of the affected calendar quarter, a Special Report which includes an evaluation of any release conditions, environmental factors or other aspects which caused the limits of Table 6.9-1 to be exceeded. 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.

c. If milk samples are unavailable from any one or more of the sample locations required by Table 3.8-5, a grass sample shall be substituted until a suitable milk location is evaluated as a replacement or until milk is available from the original location. Such an occurrence will be documented in the annual report.

4.8.F.1 Monitoring Program

4.8.F.1.1 The radiological environmental monitoring samples shall be collected and analyzed as required above.

TABLE 3.8-5

MILLSTONE RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
1. Gamma Dose - TLD	10	Monthly	Gamma Dose - Monthly
2. Airborne Particulate	10	Continuous Sampler-Weekly Filter Change	Gross Beta - Weekly Gamma Spectrum-Monthly on Composite (by location), and On individual sample if Gross Beta is Greater Than 10 Times Mean of the Weekly Control Station Gross Beta Results
3. Airborne Iodine	4	Continuous Sampler Weekly Canister Change	I-131 - Weekly
4. Vegetation	4	One Sample Near Middle and One Near End of Growing Season	Gamma Isotopic and I-131 on each Sample
5. Milk	6	Monthly	Gamma Isotopic, I-131, Sr-89 and Sr-90 on each Sample
6. Sea Water	2	Quarterly - Composite of 6 Weekly Grab Samples	Quarterly - Fractional Beta, Gamma Isotopic, Tritium
7. Bottom Sediment	6	Semi-Annual	Gamma Isotopic on Each Sample
8. Mussels	2	Quarterly	Gamma Isotopic on Each Sample
9. Oysters or Clams	5	Quarterly	Gamma Isotopic on Each Sample
10. Lobster	3	Quarterly	Gamma Isotopic on Each Sample
11. Fin Fish - Flounder and One Other Type of Edible Fin Fish	2	Quarterly	Gamma Isotopic on Each Sample

3/4-8-31

1021 272

TABLE 3.8-6

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

Analysis	Sea Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Fish, Shellfish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta (fractional beta)	4	1×10^{-2}				
^{3}H	1000					
^{54}Mn	30[c]		130			
^{59}Fe	60[c]		260			
$^{58,60}Co$	30[c]		130			
^{65}Zn	60[c]		260			
^{95}Zr	60[c]					
^{95}Nb	30[c]					
^{131}I		7×10^{-2}		1	60[b]	
^{134}Cs	30[c]	1×10^{-2}	130	15	60	150
^{137}Cs	40[c]	1.2×10^{-2}	160	18	75	180
^{140}Ba	60[c]			30		
^{140}La	30[c]			15		

TABLE 3.8-6 (Continued)

TABLE NOTATION

a - The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability.

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

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

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume)

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

E is the counting efficiency (as counts per transformation)

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

2.22 is the number of transformation per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δt is the elapsed time between sample collection (or end of the sample collection period) and time of counting

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interferring nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors will be identified and described in the Annual Radiological Environmental Operating Report.

b - LLD for leafy vegetables.

c - To be reduced by a factor of two if the fractional beta for the sample exceeds 15 pCi/l.

3.8.F.2 LAND USE CENSUS

3.8.F.2.1 A land use census shall be conducted and shall identify the location of the milk animals in each of the 16 meteorological sectors within a distance of five miles.

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) which yields a calculated dose or dose commitment greater than the doses currently being calculated in the ODCM, make the appropriate changes in the ODCM.

b. With a land use census identifying a location(s) which has a higher D/Q than a current indicator location the following shall apply:

(1) If the D/Q is at least 20% greater than the previously highest D/Q, replace one of the present sample locations with the new one within 30 days if milk is available.

(2) If the D/Q is not 20% greater than the previously highest D/Q, consider both direction, distance, availability of milk, and D/Q in deciding whether to replace one of the existing sample locations. If applicable, replacement should be within 30 days. If no replacement is made, sufficient justification should be given in the annual report.

Sample location changes should be noted in the annual report.

4.8.F.2 Land Use Census

4.8.F.2.1 The land use census shall be conducted at least once per 12 months by either a door-to-door survey, aerial survey, consulting local agriculture authorities, or any combination of these methods using that information which would provide the best survey.

3.8.F.3 Interlaboratory Comparison Program

3.8.F.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which has been approved by the Commission.

APPLICABILITY: At all times.

ACTION:

a. 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.

4.8.F.3 Interlaboratory Comparison Program

4.8.F.3.1 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.

BASES

3.8.A & 4.8.A - Radioactive Liquid Effluent Instrumentation

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approved methods 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 is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

3.8.B & 4.8.B - Radioactive Gaseous Effluent Instrumentation

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approved methods 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 is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

BASES

3.8.C & 4.8.C - Radioactive Liquid Effluents

3/4.8.C.1 CONCENTRATION

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

3/4.8.C.2 DOSE

This specification is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix 1, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.A of Appendix 1. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonably achievable." The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I is to be shown by calculational procedures based on models and data such that the actual exposure of an individual through 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 will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, "Revision 1, October 1977, and Regulatory Guide 1,113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

3/4.8.C.3 LIQUID WASTE TREATMENT

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

3.8.D & 4.3.D - Radioactive Gaseous Effluents

3/4.8.D.1 Dose Rate

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

3/4.8.D.2 Dose, Noble Gases

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

3/4.8.D.3 Dose, Radioiodines, Radioactive Material in Particulate Form and Radionuclides Other Than Noble Gases

This specification is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable". The ODCM calculational methods specified in the surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methods approved by NRC for calculating the doses due to the actual release rates of the subject materials are required to be consistent with the methodology provided in Regulatory Guide 1.109, "Calculating of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, "Revision 1, 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 release rate specifications for radioiodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man. The pathways which are examined in the development of these calculations are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

3/4.8.D.4 Gaseous Waste Treatment

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

3/4.8.D.5 TOTAL DOSE

This specification is provided to meet the reporting requirements of 40 CFR 190.

3/4.8.D.6 EXPLOSIVE GAS MIXTURE

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

3/4.8.D.7 STEAM JET AIR EJECTOR NOBLE GAS ACTIVITY

Restricting the gross radioactivity rate of noble gases from the main condenser provides reasonable assurance that the total body exposure to an individual at the exclusion area boundary will not exceed a small fraction of the limits of 10 CFR Part 100 in the event this effluent is inadvertently discharged directly to the environment without treatment. This specification implements the requirements of General Design Criteria 60 and 64 of Appendix A to 10 CFR Part 50.

3/4.8.E SOLID WASTE PROGRAM

This specification ensures compliance with the appropriate regulations on radioactive waste shipments.

3.8.F & 4.8.F - RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.8.F.1 MONITORING PROGRAM

The radiological monitoring program required by this specification provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures of individuals resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. Program changes may be made based on operational experience.

The detection capabilities required by Table 3.8-6 are state-of-the-art for routine environmental measurements in industrial laboratories. The specified lower limits of detection for I-131 in milk and other food products correspond to approximately one-quarter of the Appendix I, 10 CFR Part 50 design objective dose-equivalent of 15 mrem/year for atmospheric releases and 10 mrem/year for liquid releases to the most sensitive organ and individual. They are based on the assumptions given 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," March 1976, except the change for an infant consuming 330 liters/year of drinking water instead of 510 liters/year.

The reporting levels given in Table 6.9-1 correspond to the annual Appendix I design dose limitations for the maximum individual.

3/4.8.F.2 LAND USE CENSUS

This specification is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are made if required by the results of this census. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50.

3/4.8.F.3 QUALITY ASSURANCE PROGRAM

The requirement for participation in an Interlaboratroy Comparison program is provided to ensure that checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of a quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid.

REVIEW

6.5.3.7 The NRB shall review:

a. The safety evaluation for 1) changes to procedures, equipment or systems and 2) tests or experiments completed under the provision of Section 50.59, 10 CFR, to verify that such actions did not constitute an unreviewed safety question.

b. Proposed changes to procedures, equipment or systems which involve an unreviewed safety question as defined in Section 50.59, 10 CFR.

c. Proposed tests or experiments which involve an unreviewed safety question as defined in Section 50.59, 10 CFR.

d. Proposed changes in Sections 1.0 - 5.0 of these Technical Specifications or licenses.

e. Violations of applicable statutes, codes, regulations, orders, Technical Specifications, license requirements, or of internal procedures or instructions having nuclear safety significance.

f. Significant operating abnormalities or deviations from normal and expected performance of plant equipment that affect nuclear safety.

g. REPORTABLE OCCURRENCE, as defined in Revision 4 to Regulatory Guide 1.16.

h. Indications of a significant unanticipated deficiency, affecting nuclear safety, in some aspect of design or operation of safety related structures, systems or components.

i. Reports and meetings minutes of the PORC.

AUDITS

6.5.3.8 Audits of facility activities shall be performed under the cognizance of the NRB. These audits shall encompass:

a. The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions at least once per year.

ADMINISTRATIVE CONTROLS

MEETING FREQUENCY

6.5.4.5 The SNRB shall meet at least once per calendar year and as convened by the SNRB Chairman.

QUORUM

6.5.4.6 A quorum of SNRB shall consist of the Chairman or his designated alternate and four SNRB members including alternates. No more than a minority of the quorum shall have line responsibility for operation of the Station.

REVIEW

6.5.4.7 The SNRB shall review:

a. Proposed changes in Section 6.0 of these Technical Specifications or Licenses common to all Units.

b. Any indication of an unanticipated deficiency in some aspect of design or operation of safety related structures, systems or components common to all Units.

c. Reports and meeting minutes of the SORC.

AUDITS

6.5.4.8 Audits of site activities shall be performed under the cognizance of the SNRB. These audits shall encompass:

a. The performance of all activities required by the Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per year.

b. The Site Emergency Plan and implementing procedures at least once per two years.

c. The Site Security Plan and implementing procedures at least once per two years.

d. The Facility Fire Protection Program and implementing procedures at least once per 24 months.

e. An inspection and audit of the fire protection and loss prevention program shall be performed annually by an outside firm experienced in fire protection and loss prevention.

AUDITS (Continued)

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

g. The OFFSITE DOSE CALCULATION MANUAL and PROCESS CONTROL PROGRAM at least once per 24 months.

SAFETY LIMIT VIOLATION (Continued)

b. The Safety Limit violation shall be reported to the Commission, the System Superintendent Nuclear Operations and to the NRB immediately.

c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the PORC. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

d. The Safety Limit Violation Report shall be submitted to the Commission, the NRB and the System Superintendent Nuclear Operations within 10 days of the violations.

6.8 PROCEDURES

6.8.1 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, November, 1972.

b. Refueling operations.

c. Surveillance activities of safety related equipment.

d. Security Plan implementation.

e. Emergency Plan implementation.

f. Fire Protection Program implementation.

g. Environmental Radiological Monitoring Program.

h. Offsite Dose Calculation Manual and Process Control Program implementation.

6.8.2 Except as specified in 6.8.4, each procedure and administrative policy of 6.8.1 above, and changes thereto, shall be reviewed by the PORC/SORC, as applicable, and approved by the Unit Superintendent/Station Superintendent prior to implementation and reviewed periodically as set forth in each document.

ADMINISTRATIVE CONTROLS

6.8.3 Except as specified in 6.8.4, temporary changes to procedures of 6.8.1 above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.

c. The change is documented, reviewed by the PORC/SORC, as applicable, and approved by the Unit Superintendent/ Station Superintendent within 14 days of implementation.

6.8.4 All procedures and procedure changes required for Section 3/4.8.F of these Technical Specifications (Radiological Environmental Monitoring) do not require review as specified in Sections 6.8.2 and 6.8.3. Rather, all such procedures shall be reviewed by a qualified engineer other than the author of the Radiological Assessment Branch or Environmental Services Section, and approved by supervision of the Radiological Assessment Branch. (These two groups are part of the Northeast Utilities Service Company as identified in Figure 6.2-1.)

Temporary changes may be made provided the intent of the original procedure is not altered and the change is documented and reviewed by a qualified engineer, other than the author of the Radiological Assessment Branch or Environmental Services Section, within 14 days of implementation.

6.9 REPORTING REQUIREMENTS

ROUTINE REPORTS AND REPORTABLE OCCURRENCES

6.9.1 In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the Director of the Regional Office of Inspection and Enforcement unless otherwise noted.

STARTUP REPORT

6.9.1.1 A summary report of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal or hydraulic performance of the plant.

STARTUP REPORT (Continued)

6.9.1.2 The startup report shall address each of the tests identified in the FSAR and shall include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

ADMINISTRATIVE CONTROLS

THIRTY-DAY WRITTEN REPORTS (Continued)

completed copy of a licensee event report form. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

a. Reactor protection system or engineered safety features instrument settings which are found to be less conservative than those established by the technical specifications but which do not prevent the fulfillment of the functional requirements of affected systems.

b. 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.

c. 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 features systems.

d. Abnormal degradation of systems other than those specified in 6.9.1.8.c, above, designed to contain radioactive material resulting from the fission process.

e. An unplanned off-site release of 1) more than 1 curie of radioactive material in liquid effluents, 2) more than 150 curies of noble gas in gaseous effluents, or 3) more than 0.05 curies of radioiodine in gaseous effluents. The report of an unplanned off-site release of radioactive material shall include the following information:

   (1) A description of the event and equipment involved.

   (2) Cause(s) for the unplanned release.

   (3) Actions taken to prevent recurrence.

   (4) Consequences of the unplanned release.

f. Measured levels of radioactivity in an environmental sampling medium determined to exceed the reporting level values of Table 6.9-1 when averaged over any calendar quarter sampling period. When more than one of the radionuclides in Table 6.9-1 are detected in the sampling medium, this report shall be submitted if:

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

When radionuclides other than those in Table 6.9-1 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to an individual is equal to or greater than the appropriate calendar year limit of Specifications 3.8.C.2, or 3.8.D.3. 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.

ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT

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

The annual radiological environmental operating reports shall include summaries, interpretations, and statistical evaluation of the results of the radiological environmental surveillance activities for the report period, including a comparison with previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of the land use censuses required by Specification 3.8.F.2. If harmful effects are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.

The annual report shall include a summary table of all radiological environmental samples which shall include the following information for each pathway sampled and each type of analysis:

(1) Total number of analyses performed at indicator locations.

(2) Total number of analyses performed at control locations.

(3) Lower limit of detection (LLD).

(4) Mean and range of all indicator locations together.

(5) Mean and range of all control locations together.

(6) Name, distance and direction from discharge, mean and range for the location with the highest annual mean (indicator or control).

(7) Number of nonroutine reported measurements as defined in these specifications.

In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The report shall also include a map of sampling locations keyed to a table giving distances and directions from the discharge; the report shall also include a summary of the Quality Assurance Data required by Specification 3.8.F.3.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

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

The report shall include a summary of the quantities of radioactive liquid and gaseous effluents released from the unit as outlined in U.S.N.R.C. Regulatory Guide 1.21, Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

In addition, the report to be submitted 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 shall be 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 site during the previous calendar year. The meteorological conditions concurrent with the time of release of radioactive material in gaseous effluents shall be used for determining the gaseous pathway doses. Dose calculations shall be performed in accordance with the offsite dose calculation manual.

In addition, the report to be submitted 60 days after January 1 of each year shall include an assessment of radiation doses to the likely most exposed real individual from the site for the previous 12 consecutive months to show conformance with 40CFR 190. Doses shall be calculated in accordance with the offsite dose calculation manual.

The semiannual effluent report shall also include a summary of each type of solid waste shipped offsite during the report period. This summary shall include the following information for each type of waste:

a. Type of waste (e.g. - spent resin, compacted dry waste, etc.)
b. Solidification agent (e.g., cement)
c. Total curies
d. Total volume and typical container volumes
e. Principal radionuclides (those greater than 10% of total activity)
f. Types of containers used (e.g., LSA, Type A, etc.)

The semiannual effluent report shall include the following information for all unplanned releases from the site to unrestricted areas of radioactive materials in gaseous and liquid effluents:

a. A description of the event and equipment involved.
b. Cause(s) for the unplanned release.

c. Actions taken to prevent recurrence.
d. Consequences of the unplanned release.

The semiannual effluent report shall also include changes made to the process control program (PCP) made during the report period.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Director of the Office of Inspection and Enforcement Regional Office 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:

a. In-service Inspection Results, Specification 4.6.F.

b. Primary Containment Leak Rate Test Results, Specification 4.7.A.2.

c. Secondary Containment Leak Rate Test Results, Specification 4.7.C.

d. Materials Radiation Surveillance Specimen Examination and Results, Specification 4.6.B.3.

e. Fire detection instrumentation, Specification (3.12.E.2).

f. Fire suppression systems, Specifications (3.12.A.2, 3.12.B.2 and 3.12.C.2).

g. Radiological Effluent Reports required per Specifications in 3.8C and 3.8D.

TABLE 6.9-1

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

	Reporting Levels				
Analysis	Water pCi/l	Airborne Particulate or Gases (pCi/m^3)	Fish, Shellfish (pCi/Kg, wet)	Milk (pCi/l)	Vegetables (pCi/Kg, wet)
Mn-54	1×10^3		3×10^4		
Fe-59	4×10^2		1×10^4		
Co-58	1×10^3		3×10^4		
Co-60	3×10^2		1×10^4		
Zn-65	3×10^2		2×10^4		
I-131		1		3	1×10^2
Cs-134	30	10	1×10^3	60	1×10^3
Cs-137	50	20	2×10^3	70	2×10^3
Ba-La-140	2×10^2			3×10^2	
Zr-Nb-95	4×10^2				

6.13 PROCESS CONTROL PROGRAM

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

6.1.3.2 License initiated changes to the PCP:

1. Shall be submitted to the Commission in the semi-annual Radioactive Effluent Release Report for the period in which the change(s) was made. This submittal shall contain:

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

   b. a determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and

   c. documentation of the fact that the change has been reviewed by PORC.

2. Shall become effective upon approval of the Unit Superintendent.

6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.14.1 The ODCM shall describe the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints consistent with the applicable LCO's contained in these technical specifications.

Changes in the ODCM shall be reviewed by SORC prior to implementation. All such changes shall be submitted to the Commission by inclusion in the monthly operating report within 90 days of the date the change was approved by the Station Superintendent and should include sufficiently detailed information to support the rationale for the change.

6.15 MAJOR CHANGES TO RADIOACTIVE WASTE TREATMENT SYSTEMS (Liquid, Gaseous and Solid)

6.15.1 MAJOR CHANGES TO RADIOACTIVE WASTE SYSTEMS (liquid, gaseous and solid) shall be made as follows: "MAJOR CHANGES" is defined in Section 1 of these specifications.

1) The Commission shall be informed of all changes by the inclusion of a suitable discussion of each change in the monthly operating Report for the period in which the evaluation was completed. If applicable, 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 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 from those previously predicted in the license application and amendments thereto;

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

   f) documentation of the fact that the change was reviewed and found acceptable by (PORC)/(SORC).

   g) an estimate of the exposure to plant operating personnel as a result of the change.

2) The change shall become effective upon approval by the (unit/station) superintendent.

DOCKET NO. 50-336

ENCLOSURE 3

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

PROPOSED RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS

REVISION 1

SEPTEMBER, 1979

VTY-020-2

INDEX

DEFINITIONS

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

BASES

ADMINISTRATIVE CONTROLS

ENGINEERED SAFETY FEATURE RESPONSE TIME - (Continued)

performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays where applicable.

PHYSICS TESTS

1.28 PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation and 1) described in Chapter 13.0 of the FSAR, 2) authorized under the provisions of 10 CFR 50.59, or 3) otherwise approved by the Commission.

UNRODDED INTEGRATED RADIAL PEAKING FACTOR - F_r

1.29 The UNRODDED INTEGRATED RADIAL PEAKING FACTOR is the ratio of the peak pin power to the average pin power in an unrodded core, excluding tilt.

SOURCE CHECK

1.30 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to radiation.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

1.31 An OFFSITE DOSE CALCULATION MANUAL (ODCM) shall be a manual containing the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints. Requirements of the ODCM are provided in Specification 6.14.

GASEOUS RADWASTE TREATMENT SYSTEM

1.32 A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting reactor 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.

VENTILATION EXHAUST TREATMENT SYSTEM

1.33 A VENTILATION EXHAUST TREATMENT SYSTEM is 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 stream 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.

MAJOR CHANGES TO RADIOACTIVE WASTE SYSTEMS

1.34 The RADIOACTIVE WASTE SYSTEMS are those liquid, gaseous and solid waste systems which are required to maintain control over radioactive material in order to meet the LCO's set forth in these specifications.

MAJOR CHANGES to these systems shall include the following:

1) Major changes in process equipment, components, structures and effluent monitoring instrumentation from those described in the FSAR (e.g., deletion of evaporators and installation of demineralizers; use of fluidized bed calciner/incineration in place of cement solidification systems);

2) Major changes in the design of radwaste treatment systems (liquid, gaseous and solid) that could significantly alter the characteristics and/or quantities of effluents released or volumes of solid waste stored or shipped offsite from those previously considered in the FSAR (e.g., use of asphalt system in place of cement);

3) Changes in system design which may invalidate the accident analysis as described in the FSAR (e.g., changes in tank capacity that would alter the curies released); and

4) Changes in system design that could potentially result in a significant increase in occupational exposure of operating personnel.

PROCESS CONTROL PROGRAM (PCP)

1.35 A PROCESS CONTROL PROGRAM shall contain sampling, analysis, and formulation determination by which SOLIDIFICATION of radioactive wastes from liquid systems is accomplished.

SOLIDIFICATION

1.36 SOLIDIFICATION shall be the conversion of radioactive wastes from liquid systems to an immobilzed solid with definite volume and shape, bounded by a stable surface of distinct outline on all sides.

PURGE - PURGING

1.37 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.

VENTING

1.38 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.

TABLE 1.2

FREQUENCY NOTATION

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

INSTRUMENTATION

RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.8 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3-11 shall be OPERABLE with applicable alarm/trip setpoints set to ensure that the limits of Specification 3.11.1.1 are not exceeded. The setpoints shall be determined in accordance with procedures as described in the ODCM.

APPLICABILITY: As shown in Table 3.3-11.

ACTION:

a. With the number of channels less than the minimum channels operable requirement, take the ACTION shown in Table 3.3-11.

b. Restore the inoperable monitor to OPERABLE status within the time frame specified in the Action Statement or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the reasons for the inoperability and the plans for returning the monitor to operable status. Releases need not be terminated after the time frame specified in the Action Statement, provided the specified actions are continued.

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

SURVEILLANCE REQUIREMENTS

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

TABLE 3.3-11

Radioactive Liquid Effluent Monitoring Instrumentation

Instrument	Minimum # Operable	Alarm Setpoint Required	Applicability	Action
1. Gross radioactivity monitors providing automatic termination of release				
a. Clean Liquid Radwaste Effluent Line	(1)	Yes	*	a
b. Aerated Liquid Radwaste Effluent Line	(1)	Yes	*	a
c. Steam Generator Blowdown Monitor or Condenser Air Ejector Monitor	(1)**	Yes	*	b
d. Condensate Polishing Facility Waste Neut Sump	(1)	Yes	*	a
e. Turbine Building Sump Effluent Line $$$	(1)	Yes	*	b
2. Gross radioactivity monitors not providing automatic termination of release				
a. Reactor Bldg Closed Cooling Water Monitor***	(1)	Yes	*	c
3. Flow Rate Measurements				
a. Clean Liquid Radwaste Effluent Line	(1)	No	*	d
b. Aerated Liquid Radwaste Effluent Line	(1)	No	*	d
c. Condensate Polishing Facility Waste Neut Sump Discharge Line	(1)	No	*	d
d. Dilution Water Flow	$	No	*	NA
e. Steam Generator Blowdown Line	$$	No	*	NA

Table 3.3-11 - (Continued)

Radioactive Liquid Effluent Monitoring Instrumentation

Instrument	Minimum # Operable	Alarm Setpoint Required	Applicability	Action
4. Tank Level Indicators				
a. Refueling Water Storage Tank	(1)	Yes	*	e
b. Condensate Surge Tank	(1)	Yes	*	e

Table Notes

* - At all times - which means that channels shall be OPERABLE and in service on a continuous, uninterrupted basis, except that outages are permitted, within the time frame of the specified action statement, for the purpose of maintenance and performance of required tests, checks and calibrations.

** - Although both monitors are normally operable, only one is necessary as the activity measured by each can be related to the other, and both monitors are capable of automatically isolating the steam generator blowdown.

*** - Since the only source of service water contamination is the reactor building closed cooling water, monitoring of the closed cooling water and conservative leakage assumptions will provide adequate control of service water effluents.

$ - The dilution water flow is determined by the use of condenser cooling water and service water pump status.

$$ - Determined by the use of valve curves.

$$$ - This specification will become effective upon completion of a proposed modification to install a turbine building sump monitor.

NA - Not Applicable.

TABLE 3.3-11
(Continued)

ACTION STATEMENTS

Action a: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirements, effluent releases may continue up to 14 days provided that prior to initiating a release:

1. At least two independent samples are analyzed in accordance with Specification 4.11.1.1.3, and;

2. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valving;

Action b: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are analyzed for gross radioactivity (beta or gamma) at a limit of detection of at least 5×10^{-7} uCi/ml;

1. Once per 12 hours when the specific activity of the secondary coolant is > 0.01 uCi/ml DOSE EQUIVALENT I-131.

2. Once per 24 hours when the specific activity of the secondary coolant is ≤ 0.01 uCi/ml DOSE EQUIVALENT I-131.

Action c: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided that once per 24 hours grab samples of the service water effluent are collected and analyzed for gross radioactivity (beta or gamma) at a lower limit of detection of at least 5×10^{-7} uCi/ml.

Action d: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated once per 4 hours during actual releases.

Action e: With the numbers of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continue for up to 30 days provided the tank liquid level is estimated during all liquid additions to the tank.

TABLE 4.3-11

Radioactive Liquid Effluent Monitoring Instrumentation Surveillance Requirements

Instrument	Channel Check	Source Check	Channel Calibration	Channel Functional
1. Gross radioactivity monitors providing automatic termination of release				
a. Clean Liquid Radwaste Effluent Line	D*	NA	R(1)	Q(2)
b. Aerated Liquid Radwaste Effluent Line	D*	NA	R(1)	Q(2)
c. Steam Generator Blowdown Monitor	D*	NA	R(1)	Q(2)
d. Condenser Air Ejector Monitor	D*	M	R(3)	Q(2)
e. Condensate Polishing Facility - Waste Neut Sump	D*	P	R(1)	Q(2)
f. Turbine Building Sump Line**	D*	M	R(1)	Q(2)
2. Gross radioactivity monitors not providing automatic termination of release				
a. Reactor Building Closed Cooling Water	D	NA	R(1)	Q(2)
3. Flow Rate Measurement Devices				
a. Clean Liquid Radwaste Line	D*	NA	R	Q
b. Aerated Liquid Radwaste Line	D*	NA	R	Q
c. Condensate Polishing Facility - Waste Neut Sump Line	D*	NA	R	Q
d. Dilution Water Flow	D(4)	NA	NA	NA
e. Steam Generator Blowdown Line	D(4)	NA	NA	NA

TABLE 4.3-11 - (Continued)

Instrument	Channel Check	Source Check	Channel Calibration	Channel Functional
4. Tank Level Indicators				
a. Refueling Water Storage Tank	D(5)	NA	R	Q
b. Condensate Surge Tank	D(5)	NA	R	Q

TABLE NOTATIONS

* - During releases via this pathway and when the monitor is required operable per Table 3.3-11.

NA - Not Applicable.

(1) - Calibration shall include the use of a known radioactive liquid or solid source. The radioactive sources shall be in a known, reproducible geometry.

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

a. Instrument indicates measured levels above the alarm/trip setpoint**.

b. Instrument indicates a downscale or circuit failure**

** - Automatic isolation of the discharge stream shall also be demonstrated for this case for each monitor except the reactor building closed cooling water monitor. For the condenser air ejector monitor it is the isolation of the steam generator blowdown that shall be demonstrated.

(3) - Calibration shall be performed using a radioactive gaseous source traceable to the NBS. The source shall be in a known reproducible geometry.

(4) - Pump or valve status shall be checked daily.

(5) - Channel check need only be performed daily during liquid additions to the tank and when the monitor is required OPERABLE per Table 3.3-11.

** - This specification will become effective upon completion of a proposed modification to install a turbine building sump monitor.

INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.9 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-12 shall be OPERABLE with applicable alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The setpoints shall be determined in accordance with procedures as described in the ODCM.

APPLICABILITY: As shown in Table 3.3-12.

ACTION:

a. With the number of channels less than the minimum channels operable requirement, take the ACTION shown in Table 3.3-12. If the required actions are not taken, make a 30 day report per Section 6.9.1.9.

b. Restore the inoperable monitor to OPERABLE status within the time frame specified in the Action Statement or, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 30 days outlining the reasons for the inoperability and the plans for returning the monitor to operable status. Releases need not be terminated after the time frame specified in the Action Statement, provided the specified actions are continued.

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

SURVEILLANCE REQUIREMENTS

4.3.3.9.1 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 4.3-12.

TABLE 3.3-12

Radioactive Gaseous Effluent Instrumentation

Instrument	Minimum Channels Operable	Alarm Setpoints Required	Applicability	Action
1. MP2 Stack				
a. Noble Gas Activity Monitor	(1)	Yes	**	a
b. Iodine Sampler	(1)	No	**	b
c. Particulate Sampler	(1)	No	**	b
d. Stack Flow Rate Monitor	(1)	No	**	c
e. Sampler Flow Rate Monitor	(1)	No	**	c
2. MP1 Main Stack				
a. Noble Gas Activity Monitor	(1)	Yes	**	e
b. Iodine Sampler	(1)	No	**	b
c. Particulate Sampler	(1)	No	**	b
d. Stack Flow Rate Monitor	(1)	No	**	c
e. Sampler Flow Rate Monitor	(1)	No	**	c
3. Waste Gas Holdup System - Noble Gas Montior	(1)	Yes	**	d
4. Waste Gas Holdup System - Oxygen Monitor***	(1)	Yes	*	f

** - At all times which means that channels shall be OPERABLE and in service on a continuous, uninterrupted basis, except that outages are permitted, within the time frame of the specified action statement, for the purpose of maintenance and performance of required tests, checks and calibrations.

* - During waste gas holdup system operations.

*** - Requirements for the waste gas holdup system oxygen monitor will become effective upon completion of a proposed modification to install an operable monitor.

TABLE 3.3-12
(Continued)

ACTION STATEMENTS

Action a: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are taken once per 12 hours and these samples are analyzed for gross activity within 24 hours.

Action b: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue up for up to 30 days provided samples are continuously collected with auxiliary sampling equipment for periods of seven (7) days and analyzed for principle gamma emitters with half lives greater than 8 days within 48 hours after the end of the sampling period.

Action c: With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated once per 4 hours.

Action d: With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement:

1. Releases from the M2 waste gas system may continue for up to 14 days provided that prior to initiating the release:

   (a) At least two independent samples of the tank's contents are analyzed; and,

   (b) At least two technically qualified members of the facility staff independently verify the release rate calculations and discharge valve lineup; otherwise, suspend releases from the waste gas holdup system.

Action e: With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, MP2 releases via the MP1 stack may continue for up to 30 days provided grab samples are taken once per 12 hours and these samples are analyzed for gross radioactivity within 24 hours.

Action f: With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, operation of the waste gas holdup system may continue for up to 30 days provided grab samples are collected once per 4 hours and analyzed for oxygen within the following 4 hours.

TABLE 4.3-12

Radioactive Gaseous Effluent Monitoring Instrumentation Surveillance Requirements

Instrument	Channel Check	Source Check	Channel Calibration	Channel Functional
1. MP2 Stack				
a. Noble Gas Activity Monitor	D	M	R(1)	Q(2)
b. Iodine Sampler	NA	NA	NA	NA
c. Particulate Sampler	NA	NA	NA	NA
d. Stack Flow Rate Monitor	D	NA	R	Q
e. Sampler Flow Rate Monitor	D	NA	R	NA
2. MP1 Main Stack				
a. Noble Gas Activity Monitor	D	M	R(3)	Q(2)
b. Iodine Sampler	NA	NA	NA	NA
c. Particulate Sampler	NA	NA	NA	NA
d. Stack Flow Rate Monitor	D	NA	R	Q(2)
e. Sampler Flow Rate Monitor	D	NA	R	NA
3. Waste Gas System Noble Gas Monitor	P	P	R(1)	Q(2)
4. Waste Gas System - Oxygen Monitor (.)	D(4)	NA	Q(5)	M

NA = Not Applicable.

TABLE 4.3-12
(Continued)

TABLE NOTATION

(1) Calibration shall be performed using radioactive gaseous sources which are traceable to the NBS. These sources shall be in a known, reproducible geometry.

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

a. Instrument indicates measured levels above the alarm/trip setpoint.

b. Instrument indicates a downscale failure.

*Also demonstrate automatic isolation for the waste gas system noble gas monitor.

(3) Calibration shall include the use of radioactive gases whose strength is determined by a detector which has been calibrated to an NBS source. These gases shall be in a known reproducible geometry.

(4) During waste gas holdup system operation

(5) The channel calibration shall include the use of standard gas samples containing a nominal:

a. One volume percent oxygen, balance nitrogen, and

b. Four volume percent oxygen, balance nitrogen.

(6) Requirements for the waste gas holdup system oxygen monitor will become effective upon completion of a proposed modification to install an operable monitor.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.11.1.1 The concentration of radioactive material released from the site (see Figure 5.1-1) shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} uCi/ml total activity.

APPLICABILITY: At all times.

ACTION:

With the concentration of radioactive material released from the site exceeding the above limits, restore the concentration to within the above limits within 15 minutes and provide prompt notification to the Commission pursuant to Specification 6.9.1.8.

SURVEILLANCE REQUIREMENTS

4.11.1.1.1 The concentration of radioactive material at any time in liquid effluents released from the site shall be monitored in accordance with Table 3.3-11.

4.11.1.1.2 The liquid effluent monitors having provisions for automatic termination of liquid releases, as required by Table 3.3-11, shall be used to limit the concentration of radioactive material released at any time from the site to the values given in Specification 3.11.1.1.

4.11.1.1.3 Sampling and analysis shall be performed in accordance with Table 4.11-1 to assure that the limits of Specification 3.11.1.1 are met.

TABLE 4.11-1

Radioactive Liquid Waste Sampling and Analysis Program

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (uCi/ml)[a]
A. Batch Tanks	P Each Batch	P Each Batch	Principal Gamma Emitters	(Note b)
			I-131	1×10^{-6}
1. Coolant Waste Monitor Tank			Dissolved and Entrained Gases[(h)]	1×10^{-5}
2. Aerated Waste Monitor Tank				
3. Condensate Polishing Facility - Waste Neut Sump[(g)]				
	P Each Batch	M Composite[c,d]	$Sr-89^{(h)}$, $Sr-90^{(h)}$	5×10^{-8}
			$H-3^{(h)}$	1×10^{-5}
			$P-32^{(h)}$, $Fe-55^{(h)}$	1×10^{-6}
			Gross alpha[(h)]	1×10^{-7}
B. 1. Steam Generator Blowdown[g]	Grab Sample[e] or Continuous Composite[i]	W Composite[d]	Principal Gamma Emitters	(Note b)
2. Service Water Effluent			I-131	1×10^{-6}
3. Turbine Building Sumps[g]				
	M Grab Sample	M	Dissolved and[f] Entrained Gases	1×10^{-5}
	Grab Sample[e] or Continuous Composite[i]	M Composite[d]	$H-3^{f}$	1×10^{-5}
			$P-32^{f}$, $Fe-55^{f}$	1×10^{-6}
			Gross alpha[f]	1×10^{-7}
			$Sr-89^{f}$, $Sr-90^{f}$	5×10^{-8}

TABLE 4.11-1
(Continued)

Table Notations

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

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

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

where

LLD is the lower limit of detection as defined above (as uCi per unit mass or volume)

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

E is the counting efficiency (as counts per transformation)

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

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

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δt is the elapsed time between midpoint of sample collection and midpoint of counting time

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.

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interferring nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors will be identified and recorded on the analysis sheet for the particular sample.

TABLE 4.11-1
(Continued)

Table Notations

b. The LLD will be 5×10^{-7}. The principal gamma emitters for which this LLD applies are exclusively the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, and Cs-137.

This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level. When unusual circumstances result in LLD's higher than required, the reasons shall be documented on the particular analysis sheet.

c. 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.

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

e. Daily grab sample for the service water taken at least 5 days per week.

f. For the Service Water, these analyses are only required if a weekly gamma analyses indicates a gamma activity greater than 5×10^{-7} uCi/ml.

g. For the Steam Generator Blowdown, Turbine Building Sump, and Condensate Polishing Facility - Waste Neut Sump, analyses are only required when the steam generator gross activity (sampled and analyzed 3 times per week as per Table 4.7-2) exceeds 5×10^{-7} uCi/ml.

h. These analyses are only required if the gamma analysis of the Condensate Polishing Facility - Waste Neut Sump indicates a gamma activity greater than 5×10^{-7} uCi/ml.

i. Continuous composite sampling requirement applies only to the steam generator blowdown and turbine building sumps. This requirement will become effective upon completion of proposed modifications to install composite samplers. Until that time, the sampling requirements for the service water will also apply to the steam generator blowdown and turbine building sumps.

RADIOACTIVE EFFLUENTS

DOSE

LIMITING CONDITION FOR OPERATION

3.11.1.2 The dose or dose commitment to an individual from radioactive materials in liquid effluents from Unit 2 released from the site (see Figure 5.1-1) shall be limited:

a. During any calendar quarter to ≤ 1.5 mrem to the total body and to ≤ 5 mrem to any organ, and

b. During any calendar year to ≤ 3 mrem to the total body and to ≤ 10 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

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

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

SURVEILLANCE REQUIREMENTS

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

1021 324

RADIOACTIVE EFFLUENTS

LIQUID WASTE TREATMENT

LIMITING CONDITION FOR OPERATION

3.11.1.3 The following subsystems of the liquid radwaste treatment system shall be operable: degasifier, clean liquid primary demineralizer, boric acid evaporator, clean liquid secondary demineralizer, and the aerated waste demineralizer. These systems shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected dose due to liquid effluent releases from the site from Unit 2 (see Figure 5.1-1) when averaged over 31 days would exceed 0.06 mrem to the total body or 0.2 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the liquid radwaste system inoperable for more than 31 consecutive days, or with radioactive liquid waste being discharged without all applicable treatment by those subsystems identified above, and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which includes the following information:

   1. Identification of equipment or subsystems not OPERABLE and the reason for inoperability.

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

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

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

SURVEILLANCE REQUIREMENTS

4.11.1.3.1 Doses due to liquid releases from the site from Unit 2 shall be projected once per 31 days.

4.11.1.3.2 The appropriate liquid radwaste subsystems as identified above shall be demonstrated OPERABLE once per 92 days unless the appropriate liquid radwaste subsystem has been utilized to process radioactive liquid effluents during the previous 92 days.

RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE RATE

LIMITING CONDITION FOR OPERATION

3.11.2.1 The dose rate, at any time, offsite (see Figure 5.1-1) due to radioactive materials released in gaseous effluents from the site shall be limited to the following values:

a. The dose rate limit for noble gases shall be ≤ 500 mrem/yr to the total body and ≤ 3000 mrem/yr to the skin, and

b. The dose rate limit for iodine-131 and iodine-133, for all radioactive materials in particulate form with half lives greater than 8 days and radionuclides other than noble gases with half lives greater than 8 days shall be ≤ 1500 mrem/yr to any organ.

APPLICABILITY: At all times.

ACTION:

With the dose rate(s) exceeding the above limits, decrease the release rate within 15 minutes to comply with the limit(s) given in Specification 3.11.2.1 and provide prompt notification to the Commission pursuant to Specification 6.9.1.8.

SURVEILLANCE REQUIREMENTS

4.11.2.1.1 The release rate, at any time, of noble gases in gaseous effluents shall be controlled by the offsite dose rate as established above in Specification 3.11.2.1. The corresponding release rate shall be determined in accordance with the methodology in the ODCM.

4.11.2.1.2 The noble gas effluent monitors as required by Table 3.3-12, shall be used to control release rates to limit offsite doses wihin the values established in Specification 3.11.2.1.

4.11.2.1.3 The release rate of radioactive materials in gaseous effluents shall be determined by obtaining representative samples and performing analyses in accordance with the sampling and analysis program, specified in Table 4.11-2. The corresponding dose rate shall be determined using the methodology given in the ODCM.

TABLE 4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (uCi/cc)[a]
A. Waste Gas Storage Tank (Note h)	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters	(Note b)
			H-3	1×10^{-5}
B. Containment Purge	P Each Purge Grab Sample	P Each Purge	Principal Gamma Emitters	(Note b)
			H-3	1×10^{-5}
C. Unit 2 Stack	M[c] Grab Samples -Gases	M[c]	Principal Gamma Emitters	(Note b)
			H-3[g]	1×10^{-5}
	Continuous[d]	W[f] Charcoal Sample	I-131	1×10^{-12}
			I-133[e]	1×10^{-10}
	Continuous[d]	W[f] Particulate Sample	Principal Gamma Emitters (I-131, Others, Half Lives 8 days)	(Note b)
	Continuous[d]	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
			Sr-89, Sr-90	1×10^{-11}
	Continuous[d]	Noble Gas Monitor	Noble Gases -Gross Activity	1×10^{-6}

TABLE 4.11-2
(Continued)

Table Notation

a. The lower limit of detection (LLD) is defined in Table Notation of Table 4.11-1.

b. For gaseous samples, the LLD will be 1×10^{-4} uCi/cc, and for particulate samples, the LLD will be 1×10^{-11} uCi/cc. The principal gamma emitters for which this LLD applies are exclusively the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135 and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, and Cs-137 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level for that nuclide. When unusual circumstances result in LLD's higher than required, the reasons shall be documented on the particular analysis sheet.

c. Analyses shall also be performed within 24 hours following an unexplained increase, as indicated by the Unit 2 stack noble gas monitor, of greater than 50%, after factoring out increases due to changes in THERMAL POWER levels, containment purges, or other explainable increases.

d. The ratio of the sample flow rate to the sampled stream flow rate shall be known.

e. I-133 will not be analyzed for on each charcoal sample. Instead, at least once per month, the ratio of I-133 to I-131 will be determined from a charcoal sample changed after 24 hours of sampling. This ratio, along with the routine I-131 activity determination will be used to determine the release rate of I-133.

f. Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing. Sampling and analyses shall also be performed once per 24 hours for at least 7 days following each thermal power level change exceeding 15% of RATED THERMAL POWER in one hour. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10.

g. Grab samples for Tritum shall be taken weekly whenever the refueling cavity is flooded. The grab sample shall be taken from the stack (Unit 1 or Unit 2) where the containment ventilation is being discharged at the time of sampling.

TABLE 4.11-2
(Continued)

Table Notation

h. Waste Gas Storage Tanks are normally released on a batch basis. However, for the purposes of tank maintenance, inspection, or reduction of oxygen concentration, a waste gas tank may be continuously purged with nitrogen provided the following conditions are met:

(1) The previous batch of radioactive waste gas has been discharged to a final tank pressure of less than 5 PSIG.

(2) No radioactive waste gases have been added to the tank since the previous discharge.

(3) Value lineups are independently checked by 2 qualified individuals to ensure that no radioactive waste gases will be added to the tank.

(4) After pressurizing the tank with nitrogen, a sample of the gas in the tank will be taken and analyzed for any residual gamma emitters and tritium prior to initiation of the nitrogen purge. The measured activity will be used to calculate the amount of activity released during the purge.

RADIOACTIVE EFFLUENTS

DOSE, NOBLE GASES

LIMITING CONDITION FOR OPERATION

3.11.2.2 The air dose offsite (see Figure 5.1-1) due to noble gases released from Unit 2 in gaseous effluents shall be limited to the following:

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

b. During any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation;

APPLICABILITY: At all times.

ACTION:

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

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

SURVEILLANCE REQUIREMENTS

4.11.2.2.1 Dose Calculations Cumulative dose contributions for the total time period shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM) once every 31 days.

RADIOACTIVE EFFLUENTS

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

LIMITING CONDITION FOR OPERATION

3.11.2.3 The dose to an individual from iodine-131, iodine-133, radioactive materials in particulate form with half lives greater than 8 days and radionuclides other than noble gases with half-lives greater than 8 days in gaseous effluents from Unit 2 released offsite (see Figure 5.1-1) shall be limited to the following:

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

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

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioiodines, radioactive materials in particulate form, or radionuclides other than noble gases in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which identifies the cause(s) for exceeding the limit and defines the corrective actions to be taken to reduce the releases during the remainder of the current calendar quarter and during the subsequent three calendar quarters so that the average dose or dose commitment to an individual from such releases during these four calendar quarters is within 15 mrem to any organ.

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

SURVEILLANCE REQUIREMENTS

4.11.2.3.1 Dose Calculations Cumulative dose contributions for the total time period shall be determined in accordance with the ODCM once every 31 days.

1021 331

RADIOACTIVE EFFLUENTS

GASEOUS RADWASTE TREATMENT

LIMITING CONDITION FOR OPERATION

3.11.2.4 The following subsystems of the gaseous radwaste treatment system shall be OPERABLE:

At least two waste gas decay tanks, the waste gas filter and one waste gas compressor.

The following subsystems of the ventilation exhaust treatment system shall be OPERABLE:

Au xiliary building ventilation HEPA filter, containment purge HEPA filter.

The gaseous radwaste treatment subsystems identified above shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent air doses due to Unit 2 gaseous effluent releases offsite (see Figure 5.1-1) when averaged over 31 days would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation. Ventilation exhaust treatment subsystems identified above shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to Unit 2 gaseous effluent releases offsite (see Figure 5.1-1) when averaged over 31 days would exceed 0.3 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the gaseous radwaste treatment system and/or the ventilation exhaust treatment system inoperable for more than 31 consecutive days or with gaseous waste being discharged for more than 31 days without all applicable treatment by those subsystems identified above, and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report which includes the following information:

   1. Identification of equipment of subsystems not OPERABLE and the reason for inoperability.

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

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

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

SURVEILLANCE REQUIREMENTS

4.11.2.4.1 Doses due to Unit 2 gaseous releases offsite shall be projected once per 31 days.

1021 332

SURVEILLANCE REQUIREMENTS

4.11.2.4.2 The appropriate systems as identified above shall be demonstrated OPERABLE once per 92 days unless the appropriate system has been utilized to process radioactive gaseous effluents during the previous 92 days.

RADIOACTIVE EFFLUENTS

EXPLOSIVE GAS MIXTURE*

LIMITING CONDITION FOR OPERATION

3.11.2.5 The concentration of oxygen in the waste gas holdup system shall be limited to less than or equal to 2% by volume.

APPLICABILITY: At all times.

ACTION:

a. With the concentration of oxygen in the waste gas holdup system greater than 2% by volume, but less than or equal to 4% by volume, restore the concentration of oxygen to within the limit within 48 hours.

b. With the concentration of oxygen in the waste gas holdup system greater than 4% by volume, within two hours suspend all controlled additions to the waste gas surge tank and secure the waste gas compressors. Reduce the concentration of oxygen to less than or equal to 2% within 48 hours.

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

SURVEILLANCE REQUIREMENTS

4.11.2.5 The concentration of oxygen in the waste gas holdup system shall be determined to be within the above limits by continuously monitoring the waste gases in the waste gas holdup system with the oxygen monitor required OPERABLE by Specification 3.3.3.9.

* This specification will become effective upon completion of a proposed modification to install an operable oxygen monitor.

DOSE

LIMITING CONDITION FOR OPERATION

3.11.2.6 The dose or dose commitment to a real individual from all uranium fuel cycle sources is limited to 25 mrem to the total body or any organ (except the thyroid, which is limited to 75 mrem) over a period of 12 consecutive months.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioactive materials in liquid or gaseous effluents exceeding the limits of Specifications 3.11.1.2.a, 3.11.1.2.b, 3.11.2.2.a, 3.11.2.2.b, 3.11.2.3.a, or 3.11.2.3.b, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 and limit the subsequent releases such that the dose or dose commitment to a real individual from all uranium fuel cycle sources is limited to $\leq$ 25 mrem to the total body or any organ (except thyroid, which is limited to $\leq$ 75 mrem) over 12 consecutive months. This Special Report shall include an analysis which demonstrates that radiation exposures to all real individuals from all uranium fuel cycle sources (including all effluent pathways and direct radiation) are less than the 40 CFR Part 190 Standard. Otherwise, obtain a variance from the Commission to permit releases which exceed the 40 CFR Part 190 Standard.

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

SURVEILLANCE REQUIREMENTS

4.11.2.5.1 Dose Calculations Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with the Offsite Dose Calculation Manual (ODCM).

3/4.11.3 SOLID RADIOACTIVE WASTE

LIMITING CONDITION FOR OPERATION

3.11.3 The solid radwaste system shall be OPERABLE and used, as applicable in accordance with a PROCESS CONTROL PROGRAM, for the SOLIDIFICATION and packaging of radioactive wastes to ensure meeting the requirements of 10 CFR Part 20 and of 10 CFR Part 71 prior to shipment of radioactive wastes from the site.

APPLICABILITY: At all times.

ACTION:

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

b. With the solid radwaste system inoperable for more than 31 days, in lieu of any other report required by Specification 6.9.1, prepare and submit to the Commission within 30 days pursuant to Specification 6.9.2 a Special Report which includes the following information:

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

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

   3. A description of the alternative used for SOLIDIFICATION and packaging of radioactive wastes, and

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

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

SURVEILLANCE REQUIREMENTS

4.11.3.1 The solid radwaste system shall be demonstrated OPERABLE at least once per 92 days by:

a. Operating the solid radwaste system at least once in the previous 92 days in accordance with the PROCESS CONTROL PROGRAM, or

b. Verification of the existence of a valid contract for SOLIDIFICATION to be performed by a contractor in accordance with a PROCESS CONTROL PROGRAM.

This surveillance is not required if solid waste was not required to be processed during the previous 92 days.

1021 936

SURVEILLANCE REQUIREMENTS (Continued)

4.11.3.2 THE PROCESS CONTROL PROGRAM shall be used to verify the SOLIDIFICATION of at least one representative test specimen from at least every tenth batch of each type of wet radioactive waste.

a. If any test specimen 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 PROCESS CONTROL PROGRAM, and a subsequent test verifies SOLIDIFICATION. SOLIDIFICATION of the batch may then be resumed using the alternative SOLIDIFICATION parameters determined by the PROCESS CONTROL PROGRAM.

b. 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 SOLIFICATION.

3/4.12 Radiological Environmental Monitoring

3/4.12.1 Monitoring Program - Limiting Condition For Operation

3.12.1.. The radiological environmental monitoring program shall be conducted as specified in Table 3.12-1 from the locations shown in the ODCM. (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.)

APPLICABILITY: At all times.

ACTION:

a. If the radiological environmental monitoring program is not being conducted as specified in Table 3.12-1 prepare and submit to the Commission, in the Annual Radiological Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

b. If the level of radioactivity in an environmental sampling medium at one or more of the locations specified in Table 3.12-1 exceeds the report levels of Table 6.9-1 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days from the end of the affected calendar quarter, a Special Report which includes an evaluation of any release conditions, environmental factors or other aspects which caused the limits of Table 6.9-1 to be exceeded. 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.

c. If milk samples are unavailable from any one or more of the milk sample locations required by Table 3.12-1, a grass sample shall be substituted until a suitable milk location is evaluated as a replacement or until milk is available from the original location. Such an occurrence will be documented in the annual report.

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

SURVEILLANCE REQUIREMENTS

4.12.1 The radiological environmental monitoring samples shall be collected and analyzed as required above.

Table 3.12-1
Millstone Radiological Environmental Monitoring Program

	Exposure Pathway and/or Sample	Number of Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
1.	Gamma Dose - TLD	10	Monthly	Gamma Dose - Monthly
2.	Airborne Particulate	10	Continuous sampler - weekly filter change	Gross Beta - Weekly Gamma Spectrum - Monthly on composite (by location), and on individual sample if gross beta is greater than 10 times means of the weekly control stations gross beta results.
3.	Airborne Iodine	4	Continuous sampler weekly canister change	I-131 - Weekly.
4.	Vegetation	4	One sample near middle and one near end of growing season	Gamma isotopic and I-131 on each sample.
5.	Milk	6	Monthly	Gamma isotopic, I-131, Sr-89 and Sr-90 on each sample.
6.	Sea Water	2	Quarterly - Composite of 6 weekly grab samples	Quarterly - fractional beta, gamma isotopic, tritium.
7.	Bottom Sediment	6	Semi-annual	Gamma isotopic on each sample.

Table 3.12-1 (Continued)
Millstone Radiological Environmental Monitoring Program

	Exposure Pathway and/or Sample	Number of Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
8.	Mussels	2	Quarterly	Gamma isotopic on each sample.
9.	Oysters or Clams	5	Quarterly	Gamma isotopic on each sample.
10.	Lobster	3	Quarterly	Gamma isotopic on each sample.
11.	Fin Fish - Flounder and One Other Type of Edible Fin Fish	2	Quarterly	Gamma isotopic on each sample.

TABLE 3.12-2

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

Analysis	Sea Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Fish, Shellfish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta (fractional beta)	4	1×10^{-2}				
^{3}H	1000					
^{54}Mn	30[c]		130			
^{59}Fe	60[c]		260			
$^{58,60}Co$	30[c]		130			
^{65}Zn	60[c]		260			
^{95}Zr	60[c]					
^{95}Nb	30[c]					
^{131}I		7×10^{-2}		1	60[b]	
^{134}Cs	30[c]	1×10^{-2}	130	15	60	150
^{137}Cs	40[c]	1.2×10^{-2}	160	18	75	180
^{140}Ba	60[c]			30		
^{140}La	30[c]			15		

TABLE 3.12-2
(Continued)

Table Notation

a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability.

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

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

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume)

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

E is the counting efficiency (as counts per transformation)

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

2.22 is the number of transformation per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

Δt is the elapsed time between sample collection (or end of the sample collection period) and time of counting

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interferring nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors will be identified and described in the Annual Radiological Environmental Operating Report.

b. LLD for leafy vegetables.

c. To be reduced by a factor of two if the fractional beta for the sample exceeds 15 pCi/l.

3/4.12.2 LAND USE CENSUS - LIMITING CONDITION FOR OPERATION

3.12.2. A land use census shall be conducted and shall identify the location of the milk animals in each of the 16 meteorological sectors within a distance of five miles.

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) which yields a calculated dose or dose commitment greater than the doses currently being calculated in the ODCM, make the appropriate changes in the ODCM.

b. With a land use census identifying a location(s) which has a higher D/Q than a current indicator location the following shall apply:

(1) If the D/Q is at least 20% greater than the previously highest D/Q, replace one of the present sample locations with the new one within 30 days if milk is available.

(2) If the D/Q is not 20% greater than the previously highest D/Q, consider both direction, distance, availability or milk, and D/Q in deciding whether to replace one of the existing sample locations. If applicable, replacement should be within 30 days. If no replacement is made, sufficient justification should be given in the annual report.

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

Sample location changes should be noted in the annual report.

SURVEILLANCE REQUIREMENTS

4.12.2. The land use census shall be conducted at least once per 12 months by either a door-to-door survey, aerial survey, consulting local agriculture authorities, or any combination of these methods, using that information which would provide the best survey.

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

LIMITING CONDITION FOR OPERATION

3.12.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which has been approved by the Commission.

APPLICABILITY: At all times.

ACTION:

a. 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.

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

SURVEILLANCE REQUIREMENTS

4.12.3 A summary of the results obtained as part of the above required Interlaboratory Compaison Program shall be included in the Annual Radiological Environmental Operating Report.

3/4.3.3.8 RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approved methods 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 is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50. Monitoring of the turbine building sumps and condensate polishing facility floor drains is not required due to relatively low concentrations of radioactivity possible.

3/4.3.3.9 RADIOACTIVE GASEOUS EFFLUENT INSTRUMENTATION

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC approved methods 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 is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

There are a number of gaseous release points which could exhibit very low concentrations of radioactivity. For all of these release paths, calculations prove that any dose consequences, would be insignificant due to the intermittant nature of the release and/or the extremely low concentrations of radioactivity. Since it is not cost-beneficial (nor in many cases practical due to the nature of the release (steam) or the impossibility of detecting such low levels), to monitor these pathways, it has been determined that these release paths require no monitoring nor sampling.

These release paths include:

Turbine building ventilation, atmospheric steam dumps, steam generator safety values, condensate surge tank vent, refueling water storage tank vent, warehouse #5 ventilation, steam generator blowdown steam vent, and terry turbine exhaust.

3/4.11 RADIOACTIVE EFFLUENTS

BASES

3/4.11.1 LIQUID EFFLUENTS

3/4.11.1.1 CONCENTRATION

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

3/4.11.1.2 DOSE

This specification is provided to implement the requirements of Sections II.A, 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 statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonably achievable". The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I is to be shown by calculational procedures based on models and data such that the actual exposure of an individual through 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 will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977, and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977.

3/4.11.1.3 LIQUID WASTE TREATMENT

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

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE

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

3/4.11.2.2 DOSE, NOBLE GASES

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

established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977.

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

This specification is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methods approved by NRC for calculating the doses due to the actual release rates of the subject materials are required to be consistent with the methodology provided in Regulatory Guide 1.109, "Calculating of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision I, 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 release rate specifications for radioiodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man. The pathways which are examined in the development of these calculations are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

3/4.11.2.4 GASEOUS WASTE TREATMENT

The OPERABILITY of the gaseous radwaste treatment system and the ventilation exhaust treatment systems ensures that the systems will be available for use whenever gaseous effluents require treatment prior to release to the environment. The requirement that the appropriate portions of these

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

3/4.11.2.5 DOSE

This specification is provided to meet the reporting requirements of 40 CFR 190.

3/4.11.3 SOLID RADIOACTIVE WASTE

This specification ensures compliance with the appropriate regulations on radioactive waste shipments.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

BASES

3/4.12.1 MONITORING PROGRAM

The radiological monitoring program required by this specification provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures of individuals resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. Program changes may be made based on operational experience.

The detection capabilities required by Table 3.12-2 are state-of-the-art for routine environmental measurements in industrial laboratories. The specified lower limits of detection for I-131 in milk and other food products correspond to approximately one-quarter of the Appendix I, 10 CFR Part 50 design objective dose-equivalent of 15 mrem/year for atmospheric releases and 10 mrem/year for liquid releases to the most sensitive organ and individual. They are based on the assumptions given 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," March 1976, except the change for an infant consuming 330 liters/year of drinking water instead of 510 liters/year.

The reporting levels given in Table 6.9-1 correspond to the annual Appendix I design dose limitations for the maximum individual.

3/4.12.2 LAND USE CENSUS

This specification is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are made if required by the results of this census. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50.

3/4.12.3 QUALITY ASSURANCE PROGRAM

The requirement for participation in an Interlaboratory Comparison program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of a quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid.

REVIEW

6.5.3.6 The NRB shall review:

a. The safety evaluations for 1) changes to procedures, equipment or systems and 2) tests or experiments completed under the provisions of Section 50.59, 10 CFR, to verify that such actions did not constitute an unreviewed safety question.

b. Proposed changes to procedures, equipment or systems which involve an unreviewed safety question as defined in Section 50.59, 10 CFR.

c. Proposed tests or experiments which involve an unreviewed safety question as defined in Section 50.59, 10 CFR.

d. Proposed changes in Sections 1.0 - 5.0 of these Technical Specifications or licenses.

e. Violations of applicable statutes, codes, regulations, orders, Technical Specifications, license requirements, or of internal procedures or instructions having nuclear safety significance.

f. Significant operating abnormalities or deviations from normal and expected performance of plant equipment that affect nuclear safety.

g. REPORTABLE OCCURRENCES requiring 24 hr notification to the Commission.

h. Indications of a significant unanticipated deficiency, affecting nuclear safety, in some aspect of design or operation of safety related structures, systems or components.

i. Reports and meetings minutes of the PORC.

AUDITS

6.5.3.7 Audits of the facility activities shall be performed under the cognizance of the NRB. These audits shall encompass:

a. The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions at least once per year.

MEETING FREQUENCY

6.5.4.6 The SNRB shall meet at least once per calendar year and as convened by the SNRB Chairman.

QUORUM

6.5.4.6 A quorum of SNRB shall consist of the Chairman or his designated alternate and four SNRB members including alternates. No more than a minority of the quorum shall have line responsibility for operation of the Station.

REVIEW

6.5.4.7 The SNRB shall review:

a. Proposed changes in Section 6.0 of these Technical Specifications or Licenses common to all Units.

b. Any indication of an unanticipated deficiency in some aspect of design or operation of safety related structures, systems or components common to all Units.

c. Reports and meeting minutes of the SORC.

AUDITS

6.5.4.8 Audits of site activities shall be performed under the cognizance of the SNRB. These audits shall emcompass:

a. The performance of all activities required by the Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per year.

b. The Site Emergency Plan and implementing procedures at least once per two years.

c. The Site Security Plan and implementing procedures at least once per two years.

d. The Facility Fire Protection Program and implementing procedures at least once per 24 months.

e. An inspection and audit of the fire protection and loss prevention program shall be performed annually by an outside firm experienced in fire protection and loss prevention.

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

g. The OFFSITE DOSE CALCULATION MANUAL and PROCESS CONTROL PROGRAM at least once per 24 months.

1021 352

SAFETY LIMIT VIOLATION - (Continued)

b. The Safety Limit violation shall be reported to the Commission, the System Superintendent Nuclear Operations and to the NRB immediately.

c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the PORC. This report shall describe (1) applicable circumstances preceding the violtation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

d. The Safety Limit Violation Report shall be submitted to the Commission, the NRB and the System Superintendent Nuclear Operations within 10 days of the violations.

6.8 PROCEDURES

6.8.1 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, November 1972.

b. Refueling operations.

c. Surveillance activities of safety related equipment.

d. Security Plan implementation.

e. Emergency Plan implementation.

f. Fire Protection Program implementation.

g. Radiological Environmental Monitoring Program.

h. Offsite Dose Calculation Manual and Process Control Program implementation.

6.8.2 Except as specified in 6.8.4, each procedure and administrative policy of 6.8.1 above, and changes thereto, shall be reviewed by the PORC/SORC, as applicable, and approved by the Unit Superintendent/Station Superintendent prior to implementation and reviewed periodically as set forth in each document.

6.8.3 Except as specified in 6.8.4 temporary changes to procedures of 6.8.1 above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.

c. The change is documented, reviewed by the PORC/SORC, as applicable, and approved by the Unit Superintendent/Station Superintendent within 14 days of implementation.

6.8.4 All procedures and procedure changes required for Section 3/4.8.F of these Technical Specifications (Radiological Environmental Monitoring) do not require review as specified in Sections 6.8.2 and 6.8.3. Rather, all such procedures shall be reviewed by a qualified engineer other than the author, of the Radiological Assessment Branch or Environmental Services Section, and approved by supervision of the Radiological Assessment Branch. (These two groups are part of the Northeast Utilities Service Company as identified in Figure 6.2-1.)

Temporary changes may be made provided the intent of the original procedure is not altered and the change is documented and reviewed by a qualified engineer, other than the author of the Radiological Assessment Branch or Environmental Services Section, within 14 days of implementation.

6.9. REPORTING REQUIREMENTS

ROUTINE REPORTS AND REPORTABLE OCCURRENCES

6.9.1 In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following reports shall be submitted to the Director of the Regional Office of Inspection and Enforcement unless otherwise noted.

STARTUP REPORT

6.9.1.1 A summary report of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal or hydraulic performance of the plant.

6.9.1.2 The startup report shall address each of the tests identified in the FSAR and shall include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

THIRTY-DAY WRITTEN REPORTS - (Continued)

completed copy of a licensee event report form. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

a. Reactor protection system or engineered safety features instrument settings which are found to be less conservative than those established by the technical specifications but which do not prevent the fulfillment of the functional requirements of affected systems.

b. 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.

c. 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 features systems.

d. Abnormal degradation of systems other than those specified in 6.9.1.9.c, above, designed to contain radioactive material resulting from the fission process.

e. An unplanned off-site release of 1) more than 1 curie of radioactive material in liquid effluents, 2) more than 150 curies of noble gas in gaseous effluents, or 3) more than 0.05 curies of radioiodine in gaseous effluents. The report of an unplanned off-site release of radioactive material shall include the following information:

   1) A description of the event and equipment involved.

   2) Cause(s) for the unplanned release.

   3) Actions taken to prevent recurrence.

   4) Consequences of the unplanned release.

f. Measured levels of radioactivity in an environmental sampling medium determined to exceed the reporting the level values of Table 6.9-1 when averaged over any calendar quarter sampling period. When more than one of the radionuclides in Table 6.9-1 are detected in the sampling medium, this report shall be submitted if:

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

When radionuclides other than those in Table 6.9-1 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to an individual is equal to or greater than the appropriate calendar year limit of Specifications 3.11.1.2, 3.11.2.2 or 3.11.2.3. 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.

ANNUAL RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT

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

The annual radiological environmental operating reports shall include summaries, interpretations, and statistical evaluation of the results of the radiological environmental surveillance activities for the report period, including a comparison with previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of the land use censuses required by Specification 3/4.12.2. If harmful effects are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.

The annual report shall include a summary table of all radiological environmental samples which shall include the following information for each pathway sampled and each type of analysis:

(1) Total number of analyses performed at indicator locations.

(2) Total number of analyses performed at control locations.

(3) Lower limit of detection (LLD).

(4) Mean and range of all indicator locations together.

(5) Mean and range of all control locations together.

(6) Name, distance and direction from discharge, mean and range for the location with the highest annual mean (indicator or control).

(7) Number of nonroutine reported measurements as defined in these specifications.

In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The report shall also include a map of sampling locations keyed to a table giving distances and directions from the discharge; the report shall also include a summary of the Quality Assurance Data required by Specification 3/4.12.3.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

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

The report shall include a summary of the quantities of radioactive liquid and gaseous effluents released from the unit as outlined in U.S.N.R.C. Regulatory Guide 1.21, Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

In addition, the report to be submitted 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 shall be 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 site during the previous calendar year. The meteorological conditions concurrent with the time of release of radioactive material in gaseous effluents shall be used for determining the gaseous pathway doses. Dose calculations shall be performed in accordance with the Offsite Dose Calculation Manual.

In addition, the report to be submitted 60 days after January 1 of each year shall include an assessment of radiation doses to the likely most exposed real individual from the site for the previous 12 consecutive months to show conformance with 40CFR190. Doses shall be calculated in accordance with the Offsite Dose Calculation Manual.

The semiannual effluent report shall also include a summary of each type of solid waste shipped offsite for burial or final disposal during the report period. This summary shall include the following information for each type of waste:

a. Type of waste (e.g., spent resin, compacted dry waste, irradiated components, etc.).

b. Solidification agent (e.g., cement).

c. Total curies.

d. Total volume and typical container volumes.

e. Principal radionuclides (those greater than 10% of total activity).

f. Types of containers used (e.g., LSA, Type A, etc.).

The semiannual effluent report shall include the following information for all unplanned releases from the site to unrestricted areas of radioactive materials in gaseous and liquid effluents:

a. A description of the event and equipment involved.

b. Cause(s) for the unplanned release.

c. Actions taken to prevent recurrence.

d. Consequences of the unplanned release.

The semiannual effluent report shall also include changes made to the Process Control Program (PCP) made during the report period.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Director of the Office of Inspection and Enforcement Regional Office 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:

a. Inoperable Seismic Monitoring Instrumentation, Specification 3.3.3.3.

b. Inoperable Meteorological Monitoring Instrumentation, Specification 3.3.3.4.

c. Safety Class 1 Inservice Inspection Program Review, Specification 4.4.10.1.

d. Core Barrel Movement, Specifications 3.4.11 and 4.4.11.

e. ECCS Actuation, Specifications 3.5.2 and 3.5.3.

f. Fire Detection Instrumentation, Specification 3.3.3.7.

g. Fire Suppression Systems, Specifications 3.7.9.1 and 3.7.9.2.

h. Radiological Effluent Reports required by Section 3.11.

TABLE 6.9-1

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

	Reporting Levels				
Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish, Shellfish (pCi/Kg, wet)	Milk (pCi/l)	Vegetables (pCi/Kg, wet)
Mn-54	1×10^3		3×10^4		
Fe-59	4×10^2		1×10^4		
Co-58	1×10^3		3×10^4		
Co-60	3×10^2		1×10^4		
Zn-65	3×10^2		2×10^4		
I-131		1		3	1×10^2
Cs-134	30	10	1×10^3	60	1×10^3
Cs-137	50	20	2×10^3	70	2×10^3
Ba-La-140	2×10^2			3×10^2	
Zr-N[b]-95	4×10^2				

6.13 PROCESS CONTROL PROGRAM

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

6.13.2 Licensee initiated changes to the PCP:

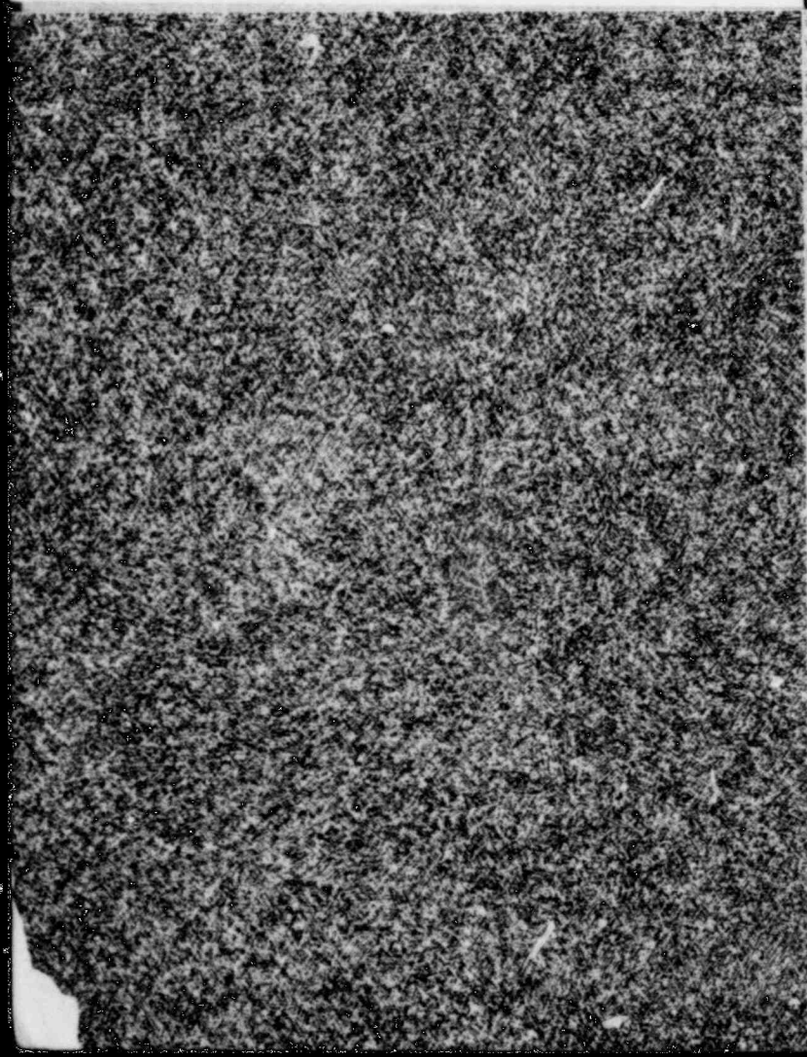
1. Shall be submitted to the Commission in the semi-annual Radioactive Effluent Release Report for the period in which the change(s) was made. This submittal shall contain:

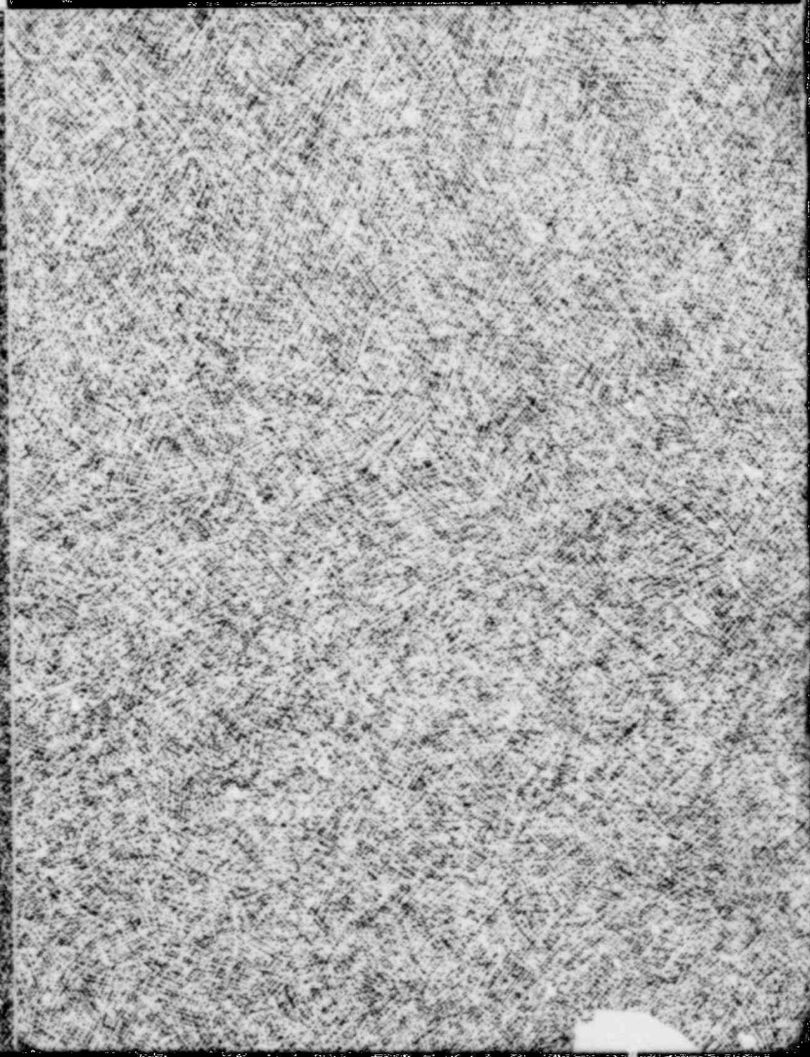
   a. sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information;

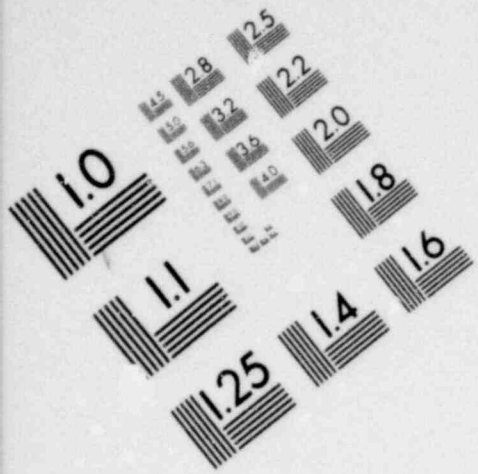
   b. a determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and

   c. documentation of the fact that the change has been reviewed by PORC.

2. Shall become effective upon approval of the Unit Superintendent.







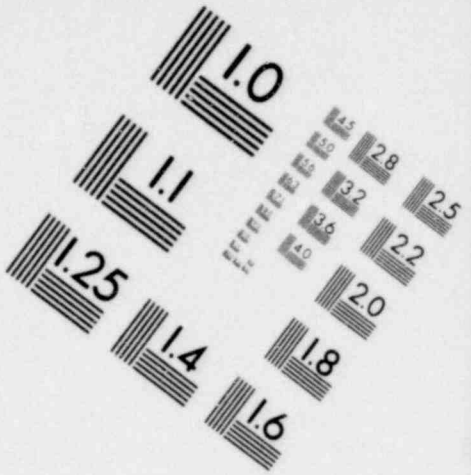
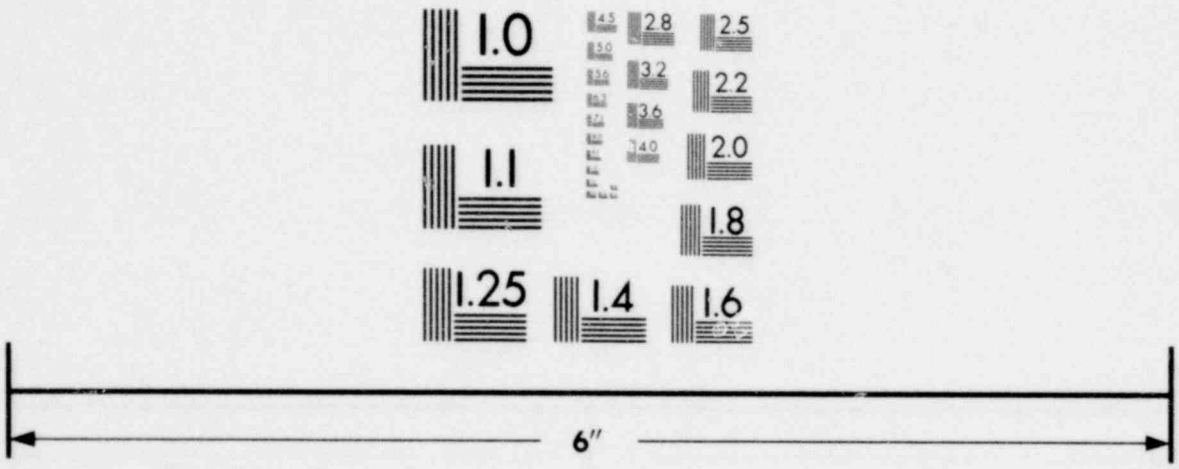
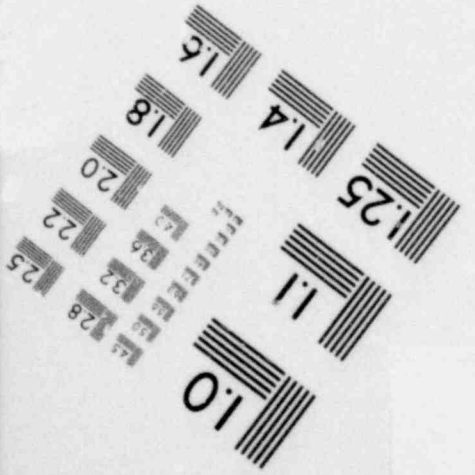
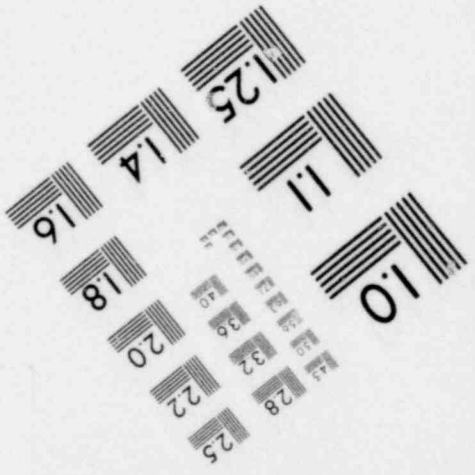
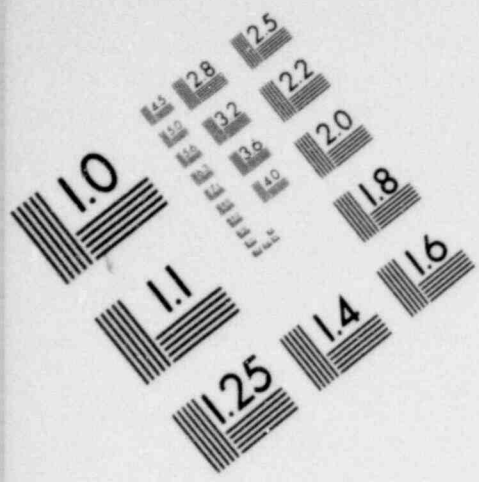


IMAGE EVALUATION TEST TARGET (MT-3)









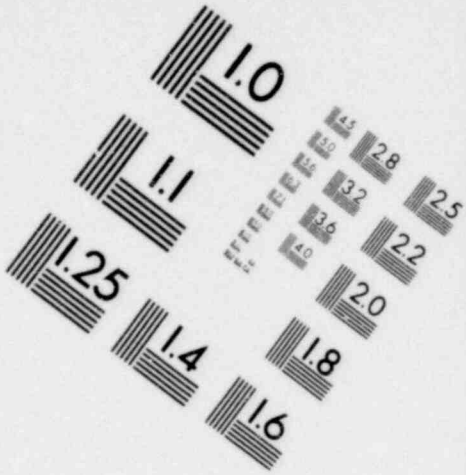
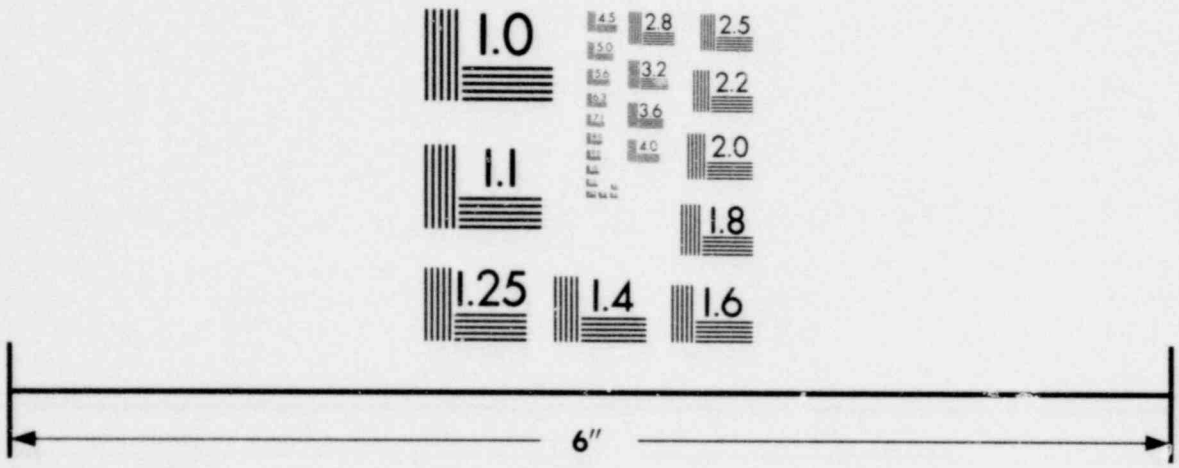
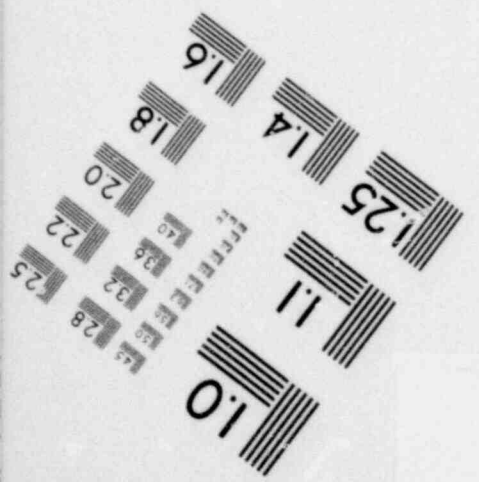
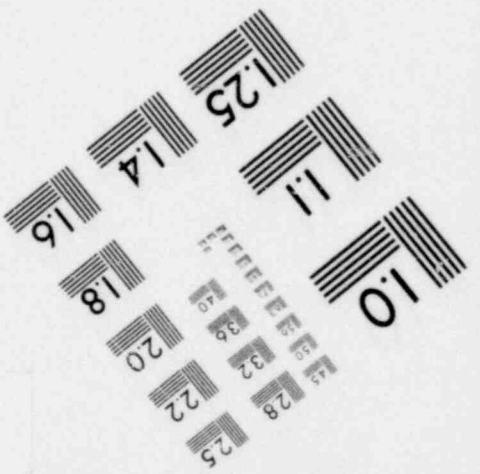


IMAGE EVALUATION TEST TARGET (MT-3)







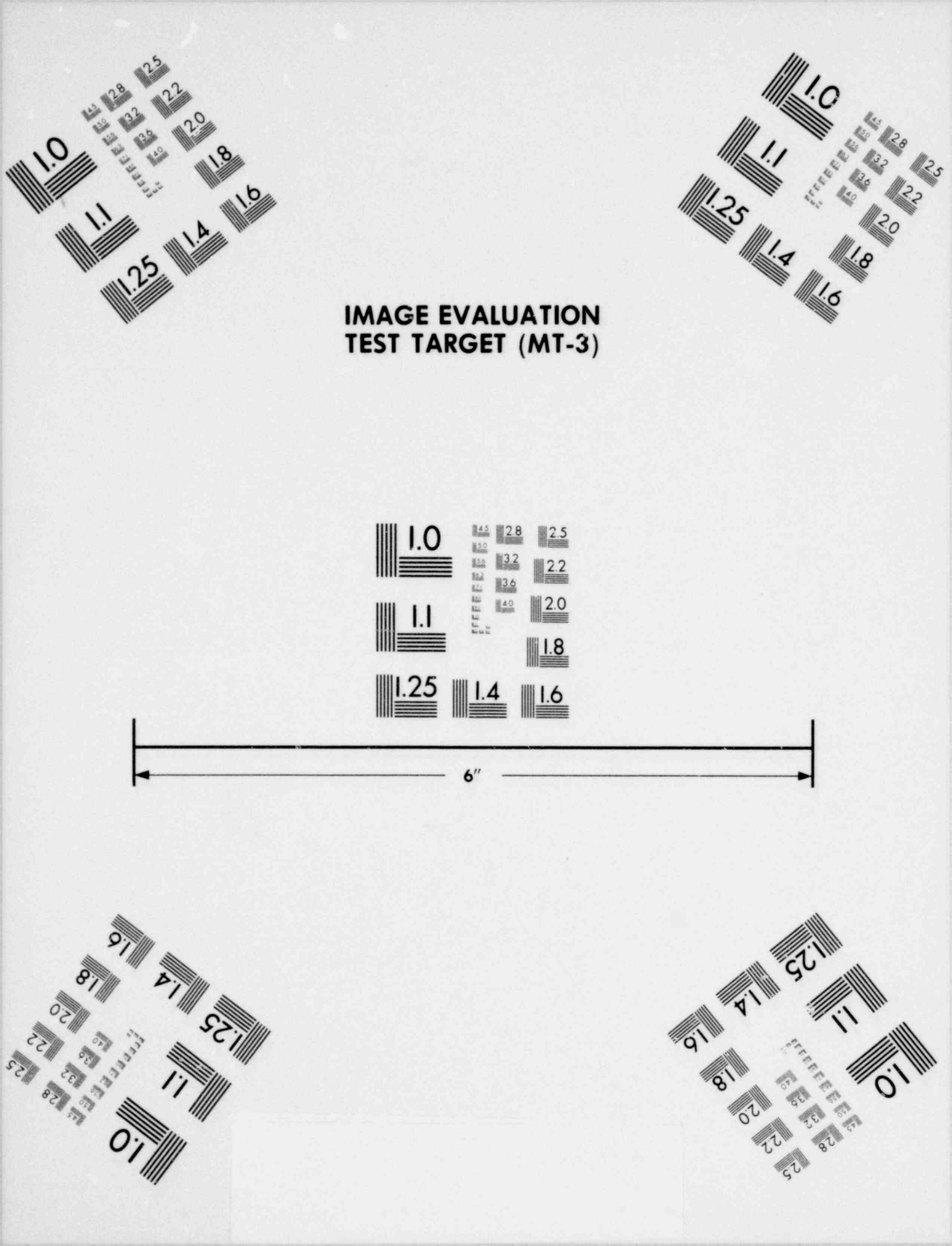


IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
2.8
2.5
3.2
2.2
3.6
2.0
4.0
1.8
6"

6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.14.1 The ODCM shall describe the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints consistent with the applicable LCO's contained in these technical specifications.

The ODCM and changes in the ODCM shall be reviewed by SORC prior to implementation. All such changes shall be submitted to the Commission by inclusion in the monthly operating report within 90 days of the date the change was approved by the Station Superintendent and should include sufficiently detailed information to support the rationale for the change.

6.15 MAJOR CHANGES TO RADIOACTIVE WASTE TREATMENT SYSTEMS (Liquid, Gaseous and Solid)

6.15.1 MAJOR CHANGES TO RADIOACTIVE WASTE SYSTEMS (liquid, gaseous and solid) shall be made as follows: "MAJOR CHANGES" is defined in Section 1 of these specifications.

1) The Commission shall be informed of all changes by the inclusion of a suitable discussion of each change in the Monthly Operating Report for the period in which the evaluation was completed. If applicable, 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 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 from those previously predicted in the license application and amendments thereto;

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

   f) documentation of the fact that the change was reviewed by (PORC/SORC); and

   g) an estimate of the exposure to plant operating personnel as a result of the change.

2) The change shall become effective upon approval by the (Unit/Station) Superintendent.

1022 002