Table D 3.1.1-1 (Page 1 of 2)
Radioactive Liquid Waste Sampling and Analysis

LIQUID RELEASE TYPE	SAMPLE TYPE	SAMPLE FREQUENCY	ANALYSIS FREQUENCY	SAMPLE ANALYSIS	SAMPLE LOWER LIMIT OF DETECTION (LLD) (a)
1. Batch Waste Release Tanks (b) a. 2LWS-TK4A b. 2LWS-TK4B c. 2LWS-TK5A d. 2LWS-TK5B	Grab Sample	Each Batch (g)	Each Batch (g)	Principal Gamma Emitters (c)	5×10^{-7} µCi/ml
				I-131	1×10^{-6} µCi/ml
	Grab Sample	One batch/31 days (g)	31 days	Dissolved and Entrained Gases (gamma emitters)	1×10^{-5} µCi/ml
	Proportional Composite of grab samples (d)	Each batch (g)	31 days	H-3	1×10^{-5} µCi/ml
				Gross Alpha	1×10^{-7} µCi/ml
	Proportional Composite of grab samples (d)	Each batch (g)	92 days	Sr-89	5×10^{-8} µCi/ml
				Sr-90	5×10^{-8} µCi/ml
				Fe-55	1×10^{-6} µCi/ml
2. Continuous Releases a. Service Water Effluent A b. Service Water Effluent B c. Cooling Tower Blowdown	Grab Sample	31 days (e)	31 days (e)	Principal Gamma Emitters (c)	5×10^{-7} µCi/ml
	Grab Sample	31 days (e)	31 days (e)	I-131	1×10^{-6} µCi/ml
	Grab Sample	31 days (e)	31 days (e)	Dissolved and Entrained Gases (gamma emitters)	1×10^{-5} µCi/ml
	Grab Sample	31 days (e)	31 days (e)	H-3	1×10^{-5} µCi/ml
	Grab Sample	31 days (e)	31 days (e)	Gross Alpha	1×10^{-7} µCi/ml
	Grab Sample	92 days (e)	92 days (e)	Sr-89	5×10^{-8} µCi/ml
	Grab Sample	92 days (e)	92 days (e)	Sr-90	5×10^{-8} µCi/ml
	Grab Sample	92 days (e)	92 days (e)	Fe-55	1×10^{-6} µCi/ml
3. Continuous Release Auxiliary Boiler Pump Seal and Sample Cooling Discharge (Service Water)	Grab Sample	31 days (f)	31 days (f)	Principal Gamma Emitters (c)	5×10^{-7} µCi/ml
	Grab Sample	92 days (f)	92 days (f)	H-3	1×10^{-5} µCi/ml

Table D 3.1.1-1 (Page 2 of 2)
Radioactive Liquid Waste Sampling and Analysis

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

For a particular measurement system, which may include radiochemical separation:

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

where:

LLD	=	The before-the-fact lower limit of detection (μCi per unit mass or volume),
S_b	=	The standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),
E	=	The counting efficiency (counts per disintegration),
V	=	The sample size (units of mass or volume),
2.22×10^6	=	The number of disintegrations per minute per μCi,
Y	=	The fractional radiochemical yield, when applicable,
λ	=	The radioactive decay constant for the particular radionuclide (sec^{-1}), and
Δt	=	The elapsed time between the midpoint of sample collection and the time of counting (seconds).

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

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

(b) A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by the method described in Part II, Section 1.4 to assure representative sampling.

(c) The principal gamma emitters for which the LLD applies include the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, and Ce-141. Ce-144 shall also be measured, but with an LLD of 5×10^{-6} μCi/ml. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Radioactive Effluent Release Report pursuant to Technical Specification 5.6.3 in the format outlined in RG 1.21, Appendix B, Revision 1, June 1974.

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

(e) If the alarm setpoint of the effluent monitor is exceeded, the frequency of sampling shall be increased to daily until the condition no longer exists. Frequency of analysis shall be increased to daily for principal gamma emitters and an incident composite for H-3, gross alpha, Sr-89, Sr-90, and Fe-55.

(f) If the alarm setpoint of Service Water Effluent Monitor A and/or B is exceeded, the frequency of sampling shall be increased to daily until the condition no longer exists. Frequency of analysis shall be increased to daily for principal gamma emitters and an incident composite for H-3, gross alpha, Sr-89, Sr-90, and Fe-55.

(g) Complete prior to each release.

(T)

3.1 ~~3/4.11~~ RADIOACTIVE LIQUID EFFLUENTS

3.1.1 ~~3/4.11.1~~ LIQUID EFFLUENTS

CONCENTRATION

D1.0-1 2 ten times

CONTROLS

DLCO 3.1.1 ~~3.11.1.1~~ The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (see Figure ~~5.1.1-1~~) shall be limited to the

a. concentrations specified in 10 CFR 20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or

b. entrained noble gases, the concentration shall be limited to 2×10^{-4} microcurie/ml total activity.

APPLICABILITY: At all times.

ACTION:

Condition A With the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS exceeding the above limits, without delay restore the

A.1 concentration to within the above limits.

SURVEILLANCE REQUIREMENTS

DSR 3.1.1.1 ~~4.11.1.1.1~~ Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table ~~4.11.1-1~~. 3.1.1

~~4.11.1.1.2~~ The results of the radioactivity analyses shall be used in

DSR 3.1.1.2 accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits of ~~CONTROL~~ ~~3.11.1.1~~.

DLCO

D 3.1.1-1

TABLE 4.11.1-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD)(a) uCi/ml
Batch Waste Release Tanks(b)		P-(g) Each Batch	P-(g) Each Batch	Principal Gamma Emitters(c)	5×10^{-7}
a. 2LWS-TK4A b. 2LWS-TK4B c. 2LWS-TK5A d. 2LWS-TK5B				I-131	1×10^{-6}
		P-(g) One Batch M 31 days	One Batch M 31 days	Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
		P-(g) Each Batch	M 31 days Composite(d)	H-3	1×10^{-5}
				Gross Alpha	1×10^{-7}
		P-(g) Each Batch	Q 92 days Composite(d)	Sr-89, Sr-90	5×10^{-8}
				Fe-55	1×10^{-6}
Continuous Releases		Grab Sample M(e) 31 days	Grab Sample M(e) 31 days	Principal Gamma Emitters(c)	5×10^{-7}
				I-131	1×10^{-6}
a. Service Water Effluent A				Dissolved and Entrained Gases (Gamma Emitters)	1×10^{-5}
b. Service Water Effluent B				H-3	1×10^{-5}
				Gross Alpha	1×10^{-7}
c. Cooling Tower Blowdown		Grab Sample Q(e) 92 days	Grab Sample Q(e) 92 days	Sr-89, Sr-90	5×10^{-8}
				Fe-55	1×10^{-6}
d. Auxiliary Boiler Pump Seal and Sample Cooling Discharge (Service Water)		Grab Sample M(f) 31 days	Grab Sample M(f) 31 days	Principal Gamma Emitters(c)	5×10^{-7}
		Grab Sample Q(f) 92 days	Grab Sample Q(f) 92 days	H-3	1×10^{-5}

A.1

D 3.1.1-1

TABLE 4.11.1-1 (Continued)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

TABLE NOTATIONS

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

For a particular measurement system, which may include radiochemical separation:

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

Where:

LLD = the before-the-fact lower limit of detection (microcurie per unit mass or volume),

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

E = the counting efficiency (counts per disintegration),

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

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

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (sec^{-1}), and

Δt = the elapsed time between the midpoint of sample collection and the time of counting (seconds).

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

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

(b) A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by a method described in the ODCM to assure representative sampling.

A.1

D 3.1.1-1

TABLE 4.11.1-1 (Continued)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

TABLE NOTATIONS

(c) The principal gamma emitters for which the LLD CONTROL applies include the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137 and Ce-141. Ce-144 shall also be measured, but with an LLD of 5 x 10^{-4} μCi/mL. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Radioactive Effluent Release Report pursuant to CONTROL Technical Specification 6.9.1.3 in the format outlined in RG 1.21, Appendix B, Revision 1, June 1974.

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

(e) If the alarm setpoint of the effluent monitor as determined by the method presented in the ODCM, is exceeded, the frequency of sampling shall be increased to daily until the condition no longer exists. Frequency of analysis shall be increased to daily for principal gamma emitters and an incident composite for H-3, gross alpha, Sr-89, Sr-90, and Fe-55.

(f) If the alarm setpoint of Service Water Effluent Monitor A and/or B (1/2) determined by the method presented in the ODCM, is exceeded, the frequency of sampling shall be increased to daily until the condition no longer exists. Frequency of analysis shall be increased to daily for principal gamma emitters and an incident composite for H-3, gross alpha, Sr-89, Sr-90, and Fe-55.

(g) Complete prior to each release.

PART I - RADIOLOGICAL EFFLUENT CONTROLS

BASES

B 3.1 RADIOACTIVE LIQUID EFFLUENTS

B 3.1.1 Liquid Effluents Concentration

BASES

This is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than ten times the concentration levels specified in 10 CFR 20, Appendix B, Table 2, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within: (1) the Section II.A design objectives of Appendix I to 10 CFR 50, to a MEMBER OF THE PUBLIC and (2) the levels required by 10 CFR 20.1301(e) to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its effluent concentration in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2.

This applies to the release of radioactive materials in liquid effluents from all units at the site.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

~~3/4.11 RADIOACTIVE EFFLUENTS~~

BASES

3.1 ~~3/4.11.1~~ RADIOACTIVE LIQUID EFFLUENTS

3.1.1 ~~3/4.11.1.2~~ LIQUID EFFLUENTS CONCENTRATION

This ~~CONTROL~~ is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than the concentration levels specified in 10 CFR 20, Appendix B, Table II, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within: (1) the Section II.A design objectives of Appendix I to 10 CFR 50, to a MEMBER OF THE PUBLIC and (2) the limits of 10 CFR 20.106(e) to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling 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.

This ~~CONTROL~~ applies to the release of radioactive materials in liquid effluents from all units at the site.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

3.1.2 ~~3/4.11.1.2~~ LIQUID EFFLUENTS DOSE

This ~~CONTROL~~ is provided to implement the requirements of Sections II.A, III.A, and IV.A of Appendix I to 10 CFR 50. The CONTROL 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 materials in liquid effluents to UNRESTRICTED AREAS will be kept as low as is reasonably achievable. Also, for fresh water sites with drinking water supplies that can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the potable drinking water that are in excess of the requirements of 40 CFR 141. The dose calculation methodology and parameters ~~in the ODCM~~ implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by Calculational procedures based on models and data, so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified ~~in the ODCM~~ for calculating the doses that result from actual release rates of radioactive material in liquid effluents are consistent with the methodology provided in RG 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."

DISCUSSION OF CHANGES
D 3.1.2 Liquid Effluents Dose

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Liquid Effluents Dose, the new Specification number is D 3.1.2 Actions from 3.11.4, Total Dose, were relocated to D 3.1.2.

D 3.1 RADIOACTIVE LIQUID EFFLUENTS

D 3.1.2 Liquid Effluents Dose

DLCO 3.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials released in liquid effluents from each unit to UNRESTRICTED AREAS (Figure D 1.0-1) shall be limited to:

a. ≤ 1.5 mrem to the whole body and ≤ 5 mrem to any organ during any calendar quarter; and

b. ≤ 3 mrem to the whole body and ≤ 10 mrem to any organ during any calendar year.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Calculated dose to a MEMBER OF THE PUBLIC from the release of radioactive materials in liquid effluents to UNRESTRICTED AREAS exceeds limits.	A.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that (1) Identifies the cause(s) for exceeding the limit(s) and (2) Defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with DLCO 3.1.2.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Calculated dose to a MEMBER OF THE PUBLIC from the release of radioactive materials in liquid effluents exceeds 2 times the limits.	B.1 Calculate the annual dose to a MEMBER OF THE PUBLIC which includes contributions from direct radiation from the units (including outside storage tanks, etc.). AND	Immediately
	B.2 Verify that the limits of DLCO 3.4 have not been exceeded.	Immediately
C. Required Action B.2 and Associated Completion time not met.	C.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report, as defined in 10 CFR 20.2203 (a)(4), of Required Action A.1 shall also include the following: (1) The corrective action(s) to be taken to prevent recurrence of exceeding the limits of DLCO 3.4 and the schedule for achieving conformance, (2) An analysis that estimates the dose to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s), and (3) Describes the levels of radiation and concentrations of radioactive material involved and the cause of the exposure levels or concentrations.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.1.2.1	Determine cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year.	31 days

RADIOACTIVE EFFLUENTS

LIQUID EFFLUENTS

DOSE

D 1.0-1

CONTROLS

DLCO 3.1.2 3.11.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released, from each unit, to UNRESTRICTED AREAS (see Figure 5.1.3-1) shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ, and

b. During any calendar year to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

cond A 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 Technical Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. 4.14

A.1

NOTE b. The provisions of CONTROLS 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

DSR 3.12.1 4.11.1.2 Cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

Insert Condition B & C and associated Required Actions & Completion Time:

RADIOACTIVE EFFLUENTS

3/4.11.4 TOTAL DOSE

CONTROLS

DLCO 3.4

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

APPLICABILITY: At all times.

ACTION:

Condition B of 3.1.2, 3.2.2, and 3.2.3

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of CONTROLS 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, calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the above limits of CONTROL 3.11.4 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.2 a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.405(c), shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

B.1 B.2 — 10 CFR 20.405(a) (c) — 4.1.1 — Condition C of 3.1.2, 3.2.2 and 3.2.3 — C.1 — Condition A — A.1 — 3.4

NOTES

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

SURVEILLANCE REQUIREMENTS

Already included in 3.1.2, 3.2.2 and 3.2.3

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with CONTROLS 4.11.1.2, 4.11.2.2 and 4.11.2.3, and in accordance with the methodology and parameters in the ODCM.

DSR 3.4.1

4.11.4.2 Cumulative dose contributions from direct radiation from the units (including outside storage tanks, etc.) shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in ACTION a of CONTROL 3.11.4.1.

As required by 3.1.2, 3.2.2, 3.2.3, or 3.4.

B 3.1 RADIOACTIVE LIQUID EFFLUENTS

B 3.1.2 Liquid Effluents Dose

BASES

This is provided to implement the requirements of Sections II.A, III.A, and IV.A of Appendix I to 10 CFR 50. This 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 materials in liquid effluents to UNRESTRICTED AREAS will be kept as low as is reasonably achievable. Also, for fresh water sites with drinking water supplies that can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the potable drinking water that are in excess of the requirements of 40 CFR 141. For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBERS OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. The dose calculation methodology and parameters 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, so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified for calculating the doses that result from actual release rates of radioactive material in liquid effluents are consistent with the methodology provided in RG 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 R.G. 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. This applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

Liquid Effluents
B 3.1.1

3/4.11 RADIOACTIVE EFFLUENTS

BASES

3.1 3/4.11.1 RADIOACTIVE LIQUID EFFLUENTS

3.1.1 3/4.11.1.1 LIQUID EFFLUENTS CONCENTRATION — 10 times

This CONTROL is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than the concentration levels specified in 10 CFR 20, Appendix B, Table II, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within: (1) the Section II.A design objectives of Appendix I to 10 CFR 50, to a MEMBER OF THE PUBLIC and (2) the limits of 10 CFR 20.106(e) to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling 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.

This CONTROL applies to the release of radioactive materials in liquid effluents from all units at the site.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements, NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

Page break — I B 3.1-1

3 3/4.11.1.2 LIQUID EFFLUENTS DOSE

Liquid Effluents C
3.1.2

This CONTROL is provided to implement the requirements of Sections II.A, III.A, and IV.A of Appendix I to 10 CFR 50. The CONTROL 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 materials in liquid effluents to UNRESTRICTED AREAS will be kept as low as is reasonably achievable. Also, for fresh water sites with drinking water supplies that can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the potable drinking water that are in excess of the requirements of 40 CFR 141. The dose calculation methodology and parameters in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by Calculational procedures based on models and data, so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses that result from actual release rates of radioactive material in liquid effluents are consistent with the methodology provided in RG 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."

① from BASES Section of Radioactive Effluents Total Dose (see attached page)

Revision 1, October 1977 and R.G. 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. This CONTROL applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

3/4.11.2.3 LIQUID RADWASTE TREATMENT SYSTEM

Insert ① - The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment before release to the environment. The requirement that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept as low as is reasonably achievable. This CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50 and the design objective given in Section II.D of Appendix I to 10 CFR 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I to 10 CFR 50 for liquid effluents. This CONTROL applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE

This CONTROL is provided to ensure that the dose rate at any time at and beyond the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR 20 to UNRESTRICTED AREAS.

① The installed liquid radwaste treatment system shall be considered OPERABLE by meeting DLCO 3.1.1 and ~~DLCO 3.1.3~~

RADIOACTIVE EFFLUENTS

BASES

3.4 RADIOACTIVE ~~GASEOUS~~ EFFLUENTS

3.4.1 TOTAL DOSE

This CONTROL is provided to meet the dose limitations of 40 CFR 190 that have been incorporated into 10 CFR 20 by 46 FR 18525. The CONTROL requires the preparation and submittal of a Special Report whenever the calculated doses from releases of radioactivity and from radiation from uranium fuel cycle sources exceed 25 mrem to the whole body or any organ, except the thyroid (which shall be limited to less than or equal to 75 mrem). For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR 20, as addressed in CONTROLS 3.11.1.1 and 3.11.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which the individual is engaged in carrying out any operation that is part of the nuclear fuel cycle.

3.1.1 and 3.2.

move to Bases sections of 3.1.2, 3.2.2 and 3.2.3

DISCUSSION OF CHANGES
D 3.1.3 Liquid Radwaste Treatment System

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Liquid Radwaste Treatment System, the new Specification number is D 3.1.3.

D 3.1 RADIOACTIVE LIQUID EFFLUENTS

D 3.1.3 Liquid Radwaste Treatment System

DLCO 3.1.3 The liquid radwaste treatment system shall be OPERABLE.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radioactive liquid waste being discharged without treatment. AND Projected doses due to the liquid effluent, from the unit, to UNRESTRICTED AREAS would exceed 0.06 mrem to the whole body or 0.2 mrem to any organ in a 31 day period. AND Any portion of the liquid radwaste treatment system not in operation.	A.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that includes: (1) An explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability, (2) Action(s) taken to restore the inoperable equipment to OPERABLE status, and (3) Summary description of action(s) taken to prevent a recurrence.	30 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DSR 3.1.3.1	----------NOTE---------- Only required to be met when liquid radwaste treatment systems are not being fully utilized. ----------	
	Project the doses due to liquid effluents from each unit to UNRESTRICTED AREAS.	31 days

RADIOACTIVE EFFLUENTS

LIQUID EFFLUENTS

LIQUID RADWASTE TREATMENT SYSTEM

CONTROLS

D 1.0-1

DLCO 3.1.3 3.11.1.3 The liquid radwaste treatment system shall be OPERABLE and appropriate portions of the system shall be used to reduce releases of radioactivity when the projected doses due to the liquid effluent, from the unit, to UNRESTRICTED AREAS (see Figure 5.1.3-1) would exceed 0.06 mrem to the whole body or 0.2 mrem to any organ in a 31-day period.

one man A

APPLICABILITY: At all times.

ACTION:

A. With radioactive liquid waste being discharged without treatment and in excess of the above limits and any portion of the liquid radwaste treatment system not in operation, prepare and submit to the Commission within 30 days, pursuant to ~~Technical Specification~~ 6.9.2, a Special Report that includes the following information:

Condition A

A.1

4.1.1

1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability,

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

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

NOTE b. The provisions of CONTROLS 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

DR 3.1.3.1 4.11.1.2.2 Doses due to liquid releases from each unit to UNRESTRICTED AREAS shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM when liquid radwaste treatment systems are not being fully utilized.

4.11.1.3.2 The installed liquid radwaste treatment system shall be considered OPERABLE by meeting CONTROLS 3.11.1.1 and 3.11.1.2

DLCO 3.1.1 3.1.2

move to BASES

B 3.1 RADIOACTIVE LIQUID EFFLUENTS

B 3.1.3 Liquid Radwaste Treatment System

BASES

The installed liquid radwaste treatment system shall be considered OPERABLE by meeting DLCO 3.1.1 and DLCO 3.1.2. The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment before release to the environment. The requirement that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept as low as is reasonably achievable. This implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50 and the design objective given in Section II.D of Appendix I to 10 CFR 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I to 10 CFR 50 for liquid effluents. This applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

Revision 1, October 1977 and R.G. 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. This CONTROL applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

— Page Break — Liquid Radioactive Waste 3/4.11.2

3/4.11.2.3 LIQUID RADWASTE TREATMENT SYSTEM

Insert ① → The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment before release to the environment. The requirement that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept as low as is reasonably achievable. This CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50 and the design objective given in Section II.D of Appendix I to 10 CFR 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I to 10 CFR 50 for liquid effluents. This CONTROL applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

— Page Break — I B 3-1-3 Gaseous Effluents Dose B 3.2.1

3/4.11.2 Radioactive GASEOUS EFFLUENTS

3/4.11.2.1 Gaseous EFFLUENTS DOSE RATE

This CONTROL is provided to ensure that the dose rate at any time at and beyond the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR 20 to UNRESTRICTED AREAS.

① The installed liquid radwaste treatment system shall be considered OPERABLE by meeting DLCO 3.1.1 and DLCO 3.1.2

DISCUSSION OF CHANGES
D 3.2.1 Gaseous Effluents Dose Rate

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Gaseous Effluents Dose Rate, the new Specification number is D 3.2.1.

D 3.2 RADIOACTIVE GASEOUS EFFLUENTS

D 3.2.1 Gaseous Effluents Dose Rate

DLCO 3.2.1 The dose rate from radioactive materials released in gaseous effluents from the site to areas at or beyond the SITE BOUNDARY (Figure D 1.0-1) shall be limited to:

a. For noble gases, ≤ 500 mrem/yr to the whole body and ≤ 3000 mrem/yr to the skin and

b. For I-131, I-133, H-3 and all radionuclides in particulate form with half-lives > 8 days, ≤ 1500 mrem/yr to any organ.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The dose rate(s) at or beyond the SITE BOUNDARY due to radioactive gaseous effluents exceeds limits.	A.1 Restore the release rate to within the limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.2.1.1	The dose rate from noble gases in gaseous effluents shall be determined to be within the limits of DLCO 3.2.1.a.	In accordance with Table D 3.2.1-1
DSR 3.2.1.2	The dose rate from I-131, I-133, H-3 and all radionuclides in particulate form with half-lives > 8 days in gaseous effluents shall be determined to be within the limits of DLCO 3.2.1.b.	In accordance with Table D 3.2.1-1

Table D 3.2.1-1 (Page 1 of 2)
Radioactive Gaseous Waste Sampling and Analysis

GASEOUS RELEASE TYPE	SAMPLE TYPE	SAMPLE FREQUENCY	ANALYSIS FREQUENCY	SAMPLE ANALYSIS	SAMPLE LOWER LIMIT OF DETECTION (LLD) (a)
1. Containment (b)	Grab Sample	Each Purge	(h)	Principal Gamma Emitters (c)	1×10^{-4} µCi/ml
			Each Purge	H-3 (oxide)	1×10^{-6} µCi/ml
			Each Purge	Principal Gamma Emitters (c)	1×10^{-4} µCi/ml
2. Main Stack, Radwaste/Reactor Building Vent	Grab Sample	31 days (d)	31 days (d)	Principal Gamma Emitters (c)	1×10^{-4} µCi/ml
	Grab Sample	31 days (e)	31 days (e)	H-3 (oxide)	1×10^{-6} µCi/ml
	Charcoal Sample	Continuous (f)	7 days (g)	I-131	1×10^{-12} µCi/ml
	Particulate Sample	Continuous (f)	7 days (g)	Principal Gamma Emitters (c)	1×10^{-11} µCi/ml
				Gross Alpha	1×10^{-11} µCi/ml
	Composite Particulate Sample	Continuous (f)	92 days	Sr-89	1×10^{-11} µCi/ml
				Sr-90	1×10^{-11} µCi/ml

See the notes on the next page.

Table D 3.2.1-1 (Page 2 of 2)
Radioactive Gaseous Waste Sampling and Analysis

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

For a particular measurement system, which may include radiochemical separation:

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

where:

LLD	=	The before-the-fact lower limit of detection (μCi per unit mass or volume),
S_b	=	The standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),
E	=	The counting efficiency (counts per disintegration),
V	=	The sample size (units of mass or volume),
2.22×10^6	=	The number of disintegrations per minute per μCi,
Y	=	The fractional radiochemical yield, when applicable,
λ	=	The radioactive decay constant for the particular radionuclide (sec^{-1}), and
Δt	=	The elapsed time between the midpoint of sample collection and the time of counting (seconds).

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

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

(b) Sample and analysis before PURGE is used to determine permissible PURGE rates. Sample and analysis during actual PURGE is used for offsite dose calculations.

(c) The principal gamma emitters for which the LLD applies include the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 in noble gas releases and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141 and Ce-144 in iodine and particulate releases. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Radioactive Effluent Release Report pursuant to Technical Specification 5.6.3 in the format outlined in RG 1.21, Appendix B, Revision 1, June 1974.

(d) If the main stack or reactor/radwaste building isotopic monitor is not OPERABLE, sampling and analysis shall also be performed following shutdown, startup, or when there is an alarm on the offgas pretreatment monitor.

(e) H-3 grab samples shall be taken once every 7 days from the reactor/radwaste ventilation system when fuel is offloaded until stable H-3 release levels can be demonstrated.

(f) The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with DLCO 3.2.1.b and DLCO 3.2.3.

(g) When the release rate of the main stack or reactor/radwaste building vent exceeds its alarm setpoint, the iodine and particulate device shall be removed and analyzed to determine the changes in iodine and particulate release rates. The analysis shall be done once per 24 hours until the release no longer exceeds the alarm setpoint. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10.

(h) Complete prior to each release.

RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE RATE

CONTROLS

DLCO 3.2.1 — 3.11.2.1 The dose rate from radioactive materials released in gaseous effluents from the site to areas at or beyond the SITE BOUNDARY (see Figure 5.1.3-1) shall be limited to the following:

D 1.0-1

a. For noble gases: Less than or equal to 500 mrem/yr to the whole body and less than or equal to 3000 mrem/yr to the skin, and

b. For iodine-131, for iodine-133, for tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to 1500 mrem/yr to any organ.

APPLICABILITY: At all times.

ACTION:

Condition A A.1 — With the dose rate(s) exceeding the above limits, immediately restore the release rate to within the above limit(s).

SURVEILLANCE REQUIREMENTS

3.2.1.1 — 4.11.2.1.1 The dose rate from noble gases in gaseous effluents shall be determined to be within the above limits of DLCO 3.2.1 in accordance with the methodology and parameters in the ODCM.

DSR 3.2.1.2 — 4.11.2.1.2 The dose rate from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the above limits of DLCO 3.2.1 in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.11.2-1 (in accordance with Table D 3.2.1-1).

D3.2.1-1

D 3.2.1-1

TABLE 4.11.2-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

GASEOUS RELEASE TYPE	SAMPLE TYPE	SAMPLING FREQUENCY	ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD)[a] (uCi/ml)
. Containment(b)		Each PURGE	P-(A)	Principal Gamma Emitters(c)	$1x10^{-4}$
			Each PURGE	H-3 (oxide), Principal Gamma Emitters(c)	$1x10^{-6}$, $1x10^{-4}$
. Main Stack Radwaste/Reactor Building Vent		M(d) 31 days	31 days M(d)	Principal Gamma Emitters(c)	$1x10^{-4}$
		Grab Sample	M(e)	H-3 (oxide)	$1x10^{-6}$
		M(e) 31 days Continuous(f)	31 days W(g) Charcoal Sample	I-131	$1x10^{-12}$
		Continuous(f)	7 days W(g) Particulate Sample	Principal Gamma Emitters(c)	$1x10^{-11}$
				Gross Alpha	$1x10^{-11}$
		Continuous(f)	Q 92 days Composite Particulate Sample	Sr-89, Sr-90	$1x10^{-11}$

D3.2.1-1

TABLE 4.11.2-1 (Continued)

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

TABLE NOTATIONS

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

For a particular measurement system, which may include radiochemical separation:

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

Where:

LLD	=	The before-the-fact lower limit of detection (microcuries per unit mass or volume)
S_b	=	the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute)
E	=	the counting efficiency (counts per disintegration)
V	=	the sample size (units of mass or volume)
2.22×10^6	=	the number of disintegrations per minute per micro curie
Y	=	the fractional radiochemical yield, when applicable
λ	=	the radioactive decay constant for the particular radionuclide (sec^{-1})
Δt	=	the elapsed time between the midpoint of sample collection and the time of counting (seconds)

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

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

D3.2.1-1

TABLE 4.11.2-1 (Continued)

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

TABLE NOTATIONS

(b) Sample and analysis before PURGE is used to determine permissible PURGE rates. Sample and analysis during actual PURGE is used for offsite dose calculations.

(c) The principal gamma emitters for which the LLD CONTROL applies include the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 in noble gas releases and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141, and Ce-144 in iodine and particulate releases. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to CONTROL 6.9.1.8 in the format outlined in RG 1.21, Appendix B, Revision 1, June 1974. Technical Specification 5.6.3

(d) If the main stack or reactor/radwaste building isotopic monitor is not OPERABLE, sampling and analysis shall also be performed following shutdown, startup, or when there is an alarm on the offgas pretreatment monitor.

(e) Tritium grab samples shall be taken weekly from the reactor/radwaste ventilation system when fuel is offloaded until stable tritium release levels can be demonstrated.

(f) The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with CONTROLS 3.11.2.1.b and 3.11.2.3. DLCO 3.2.1.b and DLCO 3.2.3

(g) When the release rate of the main stack or reactor/radwaste building vent exceeds its alarm setpoint, the iodine and particulate device shall be removed and analyzed to determine the changes in iodine and particulate release rates. The analysis shall be done daily until the release no longer exceeds the alarm setpoint. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10.

(h) Complete prior to each release

B 3.2 RADIOACTIVE GASEOUS EFFLUENTS

B 3.2.1 Gaseous Effluents Dose Rate

BASES

This is provided to ensure that the dose rate at any time at and beyond the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR 20 to UNRESTRICTED AREAS.

The annual dose limits are the doses associated with the concentrations of 10 CFR 20, Appendix B, Table 2, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA, either within or outside the SITE BOUNDARY, to annual average concentrations exceeding the limits specified in Appendix B, Table 2 of 10 CFR 20 or as governed by 10 CFR 20.1302(c). For MEMBERS OF THE PUBLIC who may at times be within the SITE BOUNDARY, the occupancy of that MEMBER OF THE PUBLIC will usually be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in Part II. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to a MEMBER OF THE PUBLIC at or beyond the SITE BOUNDARY to less than or equal to 500 mrem/year to the whole body or to less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to a child via the inhalation pathway to less than or equal to 1500 mrem/year. This applies to the release of radioactive materials in gaseous effluents from all units at the site.

The required detection capabilities for radioactive materials in gaseous waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environments Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

RADIOACTIVE EFFLUENTS

BASES

LIQUID EFFLUENTS

DOSE

3/4.11.1.2 (continued)

Revision 1, October 1977 and R.G. 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. This CONTROL applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

— Page Break —

3.1.3 3/4.11.1.3 LIQUID RADWASTE TREATMENT SYSTEM

B 3.1

Insert ① → The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment before release to the environment. The requirement that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept as low as is reasonably achievable. This CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50 and the design objective given in Section II.D of Appendix I to 10 CFR 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I to 10 CFR 50 for liquid effluents. This CONTROL applies to the release of radioactive materials in liquid effluents from each unit at the site. For units with shared radwaste treatment systems, the liquid effluents from the shared system are to be proportioned among the units sharing that system.

I B 3.1-1

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Gaseous Effluents Do

B 3.2.

3.2

3/4.11.2 Radioactive GASEOUS EFFLUENTS

3/4.11.2.1 Gaseous Effluents DOSE RATE

This CONTROL is provided to ensure that the dose rate at any time at and beyond the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR 20 to UNRESTRICTED AREAS.

① The installed [redacted] radwaste treatment system shall be considered OPERABLE [redacted] DLCO 3.1.1 and DLCO 3.1.2

3/4.11.2.1 (Continued)

The annual dose limits are the doses associated with the concentrations of 10 CFR 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA, either within or outside the SITE BOUNDARY, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR 20.106(b). For MEMBERS OF THE PUBLIC who may at times be within the SITE BOUNDARY, the occupancy of that MEMBER OF THE PUBLIC will usually be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in the ODCM. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to a MEMBER OF THE PUBLIC at or beyond the SITE BOUNDARY to less than or equal to 50 mrem/year to the whole body or to less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to a child via the inhalation pathway to less than or equal to 1500 mrem/year. This CONTROL applies to the release of radioactive materials in gaseous effluents from all units at the site.

The required detection capabilities for radioactive materials in gaseous waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environments Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

3/4.11.2.2 ~~DOSE - NOBLE GASES~~ GASEOUS EFFLUENTS NOBLE GAS DOSE

This CONTROL is provided to implement the requirements of Section II.B, III.A, and IV.A of Appendix I to 10 CFR 50. The CONTROL 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 to UNRESTRICTED AREAS 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 guidelines of Appendix I be shown by calculational procedures based on models and data so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The dose calculation methodology and parameters established in the ODCM for calculating the doses from the actual release rates of radioactive noble gases

DISCUSSION OF CHANGES
D 3.2.2 Gaseous Effluents Noble Gas Dose

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Gaseous Effluents Noble Gas Dose, the new Specification number is D 3.2.2 Actions from 3.11.4, Total Dose, were relocated to D 3.2.2.

D 3.2 RADIOACTIVE GASEOUS EFFLUENTS

D 3.2.2 Gaseous Effluents Noble Gas Dose

DLCO 3.2.2 The air dose from noble gases released in gaseous effluents from each unit to areas at or beyond the SITE BOUNDARY (Figure D 1.0-1) shall be limited to:

a. During any calendar quarter: ≤ 5 mrad for gamma radiation and ≤ 10 mrad for beta radiation and

b. During any calendar year: ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation.

APPLICABILITY: At all times.

ACTIONS

----------NOTES ----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The air dose at or beyond the SITE BOUNDARY due to noble gases released in gaseous effluents exceeds limits.	A.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that (1) Identifies the cause(s) for exceeding the limit(s) and (2) Defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with DLCO 3.2.2.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Calculated dose to a MEMBER OF THE PUBLIC from the release of radioactive materials in gaseous effluents due to noble gases exceeds 2 times the limits.	B.1 Calculate the annual dose to a MEMBER OF THE PUBLIC which includes contributions from direct radiation from the units (including outside storage tanks, etc.). AND	Immediately
	B.2 Verify that the limits of DLCO 3.4 have not been exceeded.	Immediately
C. Required Action B.2 and Associated Completion time not met.	C.1 Special Report, as defined in 10 CFR 20.2203 (a)(4), of Required Action A.1 shall also include the following: (1) The corrective action(s) to be taken to prevent recurrence of exceeding the limits of DLCO 3.4 and the schedule for achieving conformance, (2) An analysis that estimates the dose to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s), and (3) Describes the levels of radiation and concentrations of radioactive material involved and the cause of the exposure levels or concentrations.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.2.2.1	Determine cumulative dose contributions for the current calendar quarter and current calendar year.	31 days

RADIOACTIVE EFFLUENTS

GASEOUS EFFLUENTS

D 1.0-1

DOSE - NOBLE GASES - Noble Gas Dose

CONTROLS

Dec 3.2.2 3.11.2.2 The air dose from noble gases released in gaseous effluents from each unit, to areas at or beyond the SITE BOUNDARY (see Figure 6.1.3-1) shall be limited to the following:

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

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

APPLICABILITY: At all times.

ACTION:

4.1.1

A.1 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 Technical Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

NOTES b. The provisions of CONTROLS 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

Dec 3.2.2.1 4.11.2.2 Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

RADIOACTIVE EFFLUENTS

3/4.11.4 TOTAL DOSE

CONTROLS

DLCO 3.4

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

APPLICABILITY: At all times.

ACTION:

Condition B of 3.1.2, 3.2.2, and 3.2.3

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of CONTROLS 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, calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the above limits of CONTROL 3.11.4 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.2 a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.405(c), shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

B.1 B.2 — 10 CFR 20.405(c) — 4.1.1 — Condition C of 3.1.2, 3.2.2 and 3.2.3 — C.1 — Condition A — A.1 — 3.1

NOTES

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

SURVEILLANCE REQUIREMENTS

Already included in 3.1.2, 3.2.2 and 3.2.3

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with CONTROLS 4.11.1.2, 4.11.2.2, and 4.11.2.3, and in accordance with the methodology and parameters in the ODCM.

DSR 3.4.1

4.11.4.2 Cumulative dose contributions from direct radiation from the units (including outside storage tanks, etc.) shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in ACTION a of CONTROL 3.11.4.1.

As required by 3.1.2, 3.2.2, 3.2.3, or 3.4.

B 3.2 RADIOACTIVE GASEOUS EFFLUENTS

B 3.2.2 Gaseous Effluents Noble Gas Dose

BASES

This is provided to implement the requirements of Section II.B, III.A, and IV.A of Appendix I to 10 CFR 50. The DLCO implements the guides set forth in Section II.B of Appendix I. The REQUIRED ACTIONS 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 to UNRESTRICTED AREAS 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 guidelines of Appendix I be shown by calculational procedures based on models and data so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. The dose calculation methodology and parameters for calculating the doses from the actual release rates of radioactive noble in gaseous effluents are consistent with the methodology provided in RG 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 RG 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1," July 1977. The ODCM equations provided for determining the air doses at or beyond the SITE BOUNDARY are based upon real-time meteorological conditions or the historical average atmospheric conditions. This applies to the release of radioactive material in gaseous effluents from each unit at the site.

RADIOACTIVE EFFLUENTS

BASES

GASEOUS EFFLUENTS

DOSE RATE

3/4.11.2.1 (Continued)

The annual dose limits are the doses associated with the concentrations of 10 CFR 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA, either within or outside the SITE BOUNDARY, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR 20.106(b). For MEMBERS OF THE PUBLIC who may at times be within the SITE BOUNDARY, the occupancy of that MEMBER OF THE PUBLIC will usually be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY. Examples of calculations for such MEMBERS OF THE PUBLIC, with the appropriate occupancy factors, shall be given in the ODCM. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to a MEMBER OF THE PUBLIC at or beyond the SITE BOUNDARY to less than or equal to 500 mrem/year to the whole body or to less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to a child via the inhalation pathway to less than or equal to 1500 mrem/year. This CONTROL applies to the release of radioactive materials in gaseous effluents from all units at the site.

The required detection capabilities for radioactive materials in gaseous waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environments Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

3/4.11.2.2 ~~DOSE - NOBLE GASES~~ GASEOUS EFFLUENTS NOBLE GAS DOSE

This CONTROL is provided to implement the requirements of Section II.B, III.A, and IV.A of Appendix I to 10 CFR 50. The CONTROL implements the guides set forth in Section II.B of Appendix I. The ACTIONS 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 to UNRESTRICTED AREAS 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 guidelines of Appendix I be shown by calculational procedures based on models and data so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The dose calculation methodology and parameters established in the ODCM for calculating the doses from the actual release rates of radioactive noble gases

① Insert from 3.4 Radioactive Effluents Total Dose BASES

RADIOACTIVE EFFLUENTS

BASES

GASEOUS EFFLUENTS

DOSE - NOBLE GASES

3/4.11.2.2 (Continued)

in gaseous effluents are consistent with the methodology provided in RG 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 RG 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. The ODCM equations provided for determining the air doses at or beyond the SITE BOUNDARY are based upon real-time meteorological conditions or the historical average atmospheric conditions. This CONTROL applies to the release of radioactive material in gaseous effluents from each unit at the site.

GASEOUS EFFLUENTS

3/4.11.2.3 DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM

This CONTROL is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I to 10 CFR 50. The CONTROL implements 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 to UNRESTRICTED AREAS 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, so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methodology and parameters for calculating the doses from the actual release rates of the subject materials are consistent with the methodology provided in RG 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 RG 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate CONTROLS for iodine-131, iodine-133, tritium, and radioactive material in particulate form with half-lives greater than 8 days are dependent upon the existing radionuclide pathways to man, in the areas at or beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: (1) individual inhalation of airborne radioactive material, (2) deposition of radioactive material onto green leafy vegetation with subsequent consumption by man, (3) deposition onto grassy areas where milk-producing animals and meat-producing animals graze (human consumption of the milk and meat is assumed), and (4) deposition on the

RADIOACTIVE EFFLUENTS

BASES

3.4 RADIOACTIVE ~~GASEOUS~~ EFFLUENTS

3.4.A TOTAL DOSE

This CONTROL is provided to meet the dose limitations of 40 CFR 190 that have been incorporated into 10 CFR 20 by 46 FR 18525. The CONTROL requires the preparation and submittal of a Special Report whenever the calculated doses from releases of radioactivity and from radiation from uranium fuel cycle sources exceed 25 mrem to the whole body or any organ, except the thyroid (which shall be limited to less than or equal to 75 mrem). For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR 20, as addressed in CONTROLS 3.11.1.1 and 3.11.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which the individual is engaged in carrying out any operation that is part of the nuclear fuel cycle.

3.1.1 and 3.2.1

move to Bases sections of 3.1.2, 3.2.2 and 3.2.3

DISCUSSION OF CHANGES

D 3.2.3 Gaseous Effluents – I-131, I-133, H-3 and Radioactive Material in Particulate Form

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Gaseous Effluents – I-131, I-133, H-3 and Radioactive Material in Particulate Form, the new Specification number is D 3.2.3 Actions from 3.11.4, Total Dose, were relocated to D 3.2.3.

D 3.2 RADIOACTIVE GASEOUS EFFLUENTS

D 3.2.3 Gaseous Effluents Dose – I-131, I-133, H-3 and Radioactive Material in Particulate Form

DLCO 3.2.3 The dose to a MEMBER OF THE PUBLIC from I-131, I-133, H-3, and all radioactive material in particulate form with half-lives > 8 days in gaseous effluents released, from each unit, to areas at or beyond the SITE BOUNDARY (Figure D 1.0-1) shall be limited to:

a. During any calendar quarter: ≤ 7.5 mrem to any organ and

b. During any calendar year: ≤ 15 mrem to any organ.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------
1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The dose from I-131, I-133, H-3 and radioactive material in particulate form with half-lives > 8 days released in gaseous effluents at or beyond the SITE BOUNDARY exceeds limits.	A.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that (1) Identifies the cause(s) for exceeding the limit(s) and (2) Defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with DLCO 3.2.3.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Calculated dose to a MEMBER OF THE PUBLIC from the release of radioactive materials in gaseous effluents exceeds 2 times the limits.	B.1 Calculate the annual dose to a MEMBER OF THE PUBLIC which includes contributions from direct radiation from the units (including outside storage tanks, etc.). AND B.2 Verify that the limits of DLCO 3.4 have not been exceeded.	Immediately Immediately
C. Required Action B.2 and Associated Completion time not met.	C.1 Special Report, as defined in 10 CFR 20.2203 (a)(4), of Required Action A.1 shall also include the following: (1)The corrective action(s) to be taken to prevent recurrence of exceeding the limits of DLCO 3.4 and the schedule for achieving conformance, (2)An analysis that estimates the dose to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s), and (3)Describes the levels of radiation and concentrations of radioactive material involved and the cause of the exposure levels or concentrations.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.2.3.1	Determine cumulative dose contributions for the current calendar quarter and current calendar year for I-131, I-133, H-3 and radioactive material in particulate form with half-lives > 8 days.	31 days

RADIOACTIVE EFFLUENTS

GASEOUS EFFLUENTS

DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM

D1.0-1

CONTROLS

3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, iodine-133, tritium, and all radioactive material in particulate form with half-lives greater than 8 days in gaseous effluents released, from each unit, to areas at or beyond the SITE BOUNDARY (see Figure 5.1.3-1) shall be limited to the following:

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

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

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of iodine-131, iodine-133, tritium, and radioactive material in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.3, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

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

SURVEILLANCE REQUIREMENTS

4.11.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, iodine-133, tritium and radioactive material in particulate form with half-lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

RADIOACTIVE EFFLUENTS

3/4.11.4 TOTAL DOSE

CONTROLS

DLCO 3.4

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

APPLICABILITY: At all times.

ACTION:

Condition B of 3.1.2, 3.2.2, and 3.2.3

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of CONTROLS 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, calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the above limits of CONTROL 3.11.4 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.2, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.405(c), shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

B.1 B.2 C.1 A.1 B.1

10 CFR 20.405(c) 6.9.1

Condition C of 3.1.2, 3.2.2 and 3.2.3

Condition A

NOTES

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

SURVEILLANCE REQUIREMENTS

Already included in 3.1.2, 3.2.2 and 3.2.3

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with CONTROLS 4.11.1.2, 4.11.2.2, and 4.11.2.3, and in accordance with the methodology and parameters in the ODCM.

DSR 3.4.1

4.11.4.2 Cumulative dose contributions from direct radiation from the units (including outside storage tanks, etc.) shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in ACTION a of CONTROL 3.11.4.1

As required by 3.1.2, 3.2.2, 3.2.3, or 3.4.

B 3.2 RADIOACTIVE GASEOUS EFFLUENTS

B 3.2.3 Gaseous Effluents Dose – Iodine-131, Iodine-133, Tritium, and Radioactive Material In Particulate Form

BASES

This is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I to 10 CFR 50. The DLCO implements the guides set forth in Section II.C of Appendix I. The REQUIRED ACTIONS 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 to UNRESTRICTED AREAS will be kept as low as is reasonably achievable. The 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, so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. . For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. The calculational methodology and parameters for calculating the doses from the actual release rates of the subject materials are consistent with the methodology provided in RG 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 RG 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate DLCO for iodine-131, iodine-133, tritium, and radioactive material in particulate form with half-lives greater than 8 days are dependent upon the existing radionuclide pathways to man, in the areas at or beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: (1) individual inhalation of airborne radioactive material, (2) deposition of radioactive material onto green leafy vegetation

B 3.2.3 Gaseous Effluents Dose – Iodine-131, Iodine-133, Tritium, and Radioactive Material In Particulate Form (continued)

with subsequent consumption by man, (3) deposition onto grassy areas where milk-producing animals and meat-producing animals graze (human consumption of the milk and meat is assumed), and (4) deposition on the ground with subsequent exposure to man. This applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

RADIOACTIVE EFFLUENTS

BASES

GASEOUS EFFLUENTS

DOSE - NOBLE GASES

3/4.11.2.2 (Continued)

in gaseous effluents are consistent with the methodology provided in RG 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 RG 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1," July 1977. The ODCM equations provided for determining the air doses at or beyond the SITE BOUNDARY are based upon real-time meteorological conditions or the historical average atmospheric conditions. This CONTROL applies to the release of radioactive material in gaseous effluents from each unit at the site.

3/4.11.2.3 DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM

This CONTROL is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I to 10 CFR 50. The CONTROL implements 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 to UNRESTRICTED AREAS 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, so that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methodology and parameters for calculating the doses from the actual release rates of the subject materials are consistent with the methodology provided in RG 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 RG 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate CONTROLS for iodine-131, iodine-133, tritium, and radioactive material in particulate form with half-lives greater than 8 days are dependent upon the existing radionuclide pathways to man, in the areas at or beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: (1) individual inhalation of airborne radioactive material, (2) deposition of radioactive material onto green leafy vegetation with subsequent consumption by man, (3) deposition onto grassy areas where milk-producing animals and meat-producing animals graze (human consumption of the milk and meat is assumed), and (4) deposition on the

ground with subsequent exposure to man. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

Page Break

3/4.11.2.4 & 3/4.11.2.5 GASEOUS RADWASTE TREATMENT SYSTEM AND VENTILATION EXHAUST TREATMENT SYSTEM

Insert ① → 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 before 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 CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50, and the design objectives given in Section II.D of Appendix I to 10 CFR 50. Limits governing the use of appropriate portions of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I to 10 CFR 50, for gaseous effluents. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportional among the units sharing that system.

Page Break

3.2.6 3/4.11.2.8 VENTING OR PURGING

VENTING or PURGING 3.2.6

This CONTROL provides reasonable assurance that releases from drywell and/or suppression chamber purging operations will not exceed the annual dose limits of 10 CFR 20 for unrestricted areas.

① The installed VENTILATION EXHAUST TREATMENT SYSTEM shall be considered OPERABLE by meeting DLCO 3.2.1 or DLCO 3.2.3.

RADIOACTIVE EFFLUENTS

BASES

3.4 RADIOACTIVE ~~GASEOUS~~ EFFLUENTS

3/4.4.A TOTAL DOSE

This CONTROL is provided to meet the dose limitations of 40 CFR 190 that have been incorporated into 10 CFR 20 by 46 FR 18525. The CONTROL requires the preparation and submittal of a Special Report whenever the calculated doses from releases of radioactivity and from radiation from uranium fuel cycle sources exceed 25 mrem to the whole body or any organ, except the thyroid (which shall be limited to less than or equal to 75 mrem). For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR 20, as addressed in CONTROLS 3.11.1.1 and 3.11.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which the individual is engaged in carrying out any operation that is part of the nuclear fuel cycle.

3.1.1 and 3.2.1

move to Bases sections of 3.1.2, 3.2.2 and 3.2.3

DISCUSSION OF CHANGES
D 3.2.4 Gaseous Radwaste Treatment System

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Gaseous Radwaste Treatment System, the new Specification number is D 3.2.4.

D 3.2 RADIOACTIVE GASEOUS EFFLUENTS

D 3.2.4 Gaseous Radwaste Treatment System

DLCO 3.2.4 The GASEOUS RADWASTE TREATMENT SYSTEM shall be in operation.

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

ACTIONS

----------NOTES ----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The gaseous radwaste from the main condenser air ejector system is being discharged without treatment.	A.1 Restore treatment of gaseous radwaste effluent.	7 days
B. Required Action and associated Completion Time not met.	B.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that includes the following: (1) Identification of any inoperable equipment or subsystems and the reason for the inoperability, (2) Action(s) taken to restore the inoperable equipment to OPERABLE status, and (3) Summary description of action(s) taken to prevent a recurrence.	30 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DSR 3.2.4.1	Check the readings of the relevant instruments to ensure that the GASEOUS RADWASTE TREATMENT SYSTEM is functioning.	12 hours

RADIOACTIVE EFFLUENTS

GASEOUS EFFLUENTS

GASEOUS RADWASTE TREATMENT SYSTEM

CONTROLS

DLCO 3.2.4 ~~3.11.2.4~~ The GASEOUS RADWASTE TREATMENT SYSTEM shall be in operation.

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

ACTION:

Condition A — a. With gaseous radwaste from the main condenser air ejector system being discharged without treatment for more than 7 days, ~~prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.2,~~ a Special Report that includes the following information. (4.1.1)

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

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

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

TSS — b. The provisions of CONTROLS 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

DSR 3.2.4.1 ~~4.11.2.4~~ The readings of the relevant instruments shall be checked every 12 hours when the main condenser air ejector is in use to ensure that the gaseous radwaste treatment system is functioning.

B 3.2 RADIOACTIVE GASEOUS EFFLUENTS

B 3.2.4 Gaseous Radwaste Treatment System

BASES

The OPERABILITY of the GASEOUS RADWASTE TREATMENT SYSTEM ensures that the system will be available for use whenever gaseous effluents require treatment before release to the environment. The requirement that the appropriate portions of this system 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 implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50, and the design objectives given in Section II.D of Appendix I to 10 CFR 50. Limits governing the use of appropriate portions of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I to 10 CFR 50, for gaseous effluents. This applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportional among the units sharing that system.

GASEOUS EFFLUENTS

DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM

3(4/11).2.3 (Continued)

ground with subsequent exposure to man. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

Page Break

3.2.5

3(4/11).2.4 & 3(4/11).2.5 GASEOUS RADWASTE TREATMENT SYSTEM AND VENTILATION EXHAUST TREATMENT SYSTEM 3.2.4 make separate sect

Insert ① → 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 before 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 CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50, and the design objectives given in Section II.D of Appendix I to 10 CFR 50. Limits governing the use of appropriate portions of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I to 10 CFR 50, for gaseous effluents. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportional among the units sharing that system.

Page Break

3.2.6 (3/4 11-2.3) VENTING OR PURGING

VENTING or PURGING D 3.2.

This CONTROL provides reasonable assurance that releases from drywell and/or suppression chamber purging operations will not exceed the annual dose limits of 10 CFR 20 for unrestricted areas.

① The installed VENTILATION EXHAUST TREATMENT SYSTEM shall be considered OPERABLE by meeting DLCO 3.2.1 or DLCO 3.2.3.

ins to 3.2.5 only

DISCUSSION OF CHANGES
D 3.2.5 Ventilation Exhaust Treatment System

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Ventilation Exhaust Treatment System, the new Specification number is D 3.2.5.

D 3.2 RADIOACTIVE GASEOUS EFFLUENTS

D 3.2.5 Ventilation Exhaust Treatment System

DLCO 3.2.5 The VENTILATION EXHAUST TREATMENT SYSTEM shall be OPERABLE.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The radioactive gaseous waste is being discharged without treatment. AND Projected doses in 31 days from iodine and particulate releases, from each unit, to areas at or beyond the SITE BOUNDARY (see Figure D 1.0-1) would exceed 0.3 mrem to any organ of a MEMBER OF THE PUBLIC.	A.1 Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that includes the following: (1) Identification of any inoperable equipment or subsystems and the reason for the inoperability, (2) Action(s) taken to restore the inoperable equipment to OPERABLE status, and (3) Summary description of action(s) taken to prevent a recurrence.	30 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DSR 3.2.5.1	----------NOTE---------- Only required to be met when the VENTILATION EXHAUST TREATMENT SYSTEM is not being fully utilized. ---------- Project the doses from iodine and particulate releases from each unit to areas at or beyond the SITE BOUNDARY.	31 days

RADIOACTIVE EFFLUENTS

GASEOUS EFFLUENTS

VENTILATION EXHAUST TREATMENT SYSTEM

CONTROLS

DCO 3.3.5 3.11.2.5 The VENTILATION EXHAUST TREATMENT SYSTEM shall be OPERABLE and appropriate portions of this system shall be used to reduce releases of radioactivity when the projected doses in 31 days from iodine and particulate releases, from each unit, to areas at or beyond the SITE BOUNDARY (see Figure 5.1.3-1) would exceed 0.3 mrem to any organ of a MEMBER OF THE PUBLIC.

>1.0-1

APPLICABILITY: At all times. Condition A

ACTION:

a. With radioactive gaseous waste being discharged without treatment and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to ~~Technical Specification~~ 6.9.2 a Special Report that includes the following information: 4.1.1

A

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

A.1

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

NOTES

SURVEILLANCE REQUIREMENTS

DSR 3.3.5.1 ~~4.11.2.5.1~~ Doses from iodine and particulate releases from each unit to areas at or beyond the SITE BOUNDARY shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM when the VENTILATION EXHAUST TREATMENT SYSTEM is not being fully utilized.

~~4.11.2.5.2~~ The installed VENTILATION EXHAUST TREATMENT SYSTEM shall be considered OPERABLE by meeting CONTROLS 3.3.2.1 or 3.3.2.3.

DLCO DLCO

move to BASES

B 3.2 RADIOACTIVE GASEOUS EFFLUENTS

B 3.2.5 Ventilation Exhaust Treatment System

BASES

The OPERABILITY of the VENTILATION EXHAUST TREATMENT SYSTEM ensures that the system will be available for use whenever gaseous effluents require treatment before release to the environment. The requirement that the appropriate portions of this system 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 implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50, and the design objectives given in Section II.D of Appendix I to 10 CFR 50. Limits governing the use of appropriate portions of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I to 10 CFR 50, for gaseous effluents. This applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportional among the units sharing that system.

The appropriate components, which affect iodine or particulate release, to be OPERABLE are:

1) HEPA Filter – Radwaste Decon Area
2) HEPA Filter – Radwaste Equipment Area
3) HEPA Filter – Radwaste General Area

Whenever one of these filters is not OPERABLE, iodine and particulate dose projections will be made for 31-day intervals starting with filter inoperability, and continuing as long as the filter remains inoperable, in accordance with DSR 3.2.5.1.

GASEOUS EFFLUENTS

DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM

3/4.11.2.3 (Continued)

ground with subsequent exposure to man. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

Page Break

3.2.5

3/4.11.2.4 & 3/4.11.2.5 GASEOUS RADWASTE TREATMENT SYSTEM AND VENTILATION EXHAUST TREATMENT SYSTEM 3.2.4

make Separate Sect.

Insert ① → 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 before 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 CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50, and the design objectives given in Section II.D of Appendix I to 10 CFR 50. Limits governing the use of appropriate portions of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I to 10 CFR 50, for gaseous effluents. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportional among the units sharing that system.

Page Break

3.2.6 3/4.11.2.6 VENTING OR PURGING

VENTING or PURGE B 3.2.

This CONTROL provides reasonable assurance that releases from drywell and/or suppression chamber purging operations will not exceed the annual dose limits of 10 CFR 20 for unrestricted areas.

① The installed VENTILATION EXHAUST TREATMENT SYSTEM shall be considered OPERABLE by meeting DLCO 3.2.1 or DLCO 3.2.3.

Link 3.2.5 Only

DISCUSSION OF CHANGES
D 3.2.6 Venting or Purging

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Venting or Purging, the new Specification number is D 3.2.6.

D 3.2 RADIOACTIVE GASEOUS EFFLUENTS

D 3.2.6 Venting or Purging

DLCO 3.2.6 VENTING or PURGING of the drywell and/or suppression chamber shall be through the standby gas treatment system.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.

2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. VENTING or PURGING of the drywell and/or suppression chamber not through the standby gas treatment system.	A.1 Suspend all VENTING and PURGING of the drywell and/or suppression chamber.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.2.6.1	The drywell and/or suppression chamber shall be determined to be aligned for VENTING or PURGING through the standby gas treatment system.	Within 4 hours before start of VENTING or PURGING AND 12 hours thereafter during VENTING or PURGING

RADIOACTIVE EFFLUENTS

GASEOUS EFFLUENTS

VENTING OR PURGING

CONTROLS

LCO 3.2.8 3.11.2.8 VENTING or PURGING of the drywell and/or suppression chamber shall be through the standby gas treatment system.*

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

A / A.1 a. With the requirements of the above CONTROL not satisfied, suspend all VENTING and PURGING of the drywell and/or suppression chamber.

NOTES b. The provisions of CONTROLS 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.2.8.1 4.11.2.8.1 The drywell and/or suppression chamber shall be determined to be aligned for VENTING or PURGING through the standby gas treatment system within 4 hours before start of and at least once per 12 hours during VENTING or PURGING.

* See Technical Specification 3.6.5.3.

B 3.2 RADIOACTIVE GASEOUS EFFLUENTS

B 3.2.6 Venting or Purging

BASES

This provides reasonable assurance that releases from drywell and/or suppression chamber purging operations will not exceed the annual dose limits of 10 CFR 20 for unrestricted areas.

RADIOACTIVE EFFLUENTS

BASES

GASEOUS EFFLUENTS

DOSE - IODINE-131, IODINE-133, TRITIUM, AND RADIOACTIVE MATERIAL IN PARTICULATE FORM

3/4 11.2.3 (Continued)

ground with subsequent exposure to man. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

page break

3/4 11.2.4 & 3/4 11.2.5 GASEOUS RADWASTE TREATMENT SYSTEM AND VENTILATION EXHAUST TREATMENT SYSTEM

3.2.4 — 3.2.5 make separate sections

Insert ① → 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 before 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 CONTROL implements the requirements of 10 CFR 50.36a, GDC 60 of Appendix A to 10 CFR 50, and the design objectives given in Section II.D of Appendix I to 10 CFR 50. Limits governing the use of appropriate portions of the system were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I to 10 CFR 50, for gaseous effluents. This CONTROL applies to the release of radioactive materials in gaseous effluents from each unit at the site. For units with shared radwaste treatment systems, the gaseous effluents from the shared system are proportional among the units sharing that system.

page break

VENTING OR PURGING → 3.2.6

3.2.6 3/4 11.2.6 VENTING OR PURGING

This CONTROL provides reasonable assurance that releases from drywell and/or suppression chamber purging operations will not exceed the annual dose limits of 10 CFR 20 for unrestricted areas.

① The installed VENTILATION EXHAUST TREATMENT SYSTEM shall be considered OPERABLE when DLCO 3.2.1 or DLCO 3.2.3.

(Add 3.2.5 only)

DISCUSSION OF CHANGES
D 3.3.1 Radioactive Liquid Effluent Monitoring Instrumentation

ADMINISTRATIVE

1. In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

   In the specific case of the Radioactive Liquid Effluent Monitoring Instrumentation, the new Specification number is D 3.3.1 and Table D 3.3.1-1.

2. The specification ACTIONS are modified by a Note, which provides clarification that, for the purpose of the associated DLCO, "Separate Condition entry is allowed for each channel." This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable channel. Complying with the Required Actions will allow for continued operation, with subsequent inoperable channels governed by subsequent Condition entry and application of associated Required Actions. This is an administrative change with no impact on safety because the clarifications provided by the Note are consistent with the existing interpretation of the CTS.

3. The Applicability specified in CTS 3.3.7.9, Radioactive Liquid Effluent Monitoring Instrumentation, was "During releases via this pathway." This applied to all Functions, including the Tank Level Indicating Devices. The Action defined for an inoperable Tank Level Indicating Device was as follows: "With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continue provided the tank liquid level is estimated during all liquid additions to the tank. Since the Applicability of "During releases via this pathway" is not relevant to the tanks and since the most extreme Action required for an inoperable indicator is to stop liquid additions to the tank, the Applicability for Tank Level Indicating Devices is revised to be "During liquid addition to the associated tank. Since this Applicability is extracted from the current Specification, this change is considered administrative.

D 3.3 INSTRUMENTATION

D 3.3.1 Radioactive Liquid Effluent Monitoring Instrumentation

DLCO 3.3.1 The radioactive liquid effluent monitoring instrumentation channels shown in Table D 3.3.1-1 shall be OPERABLE with:

a. The minimum OPERABLE channel(s) in service.

b. The alarm/trip setpoints set to ensure that the limits of DLCO 3.1.1 are not exceeded.

APPLICABILITY: According to Table D 3.3.1-1.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.
3. Separate condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required.	A.1 Suspend the release of radioactive liquid effluents monitored by the affected channel.	Immediately
	OR	
	A.2 Declare the channel inoperable.	Immediately
	OR	
	A.3 Change the setpoint so it is acceptably conservative.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more required channels inoperable.	B.1 Enter the Condition referenced in Table D 3.3.1-1 for the channel. AND	Immediately
	B.2 Restore inoperable channel(s) to OPERABLE status.	30 days
C. As required by Required Action B.1 and referenced in Table D 3.3.1-1.	C.1 Analyze at least 2 independent samples in accordance with Table D 3.1.1-1. AND	Prior to initiating a release
	C.2 ----------NOTE---------- Verification Action will be performed by at least 2 separate technically qualified members of the facility staff. ---------- Independently verify the release rate calculations and discharge line valving.	Prior to initiating a release
D. As required by Required Action B.1 and referenced in Table D 3.3.1-1.	D.1 Collect and analyze grab samples for radioactivity at a limit of detection of at least 5×10^{-7} μCi/ml.	12 hours AND Once per 12 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. As required by Required Action B.1 and referenced in Table D 3.3.1-1.	E.1 ----------NOTE---------- Pump performance curves generated in place may be used to estimate flow. ---------- Estimate the flow rate during actual releases.	4 hours AND Once per 4 hours thereafter
F. As required by Required Action B.1 and referenced in Table D 3.3.1-1.	F.1 Estimate tank liquid level.	Immediately AND During liquid additions to the tank
G. Required Action B.2 and associated Completion Time not met.	G.1 Explain in the next Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.	In accordance with Radioactive Effluent Release Report
H. Required Action and associated Completion Time for Condition C, D, or E not met.	H.1 Suspend liquid effluent releases monitored by the inoperable channel(s).	Immediately
I. Required Action and associated Completion Time for Condition F not met.	I.1 Suspend liquid additions to the tank monitored by the inoperable channel(s).	Immediately

SURVEILLANCE REQUIREMENTS

NOTE
Refer to Table D 3.3.1-1 to determine which DSRs apply for each function.

	SURVEILLANCE	FREQUENCY
DSR 3.3.1.1	Perform CHANNEL CHECK.	24 hours
DSR 3.3.1.2	Perform CHANNEL CHECK by verifying indication of flow during periods of release.	24 hours on any day on which continuous, periodic, or batch releases are made
DSR 3.3.1.3	Perform SOURCE CHECK.	Prior to release
DSR 3.3.1.4	Perform SOURCE CHECK.	31 days
DSR 3.3.1.5	Perform CHANNEL FUNCTIONAL TEST. The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if the instrument indicates measured levels above the alarm/trip setpoint; and control room alarm annunciation occurs for instrument indication levels measured above the alarm setpoint, circuit failure, instrument indicating a downscale failure, or instrument controls not set in operate mode.	31 days
DSR 3.3.1.6	Perform CHANNEL FUNCTIONAL TEST.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
DSR 3.3.1.7	Perform CHANNEL FUNCTIONAL TEST. The CHANNEL FUNCTIONAL TEST shall also demonstrate control room alarm annunciation occurs for instrument indication levels measured above the alarm setpoint, circuit failure, instrument indicating a downscale failure, or instrument controls not set in operate mode.	184 days
DSR 3.3.1.8	Perform CHANNEL CALIBRATION. The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST), standards that are traceable to NIST standards, or using actual samples of liquid effluents that have been analyzed on a system that has been calibrated with NIST traceable sources. These standards shall permit calibrating the system over its intended range of energy and measurement. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration may be used.	18 months
DSR 3.3.1.9	Perform CHANNEL CALIBRATION.	18 months

Table D 3.3.1-1 (page 1 of 1)
Radioactive Liquid Effluent Monitoring Instrumentation

INSTRUMENT	APPLICABILITY OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER INSTRUMENT	CONDITIONS REFERENCED FROM REQUIRED ACTION B.1	SURVEILLANCE REQUIREMENTS
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release				
Liquid Radwaste Effluent Line	(a)	1	C	DSR 3.3.1.1 DSR 3.3.1.3 DSR 3.3.1.5 DSR 3.3.1.8
2. Radioactivity Monitors Providing Alarm but not Providing Automatic Termination of Release				
a. Service Water Effluent Line A	(a)	1	D	DSR 3.3.1.1 DSR 3.3.1.4 DSR 3.3.1.7 DSR 3.3.1.8
b. Service Water Effluent Line B	(a)	1	D	DSR 3.3.1.1 DSR 3.3.1.4 DSR 3.3.1.7 DSR 3.3.1.8
c. Cooling Tower Blowdown Line	(a)	1	D	DSR 3.3.1.1 DSR 3.3.1.4 DSR 3.3.1.7 DSR 3.3.1.8
3. Flow Rate Measurement Devices				
a. Liquid Radwaste Effluent Line	(a)	1	E	DSR 3.3.1.2 DSR 3.3.1.6 DSR 3.3.1.9
b. Service Water Effluent Line A	(a)	1	E	DSR 3.3.1.2 DSR 3.3.1.6 DSR 3.3.1.9
c. Service Water Effluent Line B	(a)	1	E	DSR 3.3.1.2 DSR 3.3.1.6 DSR 3.3.1.9
d. Cooling Tower Blowdown Line	(a)	1	E	DSR 3.3.1.2 DSR 3.3.1.6 DSR 3.3.1.9
4. Tank Level Indicating Devices (c)	(b)	1	F	DSR 3.3.1.1 DSR 3.3.1.6 DSR 3.3.1.9

(a) During releases via this pathway.
(b) During liquid addition to the associated tank.
(c) Tanks included in this DLCO are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the truck contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system, such as temporary tanks.

3.3 INSTRUMENTATION

~~MONITORING INSTRUMENTATION~~

3.3.1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

DLCO 3.1.1

D3.3.1-1

CONTROLS

DLCO 3.3.1

a. b. 3.3.7.9 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3.7.9-1 shall be OPERABLE with their Alarm/Trip Setpoints set to ensure that the limits of CONTROL 3.11.1.1 are not exceeded. The Alarm/Trip Setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY: ~~During releases via this pathway.~~ According to Table D 3.3.1-1

ACTION:

A. A.1 With a radioactive liquid effluent monitoring instrumentation channel Alarm/Trip Setpoint less conservative than required by the above control, immediately suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

A.3 A.2

B. B.1, C.2 3.3.1-G G.1 With the number of channels OPERABLE less than the Minimum Channels OPERABLE requirement, take the ACTION shown in Table 3.3.7.9-1 to restore the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next ~~Quarterly~~ Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

NOTES c. The provisions of CONTROLS 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.9 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 at the frequencies shown in Table 4.3.7.9-1.

3.3.1-1

DSR 3.3.1.1,2

DSR 3.3.1.3,4

DSR 3.3.1.8,9

DSR 3.3.1.5,6,7

NOTES — Separate condition entry is allowed for each channel.

D 3.3.1-1

TABLE 3.3.7.9-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release		
Liquid Radwaste Effluent Line	1	128 — Comine c
2. Radioactivity Monitors Providing Alarm but not Providing Automatic Termination of Release		
a. Service Water Effluent Line A	1	130 — Condition D
b. Service Water Effluent Line B	1	130
c. Cooling Tower Blowdown Line	1	130
3. Flow Rate Measurement Devices		
a. Liquid Radwaste Effluent Line	1	131 — Condi- tE
b. Service Water Effluent Line A	1	131
c. Service Water Effluent Line B	1	131
d. Cooling Tower Blowdown Line	1	131
4. Tank Level Indicating Devices*	1	132 — Condition

move to BASES

* Tanks included in this control are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system, such as temporary tanks.

D3.3.1-1

TABLE 3.3.7.9-1 (Continued)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

TABLE NOTATIONS

ACTION 128 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may continue provided that before initiating a release:

Condition C

C.1 a. At least two independent samples are an lyzed in accordance with Surveillance 4.11.1.1.1, and

C.2 b. At least two technically qualified members of the facility staff independently verify the release rate calculations and discharge line valving;

H.1 Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 129 - Not used.

ACTION 130 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided that, at least once per 12 hours, grab samples are collected and analyzed for radioactivity at a limit of detection of at least 5×10^{-7} microcuries/ml.

Condition D

D.1

ACTION 131 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue, provided the flow rate is estimated at least once per 4 hours during actual releases. Pump performance curves generated in place may be used to estimate flows.

Condition E

E.1

ACTION 132 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continue provided the tank liquid level is estimated during all liquid additions to the tank.

Condition F

F.1

I.1

D3.3.1-1

TABLE 4.3.7.9-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release	DSR 3.3.1.1	DSR 3.3.1.3	DSR 3.3.1.8	DSR 3.3.1.5
Liquid Radwaste Effluent Line	D	P	R(c)	M(a)(b)
2. Radioactivity Monitors Providing Alarm but not Providing Automatic Termination of Release		DSR 3.3.1.4		DSR 3.3.1.7
a. Service Water Effluent Line A	D	M	R(c)	SA(b)
b. Service Water Effluent Line B	D	M	R(c)	SA(b)
c. Cooling Tower Blowdown Line	D	M	R(c)	SA(b)
3. Flow Rate Measurement Devices	DSR 3.3.1.2		DSR 3.3.1.9	DSR 3.3.1.6
a. Liquid Radwaste Effluent Line	D(d)	NA	R	Q
b. Service Water Effluent Line A	D(d)	NA	R	Q
c. Service Water Effluent Line B	D(d)	NA	R	Q
d. Cooling Tower Blowdown Line	D(d)	NA	R	Q
4. Tank Level Indicating Devices*	D**	NA	R	Q

* Tanks included in this control are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system, such as temporary tanks.

** During liquid additions to the tank.

Move to Bases

D3.3.1-1

TABLE 4.3.7.9-1 (Continued)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATIONS

3.3.1.5(a) **The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if the instrument indicates measured levels above the Alarm/Trip Setpoint.**

3.3.1.5 3.3.1.7 (b) **The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:**

(1) Instrument indicates measured levels above the Alarm Setpoint, or
(2) Circuit failure, or
(3) Instrument indicates a downscale failure, or
(4) Instrument controls not set in operate mode.

3.3.1.8 (c) **The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) (NBS), standards that are traceable to the (NBS) NIST standards, or using actual samples of liquid effluents that have been analyzed on a system that has been calibrated with National Institute of Standards and Testing traceable sources. These standards shall permit calibrating the system over its intended range of energy and measurement. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration may be used.**

3.3.1.2 (d) **CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.**

* When the technical specification change is complete to delete the procedural details that are being transferred to the ODCM, then the NBS will be changed to the correct NIST

B 3.3 INSTRUMENTATION

B 3.3.1 Radioactive Liquid Effluent Monitoring Instrumentation

BASES

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 of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in Part II to ensure that the alarm/trip will occur before exceeding ten times the limits of 10 CFR 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of GDC 60, 63, and 64 of Appendix A to 10 CFR 50. The purpose of tank level indicating devices is to assure the detection and control of leaks that if not controlled could potentially result in the transport of radioactive materials to UNRESTRICTED AREAS.

Tanks included are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system, such as temporary tanks.

INSTRUMENTATION

BASES

3.3.1 ~~3/4.3.7.9~~ RADIOACTIVE LIQUID EFFLUENT MONITORING 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 of liquid effluents. The alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur before exceeding ~~ten times~~ the limits of 10 CFR 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of GDC 60, 63, and 64 of Appendix A to 10 CFR 50. The purpose of tank level indicating devices is to assure the detection and control of leaks that if not controlled could potentially result in the transport of radioactive materials to UNRESTRICTED AREAS.

part II

Insert (1)

Page Break — I B 3.3-1

Radioactive ... Instrumentation B 3.

3.3.2 ~~3/4.3.7.10~~ RADIOACTIVE GASEOUS EFFLUENT MONITORING 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 of gaseous effluents. The alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur before exceeding ~~ten times~~ the limits of 10 CFR 20. The range of the noble gas channels of the main stack and radwaste/reactor building vent effluent monitors is sufficiently large to envelope both normal and accident levels of noble gas activity. The capabilities of these instruments are consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1980 and NUREG-0737, "Clarification of the TMI Action Plan Requirements," November 1980. This instrumentation also includes provisions for monitoring and controlling the concentrations of potentially explosive gas mixtures in the offgas system. The OPERABILITY and use of this instrumentation is consistent with the requirements of GDC 60, 63, and 64 of Appendix A to 10 CFR 50.

part II

(1) Tanks included are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system, such as temporary tanks

DISCUSSION OF CHANGES
D 3.3.2 Radioactive Gaseous Effluent Monitoring Instrumentation

ADMINISTRATIVE

1. In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

   In the specific case of the Radioactive Gaseous Effluent Monitoring Instrumentation, the new Specification number is D 3.3.2 and Table D 3.3.2-1. The hydrogen monitoring for explosive mixtures requirements have been retained in this section. They will be transferred to the TRM in accordance with the guidance of NUREG-1302, in the next revision of the ODCM.

2. The specification ACTIONS are modified by a Note, which provides clarification that, for the purpose of the associated DLCO, "Separate Condition entry is allowed for each channel." This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable channel. Complying with the Required Actions will allow for continued operation, with subsequent inoperable channels governed by subsequent Condition entry and application of associated Required Actions. This is an administrative change with no impact on safety because the clarifications provided by the Note are consistent with the existing interpretation of the CTS.

3. For the Offgas System Noble Gas Activity Monitoring, the Required Actions for only one inoperable required channel are revised. Currently, with one inoperable channel, effluent releases may continue provided the inoperable channel is placed in the tripped condition within 12 hours. With both required channels inoperable, effluent releases may continue provided grab samples are taken and analyzed at a 12 hour frequency. Placing a channel in the tripped condition inserts a ½ offgas isolation signal. Should a trip be received from the second monitor, the offgas system will isolate and a plant transient is likely. Since for the more severely degraded condition of both monitors being inoperable the Specification allows grab samples to be taken without placing either monitor in the tripped condition, it is reasonable to provide this action as an alternative for the lesser degraded condition of a single monitor being inoperable. Since this option can currently be achieved through the administrative exercise of declaring the second monitor inoperable, this change is simply making the option explicit. As such, this change is considered administrative.

D 3.3 INSTRUMENTATION

D 3.3.2 Radioactive Gaseous Effluent Monitoring Instrumentation

DLCO 3.3.2 The radioactive gaseous effluent monitoring instrumentation channels shown in Table D 3.3.2-1 shall be OPERABLE with:

a. The minimum OPERABLE channel(s) in service.

b. The alarm/trip setpoints set to ensure that the limits of DLCO 3.2.1 are not exceeded.

APPLICABILITY: According to Table D 3.3.2-1.

ACTIONS

----------NOTES ----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.
3. Separate condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required.	A.1 Suspend the release of radioactive gaseous effluents monitored by the affected channel.	Immediately
	OR	
	A.2 Declare the channel inoperable.	Immediately
	OR	
	A.3 Change the setpoint so it is acceptably conservative.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more channels inoperable.	B.1 Enter the Condition referenced in Table D 3.3.2-1 for the channel. AND B.2 Restore inoperable channel(s) to OPERABLE status.	Immediately 30 days
C. As required by Required Action B.1 and referenced in Table D 3.3.2-1.	C.1 Place the inoperable channel in the tripped condition. OR C.2.1 Take grab samples. AND C.2.2 Analyze samples for gross activity.	12 hours 12 hours AND Once per 12 hours thereafter 24 hours from time of sampling completion

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action B.1 and referenced in Table D 3.3.2-1.	D.1 Estimate the flow rate for the inoperable channel(s).	4 hours AND Once per 4 hours thereafter
E. As required by Required Action B.1 and referenced in Table D 3.3.2-1.	E.1 Continuously collect samples using auxiliary sampling equipment as required in Table D 3.2.1-1.	8 hours
F. As required by Required Action B.1 and referenced in Table D 3.3.2-1.	F.1.1 Take grab samples.	12 hours AND Once per 12 hours thereafter
	AND	
	F.1.2 Analyze samples for gross activity with a radioactivity limit of detection of at least 1×10^{-4} µCi/ml.	24 hours from time of sampling completion
	AND	
	F.2.1 Restore the inoperable channel(s) to OPERABLE status. OR	72 hours
	F.2.2 In lieu of another required report, prepare and submit to the NRC, pursuant to D 4.1.1, a special report that: (1) Identifies the cause(s) of the inoperability. (2) Outlines the action taken and the schedule for restoring the system to OPERABLE status	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Required Action B.2 and associated Completion Time not met.	G.1 Explain in the next Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.	In accordance with Radioactive Effluent Release Report frequency
H Required Action and associated Completion Time for Condition C, D, E or F not met.	H.1 Suspend gaseous effluent releases monitored by the inoperable channel(s).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.3.2.1	Perform CHANNEL CHECK.	24 hours
DSR 3.3.2.2	Perform CHANNEL CHECK.	7 days
DSR 3.3.2.3	Perform SOURCE CHECK.	31 days
DSR 3.3.2.4	Perform CHANNEL FUNCTIONAL TEST. The CHANNEL FUNCTIONAL TEST shall also demonstrate the automatic isolation capability of this pathway and that control room alarm annunciation occurs if the instrument indicates measured levels above the alarm/trip setpoint (each channel will be tested independently so as to not initiate isolation during operation); and control room alarm annunciation occurs for instrument indication levels measured above the alarm setpoint, circuit failure, instrument indicating a downscale failure, and instrument controls not set in operate mode.	31 days
DSR 3.3.2.5	Perform CHANNEL FUNCTIONAL TEST.	92 days
DSR 3.3.2.6	Perform CHANNEL FUNCTIONAL TEST. The CHANNEL FUNCTIONAL TEST shall also demonstrate control room alarm annunciation occurs for instrument indication levels measured above the alarm setpoint, circuit failure, instrument indicating a downscale failure, and instrument controls not set in operate mode.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
DSR 3.3.2.7	Perform CHANNEL CALIBRATION. The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST, or using actual samples of gaseous effluents that have been analyzed on a system that has been calibrated with NIST traceable sources. These standards shall permit calibrating the system over its intended range of energy and measurement. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration may be used. The CHANNEL CALIBRATION shall also demonstrate that automatic isolation of this pathway occurs when the instrument channels indicate measured levels above the Trip Setpoint.	18 months
DSR 3.3.2.8	Perform CHANNEL CALIBRATION.	18 months
DSR 3.3.2.9	Perform CHANNEL CALIBRATION. The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NIST, or using actual samples of gaseous effluents that have been analyzed on a system that has been calibrated with NIST traceable sources. These standards shall permit calibrating the system over its intended range of energy and measurement. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration may be used.	18 months

Table D 3.3.2-1 (page 1 of 2)
Radioactive Gaseous Effluent Monitoring Instrumentation

INSTRUMENT	APPLICABILITY OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER INSTRUMENT	CONDITIONS REFERENCED FROM REQUIRED ACTION B.1	SURVEILLANCE REQUIREMENTS
1. Offgas System				
a. Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release	(a)	2	C	DSR 3.3.2.1 DSR 3.3.2.4 DSR 3.3.2.7
b. System Flow-Rate Measuring Device	(a)	1	D	DSR 3.3.2.1 DSR 3.3.2.5 DSR 3.3.2.8
c. Sample Flow-Rate Measuring Device	(a)	2	D	DSR 3.3.2.1 DSR 3.3.2.5 DSR 3.3.2.8
2. Offgas System Explosive Gas Monitoring System – Retained in the RETS r				
3. Radwaste/Reactor Building Vent Effluent System				
a. Noble Gas Activity Monitor (c)	(b)	1	F	DSR 3.3.2.1 DSR 3.3.2.3 DSR 3.3.2.6 DSR 3.3.2.9
b. Iodine Sampler	(b)	1	E	DSR 3.3.2.2
c. Particulate Sampler	(b)	1	E	DSR 3.3.2.2
d. Flow-Rate Monitor	(b)	1	D	DSR 3.3.2.1 DSR 3.3.2.5 DSR 3.3.2.8
e. Sample Flow-Rate Monitor	(b)	1	D	DSR 3.3.2.1 DSR 3.3.2.5 DSR 3.3.2.8

(continued)

(a) During offgas system operation.

(b) At all times.

(c) Includes high range noble gas monitoring capability.

Table D 3.3.2-1 (page 2 of 2)
Radioactive Gaseous Effluent Monitoring Instrumentation

INSTRUMENT	APPLICABILITY OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER INSTRUMENT	CONDITIONS REFERENCED FROM REQUIRED ACTION B.1	SURVEILLANCE REQUIREMENTS
4. Main Stack Effluent				
a. Noble Gas Activity Monitor (c)	(b)	1	F	DSR 3.3.2.1 DSR 3.3.2.3 DSR 3.3.2.6 DSR 3.3.2.9
b. Iodine Sampler	(b)	1	E	DSR 3.3.2.2
c. Particulate Sampler	(b)	1	E	DSR 3.3.2.2
d. Flow-Rate Monitor	(b)	1	D	DSR 3.3.2.1 DSR 3.3.2.5 DSR 3.3.2.8
e. Sample Flow-Rate Monitor	(b)	1	D	DSR 3.3.2.1 DSR 3.3.2.5 DSR 3.3.2.8

(b) At all times.

(c) Includes high range noble gas monitoring capability.

INSTRUMENTATION

MONITORING INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

D3.3.2-1 DLCO 3.2.1

LCO 3.3.2

3.3.7.10 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3.7.10-1 shall be OPERABLE with their Alarm/Trip Setpoints set to ensure that the limits of CONTROL 3.11.2.1 are not exceeded. The Alarm/Trip Setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: ~~As shown in~~ Table 3.3.7.10-1

According to D3.3.2-1

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel Alarm/Trip Setpoint less conservative than required by the above control, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

Condition A — A.1 — A.3 — A.2 — D3.3.2-1

b. With the number of channels OPERABLE less than the Minimum Channels OPERABLE requirement, take the ACTION shown in Table 3.3.7.10-1. Restore the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next ~~Annual~~ Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

Condition B — B.1 — B.2.1 — Condition G — G.1

NOTES

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

SURVEILLANCE REQUIREMENTS

4.3.7.10 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 4.3.7.10-1.

D 3.3.2-1

DSR 3.3.2.1 through DSR 3.3.2.9

D 3.3.2-1

TABLE 3.3.7.10-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. Offgas System		OR OTHER SPECIAL CONDITIONS	
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	2	a *	135 — Condition
b. System Flow-Rate Measuring Device	1	*	136 — Condition
c. Sampler Flow-Rate Measuring Device	2	*	136
2. Offgas System Explosive Gas Monitoring System - Retained in the RETS			
3. Radwaste/Reactor Building Vent Effluent System		b	
a. Noble Gas Activity Monitor†	1	††	139 — Condition F
b. Iodine Sampler	1	††	138 — Condition I
c. Particulate Sampler	1	††	138
d. Flow-Rate Monitor	1	††	136 — Condition D
e. Sample Flow-Rate Monitor	1	††	136
4. Main Stack Effluent			
a. Noble Gas Activity Monitor† — C	1	††	139 — Condition F
b. Iodine Sampler	1	††	138 — Condition E
c. Particulate Sampler	1	††	138
d. Flow-Rate Monitor	1	††	136 — Condition
e. Sample Flow-Rate Monitor	1	††	136

D 3.3.2-1

TABLE 3.3.7.10-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

TABLE NOTATIONS

Special Condition a – (*) During offgas system operation.

a.1 – (†) Includes high range noble gas monitoring capability.

b – (††) At all times.

ACTIONS

ACTION 135 – (a.) With the number of OPERABLE channels one less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the inoperable channel is placed in the tripped condition within 12 hours.

Condition C
C.1

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

Condition C
C.2.1
C.2.2

ACTION 136 – With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate for the inoperable channel(s) is estimated at least once per 4 hours.

Condition D
D.1

ACTION 137 – Retained in the RETS.

ACTION 138 – With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected starting within 8 hours of discovery using auxiliary sampling equipment as required in Table 4.11.2-1.

Condition E
E.1

D 3.2.1-1

ACTION 139 – (c.) With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for gross activity within 24 hours for a radioactivity limit of detection of at least 1×10^{-4} microcurie/ml.

Condition F
F.1.1
F.1.2

(d.) Restore the inoperable channel(s) to OPERABLE status within 72 hours or in lieu of another report required by Technical Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Technical Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the schedule for restoring the system to OPERABLE status.

F.2.1
F.2.2

D 4.1.1

D 3.3.2-1

TABLE 4.3.7.10-1

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Offgas System					
a. Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release	D	NA	R(a,e)	M(b,c)	**
b. System Flow-Rate Measuring Device	D	NA	R	Q	**
c. Sample Flow-Rate Measuring Device	D	NA	R	Q	**
2. Offgas System Explosive Gas Monitoring System - Retained in RETS					
3. Radwaste/Reactor Building Vent Effluent System					
a. Noble Gas Activity Monitor	D	M	R(a)	Q(c)	*
b. Iodine Sampler	W	NA	NA	NA	*
c. Particulate Sampler	W	NA	NA	NA	*
d. Flow-Rate Monitor	D	NA	R	Q	*
e. Sample Flow-Rate Monitor	D	NA	R	Q	*

D 3.3.2-1

TABLE 4.3.7.10-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Main Stack Effluent					
a. Noble Gas Activity Monitor (1) — Special Condition c	D W W	M	R(a)	Q(c)	Special condition b
b. Iodine Sampler	D	NA	NA	NA	
c. Particulate Sampler	D	NA	R	Q	
d. Flow-Rate Monitor		NA	R	Q	
e. Sample Flow-Rate Monitor		NA			

DSR 3.3.2.1 — DSR 3.3.2.3 — DSR 3.3.2.9 — DSR 3.3.2.6 — DSR 3.3.2.5 — DSR 3.3.2.8

TABLE 4.3.7.10-1 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATIONS

(*) At all times.

(**) During offgas system operation.

(f) Includes high range noble gas monitoring capability.

(a) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS, or using actual samples of gaseous effluents that have been analyzed on a system that has been calibrated with NBS traceable sources. These standards shall permit calibrating the system over its intended range of energy and measurement. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration may be used.

(b) The CHANNEL FUNCTIONAL TEST shall also demonstrate the automatic isolation capability of this pathway and that control room alarm annunciation occurs if the instrument indicates measured levels above the Alarm/Trip Setpoint (each channel will be tested independently so as to not initiate isolation during operation).

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

(1) Instrument indicates measured levels above the alarm setpoint.
(2) Circuit failure.
(3) Instrument indicates a downscale failure.
(4) Instrument controls not set in operate mode.

(d) Retained in RETS

(e) The CHANNEL CALIBRATION shall also demonstrate that automatic isolation of this pathway occurs when the instrument channels indicate measured levels above the Trip Setpoint.

B 3.3 INSTRUMENTATION

B 3.3.2 Radioactive Gaseous Effluent Monitoring Instrumentation

BASES

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in Part II to ensure that the alarm/trip will occur before exceeding the limits of 10 CFR 20. The range of the noble gas channels of the main stack and radwaste/reactor building vent effluent monitors is sufficiently large to envelope both normal and accident levels of noble gas activity. The capabilities of these instruments are consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1980 and NUREG-0737, "Clarification of the TMI Action Plan Requirements," November 1980. This instrumentation also includes provisions for monitoring and controlling the concentrations of potentially explosive gas mixtures in the offgas system. The OPERABILITY and use of this instrumentation is consistent with the requirements of GDC 60, 63, and 64 of Appendix A to 10 CFR 50.

INSTRUMENTATION

BASES

3.3.1 3/4.3.7.9 RADIOACTIVE LIQUID EFFLUENT MONITORING 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 of liquid effluents. The Alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur before exceeding the limits of 10 CFR 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of GDC 60, 63, and 64 of Appendix A to 10 CFR 50. The purpose of tank level indicating devices is to assure the detection and control of leaks that if not controlled could potentially result in the transport of radioactive materials to UNRESTRICTED AREAS.

Insert ① — Page Break — I B 3.3-1

3.3.2 3/4.3.7.10 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Radioactive ... Instrumentation
B 3

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The Alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur before exceeding the limits of 10 CFR 20. The range of the noble gas channels of the main stack and radwaste/reactor building vent effluent monitors is sufficiently large to envelope both normal and accident levels of noble gas activity. The capabilities of these instruments are consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1980 and NUREG-0737, "Clarification of the TMI Action Plan Requirements," November 1980. This instrumentation also includes provisions for monitoring and controlling the concentrations of potentially explosive gas mixtures in the offgas system. The OPERABILITY and use of this instrumentation is consistent with the requirements of GDC 60, 63, and 64 of Appendix A to 10 CFR 50.

① Tanks included are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents and do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system, such as temporary tanks

DISCUSSION OF CHANGES
D 3.4 Radioactive Effluents Total Dose

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Radioactive Effluents Total Dose, the new Specification number is D 3.4.

D 3.4 RADIOACTIVE EFFLUENTS TOTAL DOSE

D 3.4 Radioactive Effluents Total Dose

DLCO 3.4 The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to ≤ 25 mrem to the whole body or any organ, except the thyroid, which shall be limited to ≤ 75 mrem.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Estimated dose or dose commitment due to direct radiation and the release of radioactive materials in liquid or gaseous effluents exceeds the limits.	A.1 Verify the condition resulting in doses exceeding these limits has been corrected.	Immediately
B. Required Action and associated Completion Time not met.	B.1 ----------NOTE---------- This is the Special Report required by D 3.1.2, D 3.2.2, or D 3.2.3 supplemented with the following. ---------- Submit a Special Report, pursuant to D 4.1.1, including a request for a variance in accordance with the provisions of 40 CFR 190. This submission is considered a timely request, and a variance is granted until staff action on the request is complete.	30 days

RADIOACTIVE EFFLUENTS

3/4.11.4 TOTAL DOSE

CONTROLS

DLCO 3.4

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

APPLICABILITY: At all times.

ACTION:

Condition B of 3.1.2, 3.2.2, and 3.2.3

B.1 B.2

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of CONTROLS 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, calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the above limits of CONTROL 3.11.4 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.2 a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.405(c), shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

10 CFR 20.2203 (a)(4) 4.1.1

Condition C of 3.1.2, 3.2.2 and 3.2.3

C.1

Condition A

A.1 B.1

NOTES

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

SURVEILLANCE REQUIREMENTS

Already included in 3.1.2, 3.2.2 and 3.2.3

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with CONTROLS 4.11.1.2, 4.11.2.2, and 4.11.2.3 and in accordance with the methodology and parameters in the ODCM.

DSR 3.4.1

4.11.4.2 Cumulative dose contributions from direct radiation from the units (including outside storage tanks, etc.) shall be determined in accordance with the methodology and parameters in the ODCM. This requirement is applicable only under conditions set forth in ACTION a of CONTROL 3.11.4.2

As required by 3.1.2, 3.2.2, 3.2.3, or 3.4.

B 3.4 RADIOACTIVE EFFLUENTS TOTAL DOSE

BASES

This is provided to meet the dose limitations of 40 CFR 190 that have been incorporated into 10 CFR 20 by 46 FR 18525. This requires the preparation and submittal of a Special Report whenever the calculated doses from releases of radioactivity and from radiation from uranium fuel cycle sources exceed 25 mrem to the whole body or any organ, except the thyroid (which shall be limited to less than or equal to 75 mrem). If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR 20, as addressed in 3.1.1 and 3.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which the individual is engaged in carrying out any operation that is part of the nuclear fuel cycle.

RADIOACTIVE EFFLUENTS

BASES

3.4 RADIOACTIVE ~~GASEOUS~~ EFFLUENTS

3.4.1 TOTAL DOSE

This CONTROL is provided to meet the dose limitations of 40 CFR 190 that have been incorporated into 10 CFR 20 by 46 FR 18525. The CONTROL requires the preparation and submittal of a Special Report whenever the calculated doses from releases of radioactivity and from radiation from uranium fuel cycle sources exceed 25 mrem to the whole body or any organ, except the thyroid (which shall be limited to less than or equal to 75 mrem). For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the units including outside storage tanks, etc., are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 5 miles must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR 190 have not already been corrected), in accordance with the provisions of 40 CFR 190.11 and 10 CFR 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR 20, as addressed in CONTROLS 3.11.1.1 and 3.11.2.1. 3.1.1 and 3.2.1

An individual is not considered a MEMBER OF THE PUBLIC during any period in which the individual is engaged in carrying out any operation that is part of the nuclear fuel cycle.

move to Bases sections of 3.1.2, 3.2.2 and 3.2.3

Delete from this section

DISCUSSION OF CHANGES
D 3.5.1 Monitoring Program

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS. Due to the seasonal nature of the environmental sampling, and because the sampling program is performed in conjunction with Unit 1 and the James A. Fitzpatrick plant, the Surveillance Frequency Notation has not been changed to conform to the ITS usage, but remains in accordance with the Radiological Effluent Monitoring Program (REMP).

In the specific case of the Monitoring Program, the new Specification number is D 3.5.1 and Table D 3.5.1-1, Table D 3.5.1-2, and Table D 3.5.1-3.

D 3.5 RADIOLOGICAL ENVIRONMENTAL MONITORING

D 3.5.1 Monitoring Program

DLCO 3.5.1 The Radiological Environmental Monitoring Program shall be conducted as specified in Table D 3.5.1-1.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.
2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Radiological Environmental Monitoring Program not conducted as specified in Table D 3.5.1-1.	A.1 Prepare and submit to the NRC in the Annual Radiological Environmental Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.	In accordance with the Annual Radiological Environmental Operating Report frequency
B. Level of radioactivity in an environmental sampling medium at a specified location exceeds the reporting levels of Table D 3.5.1-2 when averaged over any calendar quarter. OR	B.1 ----------NOTES---------- 1. Only applicable if the radioactivity/radionuclides are the result of plant effluents. 2. For radionuclides other than those in Table D 3.5.1-2, this report shall indicate the methodology and parameters used to estimate the potential annual dose to a MEMBER OF THE PUBLIC. ----------	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
More than one of the radionuclides in Table D 3.5.1-2 are detected in the environmental sampling medium and Concentration 1 / reporting level 1 + concentration 2 / reporting level 2 + ... ≥ 1.0. OR Radionuclides other than those in Table D 3.5.1-2 are detected in an environmental sampling medium at a specified location which are the result of plant effluents and the potential annual dose to a MEMBER OF THE PUBLIC from all radionuclides is ≥ the calendar year limits of D 3.1.2, D 3.2.2 or D 3.2.3.	Prepare and submit to the NRC, pursuant to D 4.1.1, a Special Report that (1) Identifies the cause(s) for exceeding the limit(s) and (2) Defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a MEMBER OF THE PUBLIC is less than the calendar year limits of D 3.1.2, D 3.2.2, or D 3.2.3. OR B.2 ----------NOTES---------- 1. Only applicable if the radioactivity/radionuclides are not the result of plant effluents. 2. For radionuclides other than those in Table D 3.5.1-2, this report shall indicate the methodology and parameters used to estimate the potential annual dose to a MEMBER OF THE PUBLIC. ---------- Report and describe the condition in the Annual Radiological Environmental Operating Report.	30 days In accordance with the Annual Radiological Environmental Operating Report frequency

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Milk or fresh leafy vegetation samples unavailable from one or more of the sample locations required by Table D 3.5.1-1.	C.1 Identify specific locations for obtaining replacement samples and add them to the Radiological Environmental Monitoring Program. AND	30 days
	C.2 Delete the specific locations from which samples were unavailable from the Radiological Environmental Monitoring Program. AND	30 days
	C.3 Pursuant to Technical Specification 5.6.3, submit in the next Radioactive Effluent Release Report documentation for a change in the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples and justifying the selection of the new location(s) for obtaining samples.	In accordance with the Radioactive Effluent Release Report
D. Environmental samples required in Table D 3.5.1-1 are unobtainable due to sampling equipment malfunctions.	D.1 Ensure all efforts are made to complete corrective action(s). AND	Prior to the end of the next sampling period
	D.2 Report all deviations from the sampling schedule in the Annual Radiological Environmental Operating Report.	In accordance with the Annual Radiological Environmental Operating Report

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Samples required by Table D 3.5.1-1 not obtained in the media of choice, at the most desired location, or at the most desired time.	E.1 Choose suitable alternative media and locations for the pathway in question. AND	30 days
	E.2 Make appropriate substitutions in the Radiological Environmental Monitoring Program. AND	30 days
	E.3 Submit in the next Radioactive Effluent Release Report documentation for a change in the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples for that pathway and justifying the selection of the new location(s) for obtaining samples.	In accordance with the Radioactive Effluent Release Report

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.5.1.1	Collect and analyze radiological environmental monitoring samples pursuant to the requirements of Table D 3.5.1-1 and the detection capabilities required by Table D 3.5.1-3.	In accordance with Table D 3.5.1-1

Table D 3.5.1-1 (page 1 of 4)
Radiological Environmental Monitoring Program

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES STATIONS	SAMPLE LOCATIONS (a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
1. Direct Radiation	32 routine monitoring stations (b)	(1) An inner ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY (2) An outer ring of stations, one in each land base meteorological sector in the 4 to 5 mile (c) range from the site (3) The balance of the stations should be placed in special interest areas such as population centers, nearby residences, schools, and in one or two areas to serve as control stations (d)	Once per 3 months	Gamma dose: once per 3 months
2. Airborne Radioiodine and Particulates	5 locations	(1) 3 samples from offsite locations close to the site boundary (within 1 mile) in different sectors (e) (2) 1 sample from the vicinity of an established year-round community (e) (3) 1 sample from a control location, at least 10 miles distant and in a least prevalent wind direction (d)	Continuous sampler operation with sample collection weekly or more frequently if required by dust loading	Radioiodine canister: Analyze weekly for I-131 Particulate sampler: (1) Analyze for gross beta radioactivity $\geq$ 24 hours following filter change (f). (2) Perform gamma isotopic analysis on each sample (g) in which gross beta activity is > 10 times the previous yearly mean of control samples. (3) Gamma isotopic analysis of composite sample (g) (by location) once per 3 months
3. Waterborne				
a. Surface	1 sample	Upstream (d) (h)	Composite sample over a one month period (i)	(1) Gamma isotopic analysis of each sample (g) once per month (2) H-3 analysis of each composite sample and once per 3 months
	1 sample	Site's downstream cooling water intake (h)		
b. Ground	As required	From one or two sources if likely to be affected (j)	Grab sample once per 3 months	(1) Gamma isotopic analysis of each sample (g) once per 3 months (2) H-3 analysis of each sample once per 3 months

(continued)

Table D 3.5.1-1 (page 2 of 4)
Radiological Environmental Monitoring Program

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES	SAMPLE LOCATIONS (a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. Waterborne (continued)				
c. Drinking	1 sample of each	One to three of the nearest water supplies that could be affected by its discharge (k)	When I-131 analysis is performed, a composite sample over a two week period (i); otherwise, a composite sample monthly	(1) I-131 analysis on each composite sample when the dose calculated for the consumption of the water is greater than 1 mrem/yr (l) (2) Gross beta and gamma isotopic analyses of each composite sample (g) monthly (3) H-3 analysis of each composite sample once per 3 months
d. Sediment from Shoreline	1 sample	From a downstream area with existing or potential recreational value	Twice per year	Gamma isotopic analysis of each sample (g)
4. Ingestion				
a. Milk	(1) 3 samples from MILK SAMPLING LOCATIONS	In 3 locations within 3.5 miles (e)	Twice per month, April through December (m)	(1) Gamma isotopic (g) and I-131 analysis of each sample twice per month April through December (2) Gamma isotopic (g) and I-131 analysis of each sample once per month January through March if required
	(2) If there are none, then 1 sample from MILK SAMPLING LOCATIONS	In each of 3 areas 3.5-5.0 miles distant (e)		
	(3) 1 sample from a MILK SAMPLING LOCATION	At a control location 9-20 miles distant and in a least prevalent wind direction (d)		
b. Fish	(1) 1 sample each of 2 commercially or recreationally important species (n)	In the vicinity of a plant discharge area	Twice per year	Gamma isotopic analysis of each sample (g) on edible portions twice per year
	(2) 1 sample of the same species	In areas not influenced by station discharge (d)		

(continued)

Table D 3.5.1-1 (page 3 of 4)
Radiological Environmental Monitoring Program

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES	SAMPLE LOCATIONS (a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. Ingestion (continued)				
c. Food Products	(1) 1 sample of each principal class of food products	Any area that is irrigated by water in which liquid plant wastes have been discharged (o)	At time of harvest (p)	Gamma isotopic (g) and I-131 analysis of each sample of edible portions
	(2) Samples of 3 different kinds of broad leaf vegetation (such as vegetables)	Grown nearest to each of 2 different offsite locations (e)	Once per year during the harvest season-	
	(3) 1 sample of each of the similar broad leaf vegetation.	Grown at least 9.3 miles distant in a least prevalent wind direction	Once per year during the harvest season	

Table D 3.5.1-1 (page 4 of 4)
Radiological Environmental Monitoring Program

(a) Specific parameters of distance and direction sector from the centerline of one reactor, and additional descriptions where pertinent, shall be provided for each and every sample location in Table D 3.5.1-1. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable because of such circumstances as hazardous conditions, seasonal unavailability (which includes theft and uncooperative residents), or malfunction of automatic sampling equipment.

(b) One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to integrating dosimeters. Each of the 32 routine monitoring stations shall be equipped with 2 or more dosimeters or with 1 instrument for measuring and recording dose rate continuously. For the purpose of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; 2 or more phosphors in a packet are considered as 2 or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation.

(c) At this distance, 8 windrose sectors (W, WNW, NW, NNW, N, NNE, NE, and ENE) are over Lake Ontario.

(d) The purpose of these samples is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites, which provide valid background data, may be substituted.

(e) Having the highest calculated annual site average ground-level D/Q based on all site licensed reactors.

(f) Airborne particulate sample filters shall be analyzed for gross beta activity 24 hours or more after sampling to allow for radon and thoron daughter decay.

(g) Gamma isotopic analysis means the identification and quantification of gamma –emitting radionuclides that may be attributable to the effluents from the facility.

(h) The upstream sample shall be taken at a distance beyond significant influence of the discharge. The downstream sample shall be taken in an area beyond but near the mixing zone.

(i) In this program, representative composite sample aliquots shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

(j) Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

(k) Drinking water samples shall be taken only when drinking water is a dose pathway.

(l) Analysis for I-131 may be accomplished by Ge-Li analysis provided that the lower limit of detection (LLD) for I-131 in water samples found on Table D 3.5.1-2 can be met. Doses shall be calculated for the maximum organ and age group.

(m) Samples will be collected January through March if I-131 is detected in November and December of the preceding year.

(n) In the event 2 commercially or recreationally important species are not available, after 3 attempts of collection, then 2 samples of one species or other species not necessarily commercially or recreationally important may be utilized.

(o) Applicable only to major irrigation projects within 9 miles of the site in the general downcurrent direction.

(p) If harvest occurs more than once/year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be taken monthly. Attention should be paid to including samples of tuberous and root food products.

Table D 3.5.1-2 (page 1 of 1)
Reporting Levels for Radioactivity in Environmental Samples

RADIONUCLIDE ANALYSIS	WATER (pCi/L)	AIRBORNE PARTIUCLATE OR GASES (pCi/m^3)	FISH (pCi/kg, wet)	MILK (pCi/L)	FOOD PRODUCTS (pCi/kg, wet)
H-3	20,000 (a)				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-95	400				
Nb-95	400				
I-131	2 (b)	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba-140	200			300	
La-140	200			300	

(a) For drinking water samples. This is a 40 CFR 141 value. If no drinking water pathway exists, a value of 30,000 pCi/L may be used.

(b) If no drinking water pathway exists, a value of 20 pCi/L may be used.

Table D 3.5.1-3 (page 1 of 2)
Detection Capabilities for Environmental Sample Analysis [a] [b]

	LOWER LIMIT OF DETECTION (LLD) [c]					
RADIONUCLIDE ANALYSIS	WATER (pCi/L)	AIRBORNE PARTIUCLATE OR GASES (pCi/m^3)	FISH (pCi/kg, wet)	MILK (pCi/L)	FOOD PRODUCTS (pCi/kg, wet)	SEDIMENT (pCi/kg, dry)
Gross Beta	4	0.01				
H-3	2,000 [d]					
Mn-54	15		130			
Fe-59	30		260			
Co-58	15		130			
Co-60	15		130			
Zn-65	30		260			
Zr-95	15					
Nb-95	15					
I-131	1 [e]	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-140	15			15		
La-140	15			15		

See the notes on the next page

Table 3.5.1-3 (page 2 of 2)
Detection Capabilities for Environmental Sample Analysis [(a) (b)]

(a) This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report.

(b) Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in ANSI N-545, Section 4.3 1975. Allowable exceptions to ANSI N-545, Section 4.3 are contained in the ODCM.

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

For a particular measurement system, which may include radiochemical separation:

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

where:

LLD	=	The before-the-fact lower limit of detection (pCi per unit mass or volume),
S_b	=	The standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),
E	=	The counting efficiency (counts per disintegration),
V	=	The sample size (units of mass or volume),
2.22	=	The number of disintegrations per minute per pCi,
Y	=	The fractional radiochemical yield, when applicable,
λ	=	The radioactive decay constant for the particular radionuclide (sec^{-1}), and
Δt	=	The elapsed time between environmental collection or end of the sample collection period, and the time of counting (seconds).

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

It should be recognized that the LLD is defined as a before-the-fact limit representing the capability of a measurement system and not as an 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, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report.

(d) If no drinking water pathway exists, a value of 3,000 pCi/L may be used.

(e) If no drinking water pathway exists, a value of 15 pCi/L may be used.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.1 MONITORING PROGRAM

CONTROLS

LCO 3.5.1 The Radiological Environmental Monitoring Program shall be conducted as specified in Table 3.12.1-1.

APPLICABILITY: At all times.

ACTION:

Condition A

a. With the Radiological Environmental Monitoring Program not being conducted as specified in Table 3.12.1-1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by CONTROL 6.9.1.7 a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

Tech Spec 5.6.2

A.1

NOTES

Condition B

b. With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 3.12.1-2 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days, pursuant to Technical Specification 6.9.2 a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose* to a MEMBER OF THE PUBLIC is less than the calendar year limits of CONTROLS 3.11.1.2, 3.11.2.2, or 3.11.2.3. When more than one of the radionuclides in Table 3.12.1-2 are detected in the sampling medium, this report shall be submitted if:

4.1.1

B.1

2, 3.2.2 or 3.2.3

Condition B

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

When radionuclides other than those in Table 3.12.1-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose* to a MEMBER OF THE PUBLIC from all radionuclides is equal to or greater than the calendar year limits of CONTROL 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 required by CONTROL 6.9.1.7.

B.1

Condition B

Note to B.2

B.2

exceeds the reporting levels of Table 3.3.1-2

Tech Spec 5.6.2

NOTE TO B.1 and B.2

For radionuclides other than those in Table 3.3.1-2, the methodology and parameters used to estimate the potential annual dose to a MEMBER OF THE PUBLIC shall be indicated in this report.

TE To B.4

RADIOLOGICAL ENVIRONMENTAL MONITORING

MONITORING PROGRAM

CONTROLS

LCO 3.5.1 3.12.1 (Continued)

ACTION:

c. With milk or fresh leafy vegetation samples unavailable from one or more of the sample locations required by Table 3.12.1-1, identify specific locations for obtaining replacement samples and add them within 30 days to the Radiological Environmental Monitoring Program. The specific locations from which samples were unavailable may then be deleted from the monitoring program. Pursuant to CONTROL 6.9.1.8, submit in the next Semiannual Radioactive Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table for the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples and justifying the selection of the new location(s) for obtaining samples.

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

SURVEILLANCE REQUIREMENTS

3.5.1.1 4.12.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.12.1-1 from the specific locations given in the table and figure(s) in the ODCM, and shall be analyzed pursuant to the requirements of Table 3.12.1-1 and the detection capabilities required by Table 4.12.1-1.

5

TABLE 3.12.1-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS(a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
1. Direct Radiation	32 routine monitoring stations (b) either with 2 or more dosimeters or with 1 instrument for measuring and recording dose rate continuously, placed as follows: (1) An inner ring of stations, one in each meteorological sector in the general area of the SITE BOUNDARY (2) An outer ring of stations, one in each land base meteorological sector in the 4 to 5-mile* range from the site (3) The balance of the stations should be placed in special interest areas such as population centers, nearby residences, schools, and in one or two areas to serve as control stations (c).	Once per 3 months	Gamma dose once per 3 months

* At this distance, 8 windrose sectors, (W, WNW, NW, NNW, N, NNE, NE, and ENE) are over Lake Ontario.

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS(a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
Airborne Radioiodine and Particulates	Samples from five locations: (1) 3 samples from offsite locations close to the site boundary (within one mile) in different sectors of the highest calculated annual site average ground-level D/Q (based on all site licensed reactors) (e) (2) 1 sample from the vicinity of an established year-round community having the highest calculated annual site average ground-level D/Q (based on all site licensed reactors) (e) (3) 1 sample from a control location, at least 10 miles distant and in a least prevalent wind direction (c)	Continuous sampler operation with sample collection weekly or more frequently if required by dust loading	Radioiodine Canister I-131 analysis weekly Particulate Sampler Gross beta radioactivity ≥ 24 hours following filter change(d) and gamma isotopic analysis(e) of composite (by location) at least quarterly (c) Perform gamma isotopic analysis on each sample (g) in which Gross beta activity is > 10 times the previous yearly mean of control samples (3) Gamma isotopic analysis of composite sample (g) (by location) once per 92 days
3. Waterborne a. Surface	One sample upstream (e)(h) one sample from the site's downstream cooling water intake (h)	Composite sample over 1 month period (g)	(1) Gamma isotopic analysis (g) of each sample once per 31 days; Composite for (2) tritium analysis once per 92 days of each composite sample once per 92 days

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D 3.5.1-1

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS(a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
3. Waterborne (Continued)			
b. Ground	Samples from one or two sources, only if likely to be affected(b)	grab sample once per 92 days	(1) Gamma isotopic analysis of each sample once per 92 days and tritium analysis quarterly (2) H-3 analysis of each sample at least once per 92 days
c. Drinking	1 sample of each of one to three of the nearest water supplies that could be affected by its discharge(b)(k)	Composite sample over a 2-week period(g) when I-131 analysis is performed; otherwise composite sample over a 31 day period	(1) I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.(b)(l) Composite for (2) gross beta and gamma isotopic analyses(b)(g) monthly composite for (3) tritium analysis quarterly composite sample
d. Sediment from Shoreline	1 sample from a downstream area with existing or potential recreational value	Twice per year	Gamma isotopic analysis(b)(g) of each sample

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND SAMPLE LOCATIONS(a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. Ingestion			
a. Milk	(1) Samples from MILK SAMPLING LOCATIONS in three locations within 3.5 miles distance having the highest calculated site average D/Q (based on all licensed site reactors) (2) If there are none, then 1 sample from MILK SAMPLING LOCATIONS in each of three areas 3.5-5.0 miles distant having the highest calculated site average D/Q (based on all licensed site reactors). (3) One sample from a MILK SAMPLING LOCATION at a control location 9-20 miles distant and in a least prevalent wind direction(c)	Twice per month April-December (samples will be collected January-March if I-131 is detected in November and December of the preceding year)	(1) Gamma isotopic(#) and I-131 analysis twice/month when animals are on pasture (April-December); once per month at other times (January-March if required)
b. Fish (1)	One sample each of two commercially or recreationally important species in the vicinity of a plant discharge area(#)	Twice per year	Gamma isotopic analysis(#) on edible portions twice per year
(2)	One sample of the same species in areas not influenced by station discharge(c)		

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	~~NUMBER OF SAMPLES AND~~ SAMPLE LOCATIONS(a)	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSIS
4. Ingestion (Continued)			
c. Food Products	One sample of each principal class of food products from any area that is irrigated by water in which liquid plant wastes have been discharged(f)	At time of harvest(g)	Gamma isotopic(e) analysis of edible portions (isotopic to include I-131)
	(d) Samples of three different kinds of broad leaf vegetation (such as vegetables) grown nearest to each of two different offsite(c) locations of highest calculated site average D/Q (based on all licensed site reactors)	Once per year during the harvest season	Gamma isotopic(e) analysis of edible portions (isotopic to include I-131)
	One sample of each of the similar broad leaf vegetation grown at least 9.3 miles distant in a least prevalent wind direction	Once per year during the harvest season	Gamma isotopic(e) analysis of edible portions (isotopic to include I-131)

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

TABLE NOTATIONS

(a) Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12.1-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable because of such circumstances as hazardous conditions, seasonal unavailability* or malfunction of automatic sampling equipment. If specimens are unobtainable because sampling equipment malfunctions, effort shall be made to complete corrective action before the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to CONTROL 6.9.1.7. It is recognized that, at times, it may not be possible or practical to continue to obtain samples of the media of choice at the most desired location or time. In these instances, suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions may be made within 30 days in the Radiological Environmental Monitoring Program given in the ODCM. Pursuant to CONTROL 6.9.1.8, submit in the next Semiannual Radioactive Effluent Release Report a revised figure(s) and table for the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples for that pathway and justifying the selection of new location(s) for obtaining samples.

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

(c) At this distance, 16 windrose sectors (W, WNW, NW, NNW, N, NNE, NE, and ENE) are over Lake Ontario.

(d) The purpose of these samples is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites, which provide valid background data, may be substituted.

(e) Using the highest calculated annual site average ground-level D/Q based on all site licensed receptors.

(f) Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than 10 times the previous yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

(g) Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

*Seasonal unavailability is meant to include theft and uncooperative residents.

TABLE 3.12.1-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

TABLE NOTATIONS

(f) The upstream sample shall be taken at a distance beyond significant influence of the discharge. The downstream sample shall be taken in an area beyond but near the mixing zone.

(g) In this program, representative composite sample aliquots shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample (refer to the ODCM for definition of representative composite samples).

(h) Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination (see ODCM for discussion).

(i) Drinking water samples shall be taken only when drinking water is a dose pathway (see ODCM for discussion).

(j) Analysis for I-131 may be accomplished by Ge-Li analysis provided that the lower limit of detection (LLD) for I-131 in water samples found on Table 3.12.1-1 can be met. Doses shall be calculated for the maximum organ and age group; using the methodology in the ODCM.

(k) In the event two commercially or recreationally important species are not available, after three attempts of collection, then two samples of one species or other species not necessarily commercially or recreationally important may be utilized.

(l) This CONTROL applies only to major irrigation projects within 9 miles of the site in the general downcurrent direction (see ODCM for discussion).

(m) If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be taken monthly. Attention shall be paid to including samples of tuberous and root food products.

TABLE 3.12.1-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

RADIONUCLIDE ANALYSIS	WATER (pCi/l)	AIRBORNE PARTICULATE OR GASES (pCi/m³)	FISH (pCi/kg, wet)	MILK (pCi/l)	FOOD PRODUCTS (pCi/kg, wet)
H-3	20,000*				
Mn-54	1,000		30,000		
Fe-59	400		10,000		
Co-58	1,000		30,000		
Co-60	300		10,000		
Zn-65	300		20,000		
Zr-95, Nb-95	400				
I-131	2**	0.9		3	100
Cs-134	30	10	1,000	60	1,000
Cs-137	50	20	2,000	70	2,000
Ba/La-140	200			300	

* For drinking water samples. This is a 40 CFR 141 value. If no drinking water pathway exists, a value of 30,000 pCi/liter may be used.

** If no drinking water pathway exists, a value of 20 pCi/liter may be used.

3.5.1-B

Table D 4.12.1-1

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS(a)(b)

LOWER LIMIT OF DETECTION(c)

RADIONUCLIDE ANALYSIS	WATER (pCi/l)	AIRBORNE PARTICULATE OR GASES (pCi/m³)	FISH (pCi/kg, wet)	MILK (pCi/l)	FOOD PRODUCTS (pCi/kg, wet)	SEDIMENT (pCi/kg, dry)
Gross Beta	4	0.01				
H-3	2,000*					
Mn-54	15		130			
Fe-59	30		260			
Co-58, 60	15		130			
Zn-65	30		260			
Zr-95, Nb-95	15					
I-131	1**	0.07		1	60	
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba/La-140	15			15		

* If no drinking water pathway exists, a value of 3000 pCi/liter may be used.

** If no drinking water pathway exists, a value of 15 pCi/liter may be used.

3.5.1-3

TABLE 4.12.1-1 (Continued)

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE

ANALYSIS - LOWER LIMIT OF DETECTION
TABLE NOTATIONS

(a) This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to CONTROL 6.9.1.7 — Tech Spec 5.6.2.

(b) Required detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in ANSI N-545, Section 4.3 1975. Allowable exceptions to ANSI N-545, Section 4.3 are contained in the ~~Nine Mile Point Unit 2~~ ODCM.

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

For a particular measurement system, which may include radiochemical separation:

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

Where:

LLD = the before-the-fact lower limit of detection (picocuries per unit mass or volume)

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

E = the counting efficiency (counts per disintegration)

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

2.22 = the number of disintegrations per minute per picocurie

Y = the fractional radiochemical yield, when applicable

λ = the radioactive decay constant for the particular radionuclide (sec^{-1})

Δt = the elapsed time between environmental collection, or end of the sample collection period, and time of counting (seconds)

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

D 3.5.1-3

TABLE 4.12.1-1 (Continued)

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE

ANALYSIS - LOWER LIMIT OF DETECTION

TABLE NOTATIONS

It should be recognized that the LLD is defined as a before-the-fact limit representing the capability of a measurement system and not as an after-the-fact limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to CONTROL 6.9.1.7. Tech Spec 5.6.2

B 3.5 RADIOLOGICAL ENVIRONMENTAL MONITORING

B 3.5.1 Monitoring Program

BASES

The Radiological Environmental Monitoring Program provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of MEMBERS OF THE PUBLIC resulting from the plant operation. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR 50 and thereby supplements the Radiological Effluent Monitoring Program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979. Program changes may be initiated based on operational experience.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table D 3.5.1-3 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as a before-the-fact limit representing the capability of a measurement system and not as an after-the-fact limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

BASES

3.5.1 3/4.12.1 MONITORING PROGRAM

The Radiological Environmental Monitoring Program required by this CONTROL provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of MEMBERS OF THE PUBLIC resulting from the plant operation. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR 50 and thereby supplements the Radiological Effluent Monitoring Program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979. The initially specified monitoring program will be effective for at least the first 3 years of commercial operation. After this period, program changes may be initiated based on operational experience.

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 4.12.1-1 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as a before-the-fact limit representing the capability of a measurement system and not as an after-the-fact limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

3.5.2 3/4.12.2 LAND USE CENSUS

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

A MILK SAMPLING LOCATION, as defined in Section 1.0, requires that at least 10 milking cows are present at a designated milk sample location. It has been

DISCUSSION OF CHANGES
D 3.5.2, Land Use Census

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Land Use Census, the new Specification number is D 3.5.2.

D 3.5 RADIOLOGICAL ENVIRONMENTAL MONITORING

D 3.5.2 Land Use Census

DLCO 3.5.2 A land use census shall:

a. Be conducted,

b. Identify within a distance of 5 miles the location in each of the 16 meteorological sectors of the nearest milk animal and the nearest residence, and the nearest garden (broad leaf vegetation sampling controlled by Table D 3.5.1-1, part 5.c may be performed in lieu of the garden census) of > 500 ft^2 producing broad leaf vegetation, and

c. For elevated releases, identify within a distance of 3 miles the locations in each of the 16 meteorological sectors of all milk animals and all gardens (broad leaf vegetation sampling controlled by Table D 3.5.1-1, part 5.c may be performed in lieu of the garden census) > 500 ft^2 producing broad leaf vegetation.

APPLICABILITY: At all times.

ACTIONS

----------NOTES----------

1. LCO 3.0.3 is not applicable.

2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Land use census identifies location(s) that yields a calculated dose, dose commitment, or D/Q value > than the values currently being calculated in DSR 3.2.3.1.	A.1 Identify the new location(s) in the next Radioactive Effluent Release Report.	In accordance with the Radioactive Effluent Release Report

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Land use census identifies location(s) that yields a calculated dose, dose commitment, or D/Q value (via the same exposure pathway) 50% > than at a location from which samples are currently being obtained in accordance with Table D 3.5.1-1.	B.1 Add the new location(s) to the Radiological Environmental Monitoring Program. AND B.2 Delete the sampling location(s), excluding the control station location, having the lowest calculated dose, dose commitment(s) or D/Q value, via the same exposure pathway, from the Radiological Environmental Monitoring Program. AND B.3 Submit in the next Radioactive Effluent Release Report documentation for a change in the ODCM including revised figure(s) and table(s) for the ODCM reflecting the new location(s) with information supporting the change in sampling locations.	30 days After October 31 of the year in which the land use census was conducted In accordance with the Radioactive Effluent Release Report

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DSR 3.5.2.1	Conduct the land use census during the growing season using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities.	366 days
DSR 3.5.2.2	Report the results of the land use census in the Annual Radiological Environmental Operating Report.	In accordance with the Annual Radiological Environmental Operating Report

RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.2 LAND USE CENSUS

CONTROL

3.12.2 A land use census shall be conducted and shall identify within a distance of 5 miles the location in each of the 16 meteorological sectors of the nearest milk animal and the nearest residence, and the nearest garden* of greater than 500 square feet producing broad leaf vegetation. For elevated releases as defined in RG 1.111, Revision 1, July 1977, the land use census shall also identify within a distance of 3 miles the locations in each of the 16 meteorological sectors of all milk animals and all gardens* greater than 500 square feet producing broad leaf vegetation.

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) that yields a calculated dose, dose commitment, or D/Q value greater than the values currently being calculated in CONTROL 4.11.2.3, pursuant to CONTROL 6.9.1.8, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report.

b. With a land use census identifying a location(s) that yields a calculated dose, dose commitment, or D/Q value (via the same exposure pathway) significantly greater (50%) than at a location from which samples are currently being obtained in accordance with CONTROL 3.12.1-1, add the new location(s) within 30 days to the Radiological Environmental Monitoring Program given in the ODCM. The sampling location(s), excluding the control station location, having the lowest calculated dose, dose commitment(s) or D/Q value, via the same exposure pathway, may be deleted from this monitoring program after October 31 of the year in which this land use census was conducted. Pursuant to CONTROL 6.9.1.8, submit in the next Semiannual Radioactive Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table(s) for the ODCM reflecting the new location(s) with information supporting the change in sampling locations.

NOTES

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

* Broad leaf vegetation sampling of at least three different kinds of vegetation, such as garden vegetables, may be performed at offsite locations in each of two different locations with the highest predicted D/Qs in lieu of the garden census. CONTROLS for broad leaf vegetation sampling in Table 3.12.1-1, Part 4.c, shall be followed, including analysis of control samples.

SURVEILLANCE REQUIREMENTS

DSR 3.5.2.1 4.12.1 The land use census shall be conducted during the growing season at least once every 12 months using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to

DSR 3.5.2.2 CONTROL 6.9.1.7

Tech Spec 5.6.2

B 3.5 RADIOLOGICAL ENVIRONMENTAL MONITORING

B 3.5.2 Land Use Census

BASES

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

A MILK SAMPLING LOCATION, as defined in Section 1.0, requires that at least 10 milking cows are present at a designated milk sample location. It has been found from past experience, and as a result of conferring with local farmers, that a minimum of 10 milking cows is necessary to guarantee an adequate supply of milk twice a month for analytical purposes. Locations with fewer than 10 milking cows are usually utilized for breeding purposes, eliminating a stable supply of milk for samples as a result of suckling calves and periods when the adult animals are dry. Elevated releases are defined in RG 1.111, Revision 1, July 1977.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

BASES

3.5.1 3/4.12.1 MONITORING PROGRAM

The Radiological Environmental Monitoring Program required by this CONTROL provides representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of MEMBERS OF THE PUBLIC resulting from the plant operation. This monitoring program implements Section IV.B.2 of Appendix I to 10 CFR 50 and thereby supplements the Radiological Effluent Monitoring Program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways. Guidance for this monitoring program is provided by the Radiological Assessment Branch Technical Position on Environmental Monitoring, Revision 1, November 1979. The initially specified monitoring program will be effective for at least the first 3 years of commercial operation. After this period, program changes may be initiated based on operational experience.

D3.5.1-3

The required detection capabilities for environmental sample analyses are tabulated in terms of the lower limits of detection (LLDs). The LLDs required by Table 4.12.1-1 are considered optimum for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as a before-the-fact limit representing the capability of a measurement system and not as an after-the-fact limit for a particular measurement.

Detailed discussion of the LLD, and other detection limits, can be found in L. A. Currie, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," NUREG/CR-4007 (September 1984), and in the HASL Procedures Manual, HASL-300 (revised annually).

— page break —

Land Use Census
3.5.2

3.5.2 3/4.12.2 LAND USE CENSUS

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

A MILK SAMPLING LOCATION, as defined in Section 1.0, requires that at least 10 milking cows are present at a designated milk sample location. It has been

found from past experience, and as a result of conferring with local farmers, that a minimum of 10 milking cows is necessary to guarantee an adequate supply of milk twice a month for analytical purposes. Locations with fewer than 10 milking cows are usually utilized for breeding purposes, eliminating a stable supply of milk for samples as a result of suckling calves and periods when the adult animals are dry.

Insert ① →

— page break —

3.5.3 ~~3/4.12.3~~ INTERLABORATORY COMPARISON PROGRAM

Interlaboratory Comparison Prog B 3.5.

The requirement for participation in an approved Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR 50.

① * Elevated releases are defined in RG 1.111, Revision 1, July 1977.

DISCUSSION OF CHANGES
D 3.5.3 Interlaboratory Comparison Program

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Interlaboratory Comparison Program, the new Specification number is D 3.5.3.

D 3.5 RADIOLOGICAL ENVIRONMENTAL MONITORING

D 3.5.3 Interlaboratory Comparison Program

DLCO 3.5.3 The Interlaboratory Comparison Program shall be described in the ODCM.

AND

Analyses shall be performed on all radioactive materials, supplied as part of an Interlaboratory Comparison Program that has been approved by the NRC, that correspond to samples required by Table D 3.5.1-1. Participation in this program shall include media for which environmental samples are routinely collected and for which intercomparison samples are available.

APPLICABILITY: At all times.

ACTIONS

---------- NOTES ----------

1. LCO 3.0.3 is not applicable.

2. LCO 3.0.4 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Analyses not performed as required.	A.1 Report the corrective actions taken to prevent a recurrence to the NRC in the Annual Radiological Environmental Operating Report.	In accordance with the Annual Radiological Environmental Operating Report

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DSR 3.5.3.1	Report a summary of the results obtained as part of the Interlaboratory Comparison Program in the Annual Radiological Environmental Operating Report.	In accordance with the Annual Radiological Environmental Operating Report

RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

CONTROLS

LCO 3.5.3 3.12.1 Analyses shall be performed on all radioactive materials, supplied as part of an Interlaboratory Comparison Program that has been approved by the Commission, that correspond to samples required by Table 3.12.1-1. Participation in this program shall include media for which environmental samples are routinely collected and for which intercomparison samples are available.

APPLICABILITY: At all times.

ACTION:

Condition A

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 pursuant to CONTROL 6.9.1.7 — Tech Spec 5.6.2

A.1

NOTES

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

SURVEILLANCE REQUIREMENTS

4.12.3 The Interlaboratory Comparison Program shall be described in the ODCM. A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report pursuant to CONTROL 6.9.1.7.

SR 3.5.3.1

Tech Spec 5.6.2

B 3.5 RADIOLOGICAL ENVIRONMENTAL MONITORING

B 3.5.3 Interlaboratory Comparison Program

BASES

The requirement for participation in an approved Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR 50.

found from past experience, and as a result of conferring with local farmers, that a minimum of 10 milking cows is necessary to guarantee an adequate supply of milk twice a month for analytical purposes. Locations with fewer than 10 milking cows are usually utilized for breeding purposes, eliminating a stable supply of milk for samples as a result of suckling calves and periods when the adult animals are dry. — page break —

3.5.3 3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

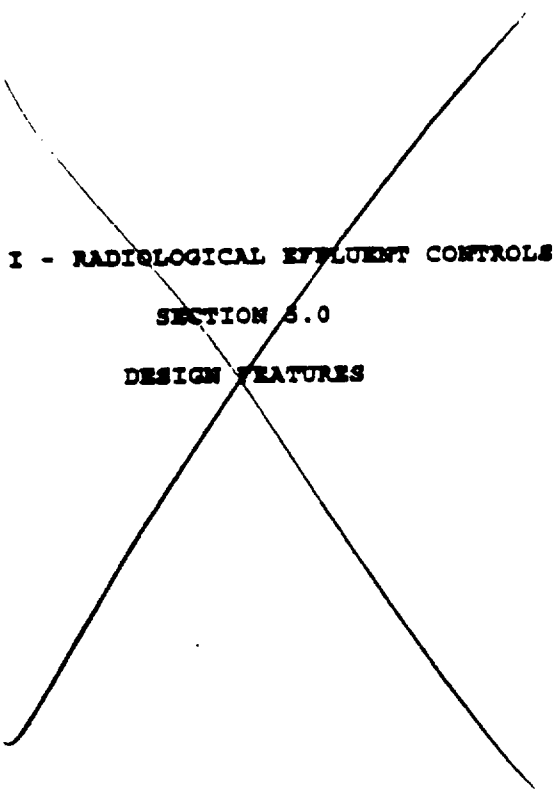
The requirement for participation in an approved Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR 50.

DISCUSSION OF CHANGES
5.0 Design Features

ADMINISTRATIVE

In the relocation and conversion of the Nine Mile Point Unit 2 current Technical Specifications (CTS) to the proposed Offsite Dose Calculation Manual (ODCM) used in support of the Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do no result in technical changes (either actual or interpretational). Editorial changes, the elimination of redundant wording, reformatting and revised numbering are adopted to make the ODCM consistent with ITS.

In the specific case of the Design Features, the section has been deleted. The map has been relocated to D 1.0, Definitions, as Figure D 1.0-1.



PART I - RADIOLOGICAL EFFLUENT CONTROLS

SECTION 5.0

DESIGN FEATURES

5.0 DESIGN FEATURES

Sections 5.1.1, 5.1.2, 5.2, 5.3, 5.4, 5.6, and 5.7 are retained in the RETS.

5.1.3 MAP DEFINING UNRESTRICTED AREAS AND SITE BOUNDARY FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS. Information regarding radioactive gaseous and liquid effluents, which will allow identification of structures and release points as well as definition of UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC, shall be as shown in Figure 5.1.3-1.

5.5 METEOROLOGICAL TOWER LOCATION

The Meteorological Tower shall be located as shown on Figure 5.1.3-1.

i.a.w. ITS

Reword → Use

ITS

MAP.

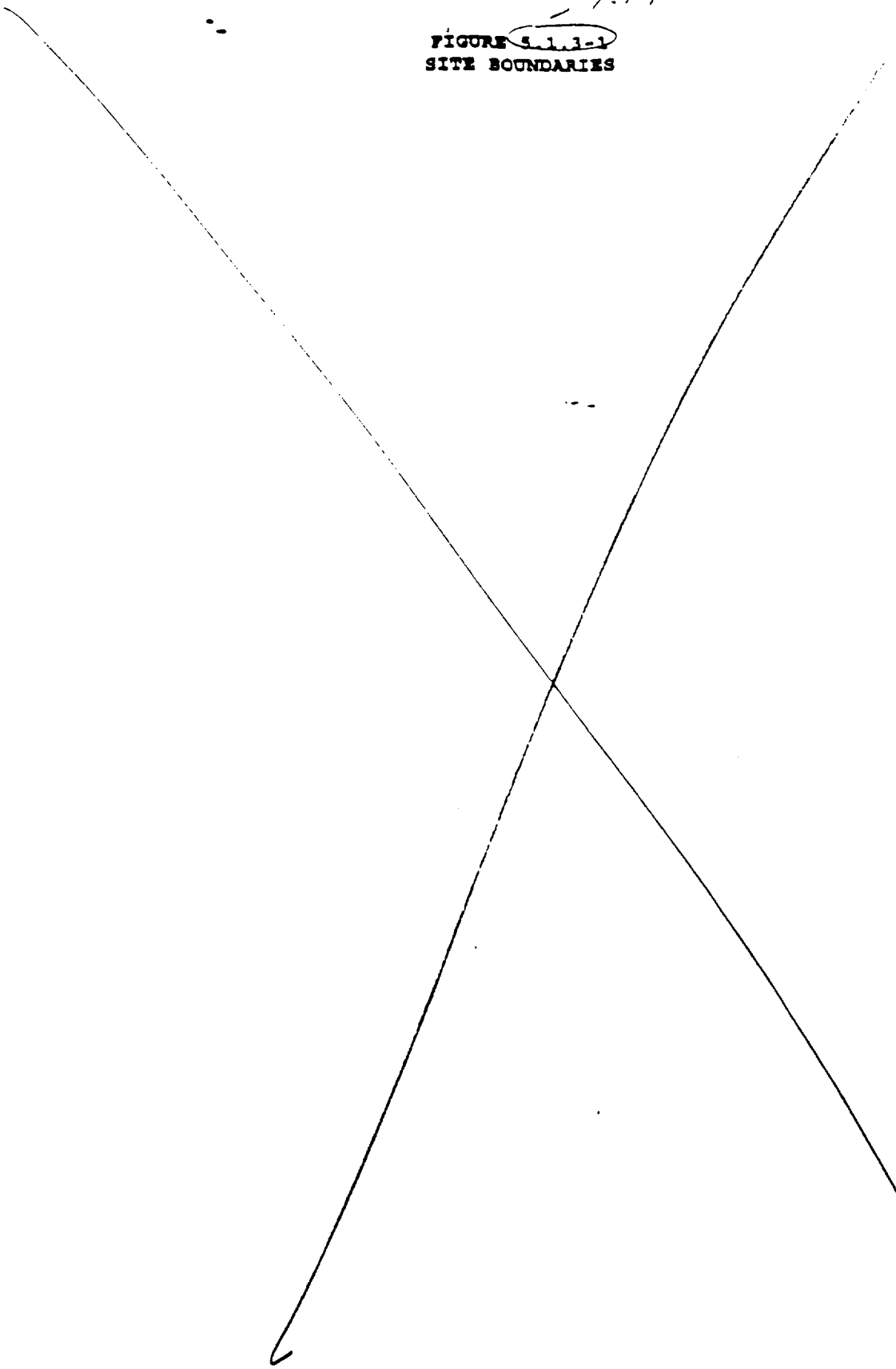
— see section 4.1 of ITS

SITE and EXCLUSION AREA BOUNDARIES

4.1 The site area boundary and the land portion of the exclusion area boundary are as shown in Figure 4.1-1. The lake portion of the exclusion area boundary is the area of Lake Ontario within a 3 mile radius of the Nine Mile Point Unit 2 Reactor centerline.

4.1-1

FIGURE 5.1.1-1
SITE BOUNDARIES



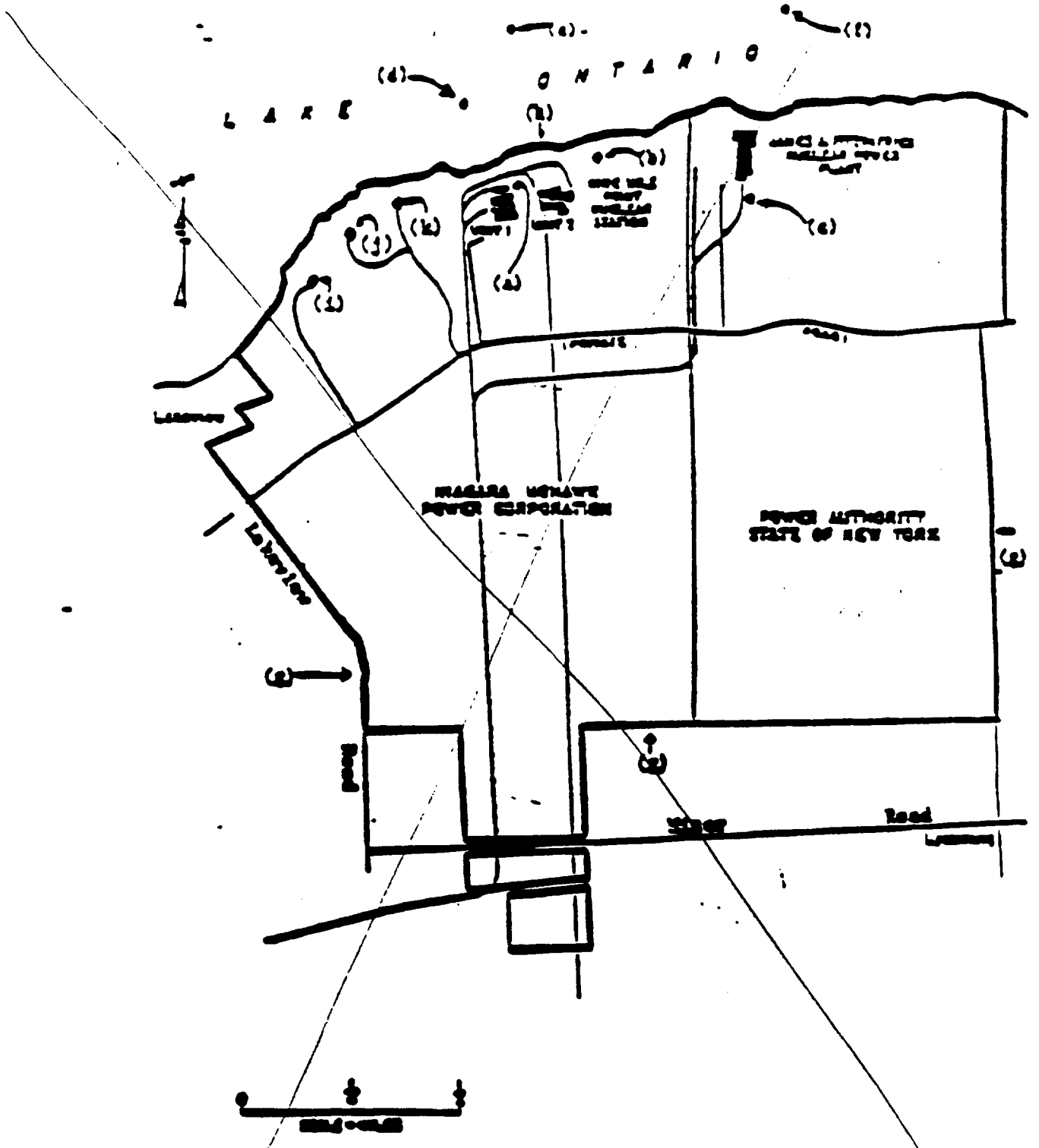


Figure 3.1.3-1 Site Boundaries

4.1-1

4.1-1

NOTES TO FIGURE 5.1.3-1

(a) NMP1 Stack (height is 350')
(b) NMP2 Stack (height is 430')
(c) JAFNPP Stack (height is 385')
(d) NMP1 Radioactive Liquid Discharge (Lake Ontario, bottom)
(e) NMP2 Radioactive Liquid Discharge (Lake Ontario, bottom)
(f) JAFNPP Radioactive Liquid Discharge (Lake Ontario, bottom)
(g) Site Boundary
(h) Lake Ontario Shoreline
(i) Meteorological Tower
(j) Training Center
(k) Energy Information Center

Additional Information:

- NMP2 Reactor Building Vent is located 187 feet above ground level
- JAFNPP Reactor and Turbine Building Vents are located 173 feet above ground level
- JAFNPP Radwaste Building Vent is 112 feet above ground level
- The Energy Information Center and adjoining picnic area are UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC
- Lake Road, a private road, is an UNRESTRICTED AREA within the SITE BOUNDARY accessible to MEMBERS OF THE PUBLIC

4.0 DESIGN FEATURES

4.1 Site Location

4.1.1 Site and Exclusion Area Boundaries

The site area boundary and the land portion of the exclusion area boundary are as shown in Figure 4.1-1. The lake portion of the exclusion area boundary is the area of Lake Ontario within a 2 mile radius of the Nine Mile Point Unit 2 reactor centerline.

4.1.2 Low Population Zone

The low population zone is all the land within a circle with its center at the Nine Mile Point Unit 1 stack and a radius of four miles.

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 764 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material, and water rods. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all safety design bases. A limited number of lead fuel assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 185 cruciform shaped control rod assemblies. The control material shall be boron carbide and hafnium metal as approved by the NRC.

(continued)

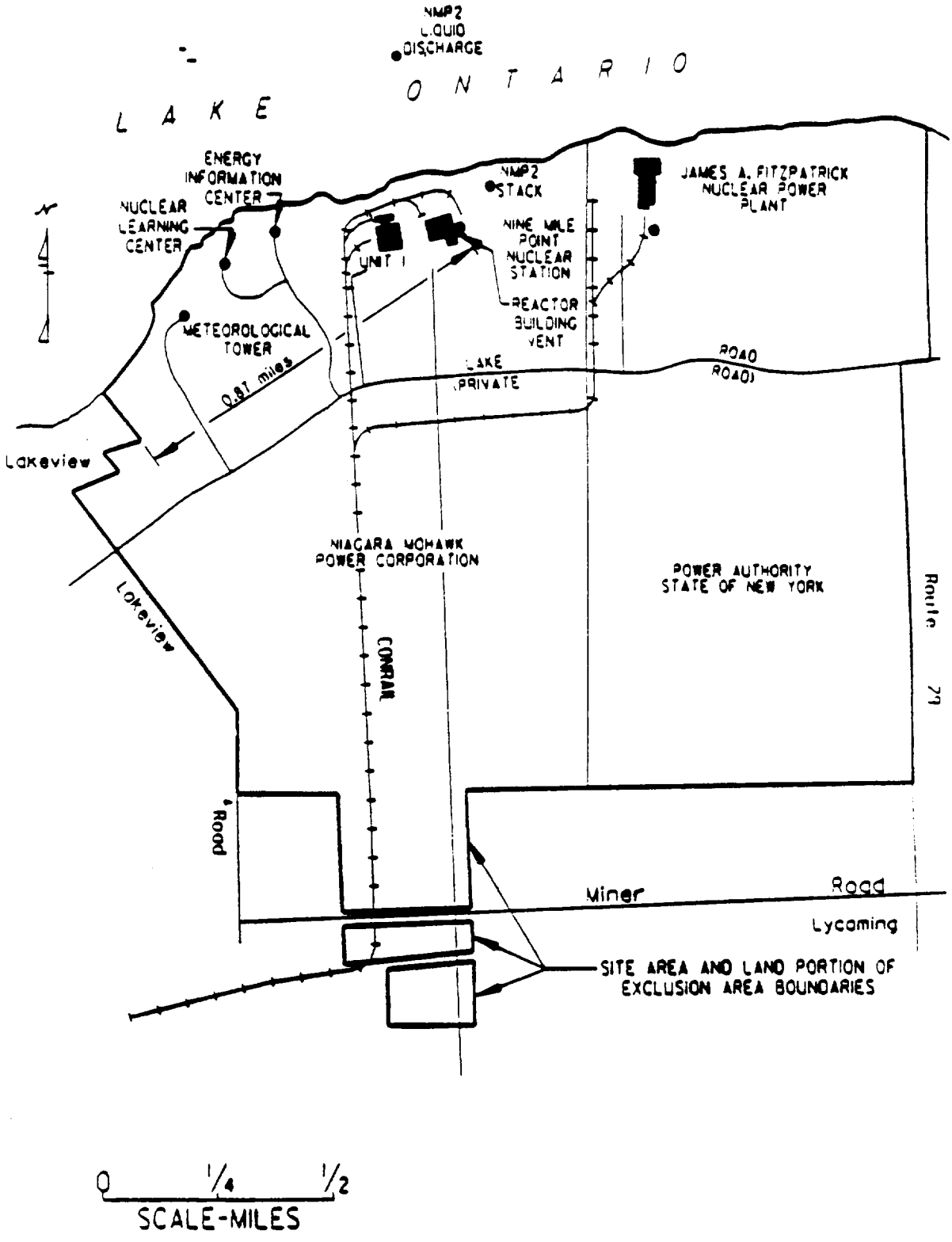


Figure 4.1-1 (Page 1 of 1)
Site Area and Land Portion of Exclusion Area Boundaries

A.1

Chapter 4.0

4.0

5.0 DESIGN FEATURES

4.1

5.1 SITE

area boundary A.1

The Nine Mile Point Nuclear Station and James A. FitzPatrick Nuclear Power Plant site, comprising approximately 1500 acres, is located on the shores of Lake Ontario, about 7 miles northeast of Oswego, New York. An exclusion distance of nearly 1400 feet is provided between the station and the nearest SITE BOUNDARY to the west, a mile to the boundary on the east, and a mile and a half to the southern SITE BOUNDARY.

A.3

LA.1

A.2

as shown in Figure 4.1-1

A.2

EXCLUSION AREA

4.1.1 5.1.1 The exclusion area shall be as shown in Figure 5.1.1-1.

all the land within a circle with its center at the Nine Mile Point Unit 1 stack and a radius of four miles.

LOW POPULATION ZONE

A.2

4.1.2 5.1.2 The low population zone shall be as shown in Figure 5.1.2-1.

MAP DEFINING UNRESTRICTED AREAS AND SITE BOUNDARY FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS

LA.2

5.1.3 Information regarding radioactive gaseous and liquid effluents, which will allow identification of structures and release points as well as definition of UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC, shall be as shown in Figure 5.1.3-1.

LA.2

4.1.1 -

5.2 CONTAINMENT

CONFIGURATION

5.2.1 The primary containment is a steel-lined concrete structure consisting of a drywell and suppression chamber. The drywell is a steel-lined concrete vessel in the shape of a truncated cone on top of a water-filled suppression chamber and is attached to the suppression chamber through a series of downcomer vents. The drywell has a minimum free air volume of 303,418 cubic feet. The suppression chamber has a minimum air region of 192,028 cubic feet and a minimum water region of 145,498 cubic feet.

DESIGN TEMPERATURE AND PRESSURE

5.2.2 The primary containment is designed and shall be maintained for:

a. Maximum internal pressure, 45 psig.

b. Maximum internal temperature:

- drywell, 340°F
- suppression pool, 212°F
- suppression chamber, 270°F

LA.3

Page 1 of 11

Insert 1

A.2

Chapter 4.0

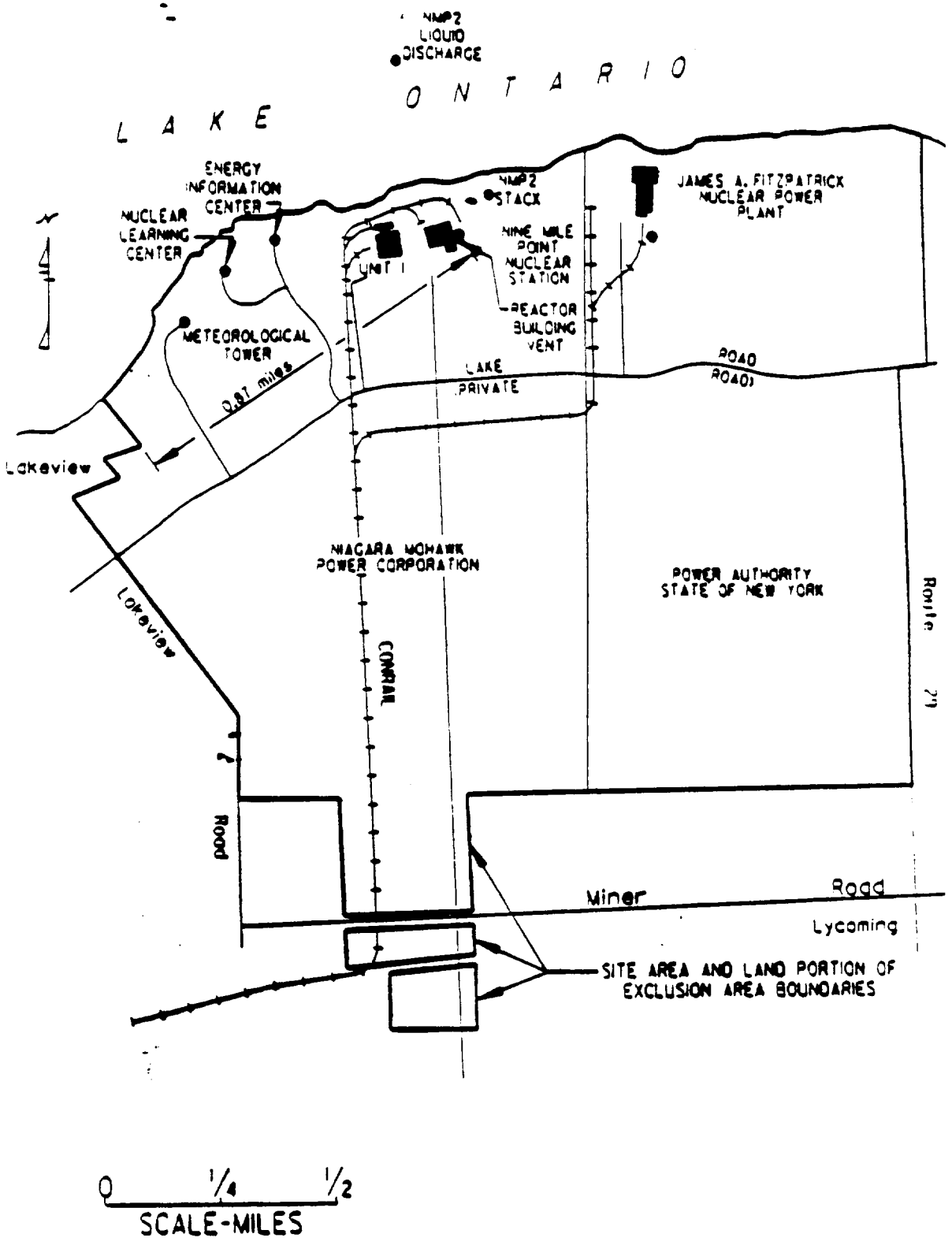


Figure 4.1-1 (Page 1 of 1)
Site Area and Land Portion of Exclusion Area Boundaries

A.1

4.1-1

A.2

NOTES TO FIGURE 5.1.3-1

A.3 LA.6

(a) NMP1 Stack (height is 360')
(b) NMP2 Stack (height is 430')
(c) JAFNPP Stack (height is 385')
(d) NMP1 Radioactive Liquid Discharge (Lake Ontario, Bottom)
(e) NMP2 Radioactive Liquid Discharge (Lake Ontario, Bottom)
(f) JAFNPP Radioactive Liquid Discharge (Lake Ontario, Bottom)
(g) Site Boundary
(h) Lake Ontario Shoreline
(i) Meteorological Tower
(j) Training Center
(k) Energy Information Center

LA.6

A.3

Additional Information:

LA.6

A.3

- NMP2 Reactor Building Vent is located 187 feet above ground level
- JAFNPP Reactor and Turbine Building Vents are located 273 feet above ground level
- JAFNPP Radwaste Building Vent is 112 feet above ground level
- The Energy Information Center and adjoining picnic area are UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC
- Lake Road, a private road, is an UNRESTRICTED AREA within the SITE BOUNDARY accessible to MEMBERS OF THE PUBLIC

LA.6

A.2

A.1

DESIGN FEATURES

5.5 METEOROLOGICAL TOWER LOCATION

The meteorological tower shall be located as shown on Figure 5.1.3-1.

LA.5

4.3 5.6 FUEL STORAGE

4.3.1 CRITICALITY

4.3.1.1 5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. A k_{eff} equivalent to less than or equal to 0.95 when flooded with unborated water, including all calculational uncertainties and biases as described in Section 9-1 of the FSAR.

b. A nominal 6.18-inch center-to-center distance between fuel assemblies placed in the storage racks.

4.3.1.2 5.6.1.2 The k_{eff} for new fuel stored in the new fuel storage racks shall not exceed 0.95 (b) in the normal dry condition or in the abnormal completely water-flooded condition. The k_{eff} shall not exceed 0.98 with all but one of the non-combustible storage vault covers in place when optimum moderation (foam, spray, fogging, or small droplets) is assumed.

A.5

add proposed Specification 4.3.1.2.c

M.1

4.3.2 DRAINAGE

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 329 ft. 7 in.

4.3.3 CAPACITY

5.6.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 4049 fuel assemblies.

5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

The component identified in Table 5.7.1-1 is designed and shall be maintained within the cyclic or transient limits of Table 5.7.1-1.

#6 moved to Specification 5.5.5