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JUL 2 1 1972

Docket No. 50-269

R. C. DeYoung, Assistant Director for Pressurized Water Reactors, L

OCONEE UNIT 1 TECHNICAL SPECIFICATIONS - RADIOACTIVE RELEASES.

Plant name - Oconee
Licensing stage - OL
Docket number - 50-269
Responsible branch - PWR-4
Project leader - I. A. Peltier
Date request received by RA-L - 6/29/72
Requested completion date - timely, prior to 8/30/72
Description of response - Revisions to Oconee Technical Specifications
Review status - Awaiting response from applicant.

The Oconee Technical Specifications are being revised to conform to the versions which incorporate requirements equivalent to proposed Appendix I, 10 CFR Part 50. Specific guidance to Duke Power Company has been supplied in the form of a revised copy of the Maine Yankee Technical Specifications (see attachment #1). A copy of these revised specifications was delivered to Mr. I. A. Peltier on July 11 prior to his meeting with the applicant on July 12.

Subsequent to this meeting Mr. Lionel Lewis of Duke Power called to discuss the following points:

1. Station limit vs. unit limit. They prefer to write limits in terms of the station rather than for a single unit. A single unit limit was written in the guidance because it was not construed to be "as low as practicable" to use a three unit limit when only one unit is operating. This limit will be increased if necessary as the other units come on line.

2. The nearest cow. The nearest cow to Oconee is at the nearest dairy farm which is 4.5 miles west of the site. There had been a closer cow but it was sold last year. The applicant calculates a χ/Q at this dairy of 1.22×10^{-7} sec/m^3.

3. Iodine release limit. The numerical limit for iodine releases was set equal to the source term for 1 unit (see Radwaste Section for Environmental Statement for Oconee Nuclear Power Station, Units 1, 2, and 3. - Memo dated 3/2/72 from V. Benaroya to J. Kastner). They

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questioned this because they had based their limit on keeping the iodine concentration at the nearest dairy within Appendix I guidelines and, consequently, had arrived at a lower value.

4. Gaseous release limits. They would prefer to write the specification for gaseous rele[illegible] so that low activity gaseous wastes can be released with less than 30 days hold-up time if the hold-up tanks were needed for higher level gaseous wastes. The total release computed on a quarterly basis would be kept within Appendix I guidelines.

Conclusions reached in this discussion were: (1) they will recalculate the iodine release limit, (2) they will rewrite the specification for gaseous waste hold-up time, and (3) they will consider the limit for iodine release based on the single unit source term (no commitment was made).

Follow-up review on these specifications will be provided by RAB through final formulation prior to August 30, 1972.

Original signed by
H. R. Denton

Harold R. Denton, Assistant Director
for Site Safety
Directorate of Licensing

Enclosure:
As stated

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DATE ▸	7/[illegible]/72	7/[illegible]/72	7/[illegible]/72			

7/19/72

Form AEC-318 (Rev. 9-53) AECM 0240

3.16 [illegible]

Applicability: Applies to the controlled release of all liquid waste discharged from the plant which may contain radioactive materials.

Objective: To establish conditions for the release of liquid waste containing radioactive materials and to assure that all such releases are within the concentration limits specified in 10 CFR Part 20. In addition, to assure that the releases of radioactive material in liquid wastes (above background) to unrestricted areas meet the low as practicable concept, the following liquid release objectives shall apply.

a. The annual total quantity of radioactive materials in liquid waste, excluding tritium and dissolved gases, shall be less than 5 curies;

b. The annual average concentration of radioactive materials in liquid waste, ~~prior to dilution in Bailey Cove~~, excluding tritium and dissolved gases, shall not exceed 2×10^{-8} µCi/ml;

c. The annual average concentration of tritium in liquid waste, ~~prior to dilution in Bailey Cove~~, shall not exceed 5×10^{-6} µCi/ml;

d. The annual average concentration of dissolved gases in liquid waste, ~~prior to dilution in Bailey Cove~~, shall not exceed 2×10^{-6} µCi/ml.

Specifications: A. Release Quantities and Concentrations of Radioactive Materials in Liquid Waste

1. If the experienced release of radioactive materials in liquid wastes, when averaged over a calendar quarter, is such that these quantities if continued at the same release rate for a year would exceed twice the annual objectives the licensee will:

a. make an investigation to identify the causes for such release rates;

b. define and initiate a program of action to reduce such release rates to the design levels, and;

c. describe these actions in a report to the Commission within 30 days.

2. If the [illegible] release of radioactive material in liquid [illegible] averaged over [illegible] is such that [illegible] quantities if [illegible]

Tech Specs dups 77 preceding doc 720623

[illegible] for a year would exceed eight times the [illegible] objectives, the licensee shall define and [illegible] a program of action to ensure that such [illegible] are reduced, and shall submit a report to the Commission within 7 days describing the [illegible] for such release rates and the course of action taken to reduce them.

3. The rate of release of radioactive materials in liquid waste from the plant shall be controlled such that the instantaneous concentration of radioactivity in liquid waste does not exceed the values listed in 10 CFR Part 20, Appendix B, Table II, Column 2.

B. Treatment and Monitoring

1. The equipment installed in the liquid radioactive waste system shall be maintained and operated with the intent of keeping releases within the objectives of these Specifications.

2. At [illegible] service water pump shall be in operation when liquid radioactive wastes are being released.

3. Liquid waste discharged from the test tanks shall be continuously monitored during release. The liquid effluent monitor reading shall be compared with the expected reading of each discharge batch. The monitor shall be tested daily and calibrated at refueling intervals. The calibration procedure shall consist of exposing the detector to a referenced calibration source in a controlled, reproducible geometry. The sources and geometry shall be referenced to the original monitor calibration which provides the applicable calibration curves.

4. The effluent control monitor shall be set to alarm and automatically close the waste discharge valve such that the requirements of the specification are met. In the event of [illegible] in the monitor, the alarm shall [illegible] automatically close the waste discharge valve.

5. [illegible] or blowdown shall be continuously monitored, [illegible] during periods when the monitor is not operating [illegible] grab samples shall be taken.

C. Sampling and [illegible]

In addition to the above continuous monitoring requirements, liquid [illegible] sampling [illegible] analysis [illegible]

[illegible] an accordance with [illegible]

[illegible] Specifications.

[illegible]

Basis: It is expected that the release of radioactive materials in liquid waste will be kept within the design objective levels and will not exceed the concentration limits specified in 10 CFR Part 20. These levels provide reasonable assurance that the resulting annual exposure to the whole body or any organ of an individual will not exceed 5 millirems per year. At the same time, the licensee is permitted the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that using this operational flexibility under unusual operating conditions, the licensee shall exert every effort to keep levels of radioactive material in liquid wastes as low as practicable and that annual releases will not exceed a small fraction of the annual average concentration limits specified in 10 CFR Part 20.

The design objectives have been developed taking into account a combination of variables including fuel failures, primary system leakage, primary-to-secondary leakage and the performance of the various waste treatment systems. The actual magnitude of these parameters are as follows:

a. Maximum expected reactor coolant corrosion product concentrations;

b. Reactor coolant fission product concentration corresponding to 0.1% fuel cladding defects;

c. Steam generator primary-to-secondary leak rate of 0.01 gpm;

d. Hydrogenated liquid waste generation rate of 1.75 gpm;

e. Aerated liquid waste generation rate of [illegible] gpm;

f. [illegible] 2 gpm [illegible]

g. [illegible] factors of 10^4 for all [illegible] nuclides except [illegible] evaporators;

h. [illegible] factors of 10 for Cs, [illegible], Mo and Y for cesium [illegible]

The application of the above estimates results in the radionuclide discharge concentrations and rates shown in Table 3.15-2. Also given in this table are the radionuclide concentrations in the reactor coolant and the secondary coolant, which are the "source terms" for releases from the primary and secondary systems, respectively. ~~Liquid radioactive waste is mixed with [illegible] water in the plant discharge system prior to release. With four circulating water pumps in operation, the rated capacity of the system is 400,000 gpm. This is equivalent to a dilution multiple of 2.5 x 10-6 min/gal x the discharge rate in gal/min.~~ Liquid radioactive waste from the waste treatment system is collected and stored in tanks until a quantity sufficient for processing has accumulated. The processed liquid waste is discharged through a recorder controller which provides a measure and control of volume of liquid released. The volume discharged and the analysis of the proportional composite sample provide the basis for reporting the quantity and concentration of activity released.

The operating manual will identify all equipment installed in the liquid waste handling and treatment systems and will specify detailed procedures for operating and maintaining this equipment.

The low as practicable liquid release objectives expressed in this Specification are based on the guidelines contained in the proposed Appendix I of 10 CFR 50. Since these guidelines have not been adopted as yet, the release objectives of this Specification will be reviewed at the time Appendix I becomes a regulation to assure that this Specification is based upon the guidelines contained therein.

<u>References:</u> FSAR, Section 9.14, <u>Waste Disposal System</u>
FSAR, Section 11.2.3, <u>[illegible] Monitoring System</u>
Tech Spec Sections 3.8 and 3.7, <u>[illegible] of Radioactive [illegible] to [illegible]</u>

TABLE 3.14-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS

A. Test Tank Releases

Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (5)
Each Batch	Gross β,γ	10^{-7} μCi/ml
One Batch/Month	Dissolved Noble Gases	10^{-5} μCi/ml
Weekly Proportional Composite (1)	Ba-140, La-140, I-131	10^{-6} μCi/ml
Monthly Proportional Composite (1)	Gamma Emitters	10^{-6} μCi/ml(2)
	H-3	10^{-5} μCi/ml
	Gross α	10^{-7} μCi/ml
Quarterly Proportional Composite (1)	Sr-89, Sr-90	10^{-8} μCi/ml(6)

B. Secondary Plant Blowdown and [illegible] Releases(3)

Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (5)
Weekly	Gross β,γ	10^{-7} μCi/ml
	Ba-140, La-140, I-131	10^{-6} μCi/ml
One Sample/Month	Dissolved Noble Gases	10^{-5} μCi/ml
Monthly Proportional Composite (4)	Gamma Emitters	10^{-6} μCi/ml(2)
	H-3	10^{-5} μCi/ml
	Gross α	10^{-7} μCi/ml
Quarterly Proportional Composite (4)	Sr-89, Sr-90	10^{-8} μCi/ml(6)

NOTES:

(1) A proportional sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged from the plant.

(2) For certain mixtures of gamma emitters, it may not be possible to measure radionuclides in concentrations near their sensitivity limits when other nuclides are present in the sample in much greater concentrations. Under these circumstances, it will be more appropriate to calculate the concentrations of such radionuclides using observed ratios with those radionuclides which are measurable.

(3) Secondary plant blowdown and secondary plant leakage are each subject to the sampling and analysis requirements contained in Part B of Table 3.16-1.

(4) Since these potential sources of liquid radioactive waste are discharged on a continuous rather than batch basis, the volume of liquid to be used as a basis for obtaining proportional samples from secondary blowdown and leakage is that amount discharged over the period of one week.

(5) These activity analyses sensitivities are based on the projected capabilities of laboratory instrumentation and techniques to be employed by Maine Yankee. In order to assure that actual Maine Yankee operating experience is utilized, a reevaluation will be performed within 2 years of initial full power operation of the plant to determine whether these sensitivities should be revised.

(6) One quarterly proportional composite sample will be collected and analyzed for Sr-89 and Sr-90. The proportional inputs to this sample will be from the test tank, secondary blowdown, and secondary leakage releases.

Table 3.16-2

RADIONUCLIDE SOURCE T[illegible] AND DISCHARGES

Isotope	Reactor Coolant Concentration (μCi/ml @ 70°F)	Steam Generator Blowdown Concentration (μCi/ml @ 70°F)	Plant Discharge Concentration (μCi/ml)	Fraction of 10 CFR 20 MPC	Annual Dose [illegible]
I-131	2.99-1*	4.22-4	2.36-9	7.20-3	[illegible]
[illegible]	1.12-1	6.25-6	8.83-11	1.11-5	[illegible]
[illegible]	5.02-3	2.08-4	1.25-9	1.35-[illegible]	[illegible]
[illegible]	[illegible].55-2	1.57-6	4.13-11	2.37-6	[illegible]
[illegible]	2.80-1	4.33-5	3.52-10	8.80-5	[illegible]
[illegible]	3.11-4	5.62-7	2.81-12	9.37-8	[illegible]
[illegible]	1.69-5	3.77-8	1.62-13	6.07-7	[illegible]
[illegible]	[illegible].97-4	4.25-8	2.32-13	4.6[illegible]-7	[illegible]
[illegible]	6.13-5	5.4[illegible]-8	2.66-13	1.34-8	[illegible]
[illegible]	2.40-3	4.70-6	2.27-11	7.57-7	[illegible]
[illegible]	1.18-1	1.0[illegible]-4	5.21-10	1.[illegible]	[illegible]
[illegible]	[illegible].95-[illegible]	3.61-7	1.62-12	2.[illegible]-8	[illegible]
[illegible]	1.02-[illegible]	3.60-8	1.81-13	1.31-8	[illegible]
[illegible]	2.66-[illegible]	7.24-8	1.74-12	2.18-9	[illegible]
[illegible]	[illegible].51-2	2.43-5	1.51-10	4.37-5	[illegible]
[illegible]	[illegible].37-4	6.92-7	3.51-12	7.75-7	[illegible]
[illegible]	4.17-4	2.79-7	1.[illegible]-12	7.10-3	[illegible]
[illegible]	5.19-2	9.93-5	[illegible]-10	[illegible].60-4	[illegible]
[illegible]	1.[illegible]-2	2.[illegible]3-5	1.[illegible]-12	2.6[illegible]-8	[illegible]
[illegible]	1.[illegible]-1	2.97-4	1.14-9	7.[illegible]-5	[illegible]
[illegible]	[illegible]	[illegible].39-6	4.74-11	1.[illegible]-5	[illegible]
[illegible]	[illegible]	7.[illegible]0-8	3.76-13	3.70-9	[illegible]
[illegible]	[illegible]	5.[illegible]-8	[illegible].15-13	5.[illegible]-9	[illegible]
[illegible]	[illegible]	1.[illegible]-5	[illegible].32-11	7.02-7	[illegible]
[illegible]	[illegible]	1.[illegible]-6	7.22-12	2.[illegible]-7	[illegible]
[illegible]	[illegible]	2.[illegible]-9	1.23-14	2.[illegible]-10	[illegible]
			Σ = 5.62 x 10^{-9}	Σ = 8.85 x 10^{-3}	Σ = [illegible]
[illegible]	2.3-2	4.59-5	1.22-7	4.07-5	[illegible]

*2.99-1 = 2.99 x 10^{-1}

3.17 RELEASE OF GASEOUS RADIOACTIVE WASTES

Applicability: Applies to the controlled release of all gaseous waste discharged from the plant which may contain radioactive materials.

Objective: To establish conditions in which gaseous waste containing radioactive materials may be released and to assure that all such releases are within the concentration and dose limits specified in 10 CFR Part 20. In addition, to assure that the releases of gaseous radioactive wastes (above background) to unrestricted areas meet the as low as practicable concept, the following objectives shall apply:

This condition is necessary to meet Appendix I limits [illegible] at the boundary. [illegible] can meet this since [illegible] = [illegible]

1. Averaged over a yearly interval, the release rate of radioactive isotopes, except I-131 and particulate radioisotopes with half lives greater than 8 days, discharged at the plant stack, shall be limited as follows:

$$\sum \frac{Q_i}{(MPC)_i} \leq 800 \text{ m}^3/\text{sec}$$

where Q_i is the annual controlled release rate (Ci/sec) of radioisotope i and $(MPC)_i$ (μci/cc) is defined for radioisotope i in column 1, Table II of Appendix B to 10 CFR 20.

2. Averaged over a yearly interval, the release rate of I-131 and other particulate radioisotopes with half lives longer than 8 days, discharged at the plant stack, shall be limited as follows:

This [illegible] will [illegible] I but [illegible] [illegible] the [illegible].

$$\sum \frac{Q_i}{(MPC)_i} \leq 5.5 \text{ m}^3/\text{sec}$$

where Q_i and $(MPC)_i$ are as defined above.

Specifications: A. Release Rate [illegible] Gaseous Wastes of Radioactive Materials [illegible]

1. If the [illegible] rate of release of radioactive materials in gaseous wastes, when averaged over a calendar [illegible] is such that these quantities if continued at the same release rate for a year would exceed twice the annual objectives, the licensee shall:

   a. [illegible] investigation to identify the causes [illegible] rates;

   b. [illegible] a program of action to [illegible] design levels;

Tech Spec dup of preceding doc 720623

Table [illegible].17-1

RADIOACTIVE [illegible] SAMPLING AND ANALYSIS

A. Gas Decay Drum Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Each Drum Release	Gross Gamma	10^{-5} μCi/cc
		Individual Gamma [illegible]	10^{-4} μCi/cc(2)

B. Containment [illegible] Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Each Vent	Gross Gamma	10^{-5} μCi/cc
		Individual Gamma [illegible]	10^{-4} μCi/cc(2)
Dehumidified Sample	Each Vent	[illegible]	10^{-6} μCi/cc

C. Condenser Air [illegible]

Sample Type	Sampling [illegible]	Type of [illegible]	Sensitivity of [illegible] (1)
Gas	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible] (2)

The [illegible] of [illegible] dramatic [illegible] of radioactive gases [illegible] [illegible] [illegible] coolant [illegible] [illegible] dependent upon several factors including fuel leakage, burnup and power level. Changes in power level will affect [illegible] gas generation rates temporarily. [illegible] released from the reactor coolant to the gaseous waste system during degassifier treatment of the letdown and leakage water and also during venting of the system. This venting may occasionally be performed to degas the system and to control plant chemistry and/or reduce coolant radioactive gas concentrations to an acceptable value for the protection of plant personnel.

Gaseous waste holdup and decay occurs while it is retained in the reactor coolant system and in the surge drum of the gaseous treatment system. The gaseous waste holdup drums are of sufficient capacity to provide an additional average retention period of 30 days during normal operating conditions.

The low as practicable gaseous release objectives expressed in this Specification are based on the guidelines contained in the proposed Appendix I of 10 CFR 50. Since these guidelines have not been [illegible] yet, the release objectives of this Specification [illegible] at the time Appendix I becomes a regulation [illegible] this Specification is based upon the guidelines contained therein.

Table 3.17-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSES

A. Gas Decay Drum Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Each Drum Release	Gross Gamma	10^{-5} μCi/cc
		Individual Gamma Emitters	10^{-4} μCi/cc (2)

B. Containment Venting Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Each Vent	Gross Gamma	10^{-5} μCi/cc
		Individual Gamma Emitters	10^{-4} μCi/cc (2)
Dehumidified Sample	Each Vent	H-3	10^{-6} μCi/cc

C. Condenser Air Ejector Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Monthly	Gross Gamma	[illegible]
		Individual Gamma Emitters	[illegible] (2)

g. [illegible] factor of 1000 for iodine in the [illegible]

h. Charcoal filter efficiency of 99% for iodine on the air ejector, [illegible] and gas decay drum systems.

The application of the above estimates result in the radiogas discharge rates shown in Table-3.17-2.

4.61 x 10⁻⁶ sec/m³

The noble gas release rate stated in the objectives is based on a X/Q value from the annual meteorological data. The dispersion factor used, ~~2.59 x 10⁻⁵ sec/m³~~, is conservative and controls the release rate to a small function of 10 CFR Part 20 requirements at the site restricted area boundary (410 mrem per year).

The I-131 and particulate release rate stated in the objectives limits the concentration at the restricted area boundary [illegible] less than 1% of the MPC listed in 10 CFR 20. The release rate also controls the [illegible] concentrations at nearby commercial dairy farms to much less than 1/100,000 of the 10 CFR 20 requirements.

The maximum one hour release rate limits the dose rate at the site boundary [illegible] 2 mrem/hour even during period of unfavorable [illegible] (moderately stable conditions with 2 m/sec wind speed [illegible]).

The maximum activity in a waste gas decay drum is specified as 88,400 curies of Xe-133 equivalent based on a postulated rupture that allows all of the contents to escape to the atmosphere. This specification limits the maximum offsite dose to well below the limits of 10 CFR 100.

The gaseous waste system is divided into two portions; aerated gases and hydrogenated gases. Low activity, aerated gaseous wastes are discharged to the aerated gas header and through a high efficiency filter to the primary vent stack. Hydrogenated [illegible] through the gas [illegible] drum. The [illegible] the gaseous [illegible] line [illegible] in the stack. [illegible] activity in the vent line or upon the loss [illegible] control valve will [illegible]

C. [illegible]

[illegible] agree with [illegible] and [illegible] reporting requirements.

In addition to the above continuous sampling and monitoring requirements, gaseous radioactive waste sampling and activity analysis shall be performed in accordance with Table 3.17-1. Records shall be maintained and reports of the sampling and analysis results shall be submitted in accordance with Sections 5.6 and 5.7 of these Specifications.

Basis: It is expected that the releases of radioactive materials in gaseous waste will be kept within the design objective levels and will not exceed on an instantaneous basis the dose rate limits specified in 10 CFR Part 20.

These levels provide reasonable assurance that the resulting annual exposure from noble gases to the whole body or any organ of an individual will not exceed 5 millirems per year. At the same time, the licensee is permitted the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that using this operational flexibility under unusual operating conditions the licensee shall exert every effort to keep levels of radioactive material in gaseous wastes as low as practicable and that annual releases will not exceed a small fraction of the annual average concentration limits specified in 10 CFR Part 20. These efforts shall include consideration of meteorological conditions during releases.

The design objectives have been developed taking into account a combination of system variables including fuel failures, primary system leakage and the performance of radioisotope removal mechanisms. The values assumed for these variables include the following:

a. Reactor coolant [illegible] product concentration corresponding to [illegible];

b. [illegible] primary-to-secondary leak rate of 0.01 gpm;

c. [illegible] rate of 5 [illegible];

d. [illegible] to the containment building of 0.25 [illegible];

e. [illegible] for iodine [illegible] drains tanks;

f. [illegible] 60 days [illegible].

[illegible] 3. a. [illegible] conditions of plant operation, radioactive gaseous waste from the hydrogenated [illegible] shall be provided a minimum average holdup of 30 days except for low radioactivity gaseous waste resulting from purge and fill operations associated with refueling and reactor startup.

[illegible] b. Holdup time less than that specified in 3.3.a above shall be covered in the special effluent report required by Section 5.7.2.3 of these specifications.

[illegible] c. The maximum activity to be contained in one gas decay tank shall not exceed 08,400 curies of Xe-133 equivalent.

4. During the [illegible] indication of primary-to-secondary leakage, concurrent with sufficient fuel defects, a determination of the iodine partition factor for the blowdown tank shall be made.

[illegible] 5. During power operation, the condenser air ejector discharge shall be continuously monitored for gross radiogas activity. Whenever this monitor is inoperable, grab samples shall be taken from the air ejector discharge and analyzed for gross radiogas activity daily.

6. Gases discharged through the stack shall be continuously monitored for gross noble gas and particulate activity. Whenever either of these monitors is inoperable, appropriate grab samples shall be taken and analyzed daily.

[illegible] 7. Purging of the reactor building shall be governed by the following [illegible]:

a. Reactor building purge shall be filtered through the [illegible] particulate air filters and [illegible] whenever the concentration of iodine and particulate isotopes exceed the [illegible] MPC inside the reactor building.

b. Reactor building purge shall be filtered through the high efficiency particulate air filters and [illegible] whenever irradiated fuel is [illegible] or any object is being handled [illegible] irradiated fuel in the reactor building.

c. Describe these actions in a report to the Commission within 30 days.

2. If the experienced rate of release of radioactive material in gaseous wastes, when averaged over a calendar quarter, is such that these quantities if continued at the same release rate for a year would exceed eight times the annual objectives, the licensee shall define and initiate a program of action to assure that such release rates are reduced, and shall submit a report to the Commission within 7 days describing the causes for such release rates and the course of action taken to reduce them.

3. The rate of release of radioactive materials in gaseous waste from the plant (except I-131 and particulate radioisotopes with half lives greater than 8 days) shall be controlled such that the maximum release rate averaged over any one-hour period shall not exceed:

$$\sum \frac{Q_i}{(MPC)_i} = [illegible] \times 10^4 \ m^3/sec$$

B. <u>Treatment and Monitoring</u>

1. At least one exhaust fan shall be in operation when radioactive gaseous wastes are released to the stack.

2. During release of radioactive gaseous waste from the gaseous waste decay drums to the stack, the following conditions shall be met:

CTS 3.4.3.2a → a. The gas decay drum effluent monitor and the stack sampling devices for halogens and particulates shall be operable. The normal response of the decay drum effluent monitor shall be verified by comparison with the prerelease sample analysis. The monitor shall be tested prior to any release of radioactive gas from a decay drum and shall be calibrated at refueling intervals. The calibration procedure shall consist of exposing the detector to a referenced calibration source in a controlled reproducible geometry. The source and geometry shall be referenced to the original monitor calibration which provides the applicable calibration curves.

CTS 3.4.3.2b → b. The gaseous waste from the decay drums shall be filtered through the high efficiency particulate air filters and the charcoal adsorber [illegible].

Table 3.17-1

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS

A. Gas Decay Drum Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Each Drum Release	Gross Gamma	10^{-5} µCi/cc
		Individual Gamma Emitters	10^{-4} µCi/cc (2)

B. Containment Venting Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Each Vent	Gross Gamma	10^{-5} µCi/cc
		Individual Gamma Emitters	10^{-4} µCi/cc (2)
Dehumidified Sample	Each Vent	H-3	10^{-6} µCi/cc

C. Condenser Air Ejector Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Monthly	Gross Gamma	10^{-4} µCi/cc
		Individual Gamma Emitters	10^{-3} µCi/cc (2)

Table 3.17-1 (cont'd)

D. Stack Releases

Sample Type	Sampling Frequency	Type of Activity Analysis	Sensitivity of Analysis (1)
Gas	Quarterly	Gross Gamma	10^{-6} μCi/cc
		Individual Gamma Emitters	10^{-5} μCi/cc (2)
Dehumidified Sample	Each Decay Drum Release	H-3	10^{-6} μCi/cc
Charcoal	Weekly	I-131, I-133, I-135	3×10^{-12} μCi/cc
Particulates	Weekly	Gross β, γ	3×10^{-12} μCi/cc
	Weekly	Ba-140, La-140, I-131	3×10^{-11} μCi/cc
	Monthly Composite of Weekly Samples	Gross β, γ	3×10^{-12} μCi/cc
		Individual Gamma Emitters	3×10^{-11} μCi/cc
	Quarterly Composite of Weekly Samples	Sr-89, Sr-90	1 x 10-[illegible] μCi/cc
	One Weekly Sample/Quarter	Gross α	3×10^{-12} μCi/cc

NOTES:

(1) The above activity analysis sensitivities are based on the projected capability of laboratory instrumentation and techniques to be employed by Maine Yankee. In order to assure that actual Maine Yankee operating experience is utilized, a reevaluation will be performed within 2 years of initial full power operation of the plant.

(2) For certain mixtures of gamma emitters, it may not be possible to measure radionuclides at levels near their sensitivity limits when other nuclides are present in the sample at much higher levels. Under these circumstances, it will be more appropriate to calculate the levels of such radionuclides using observed ratios with those radionuclides which are measurable.

Table 3.17-2

GASEOUS RADIOACTIVE RELEASES

Isotope	Reactor Coolant Concentration (μCi/ml @ 70°F)	Release Rate, μCi/sec Aerated Vents	Air Ejector	Containment Vent	Decay Drums	Total
[illegible]	2.99-1*	1.28-4	1.08-4	4.2-4	2.0-6	[illegible]
[illegible]	1.12-1	4.83-5	1.59-6	1.96-6	---	[illegible]
[illegible]	5.02-1	2.16-4	5.31-5	7.9-5	---	[illegible]
[illegible]	7.99-2	3.22-5	1.0-7	4.95-8	---	[illegible]
[illegible]	2.30-1	1.2-4	1.1-5	1.41-6	---	[illegible]
[illegible]	1.04	---	6.56-1	1.2+1	3.4+1	[illegible]
[illegible]	1.9-1	---	1.2-1	6.27-3	---	[illegible]
[illegible]	1.08-1	---	6.8-2	1.05-3	---	[illegible]
[illegible]	3.26-1	---	2.06-1	6.8-3	---	2.2-1
[illegible]	1.25-1	---	7.88-2	2.76-1	---	3.6-[illegible]
[illegible]	2.52+1	---	1.59+1	2.44+1	---	4.0+1
[illegible]	5.60-1	---	3.53-1	4.26-2	---	4.0-[illegible]

$*2.99\text{-}1 = 2.99 \times 10^{-1}$