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AUTH.NAME AUTHOR AFFILIATION
UHRIG,R.E. FLORIDA POWER & LIGHT CO.
RECIP.NAME RECIPIENT AFFILIATION
STELLO,V. DIVISION OF OPERATING REACTORS

SUBJECT: FORWARDS AMEND TO APP A OF OL DPR-31 & DPR-41,DESCRIPTION OF PROPOSED CHANGES & REVISED TECH SPEC PAGES.

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FLORIDA POWER & LIGHT COMPANY

April 17, 1979
L-79-92

Director of Nuclear Reactor Regulation
Attention: Mr. Victor Stello, Director
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Stello:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Proposed Amendment to
Facility Operating Licenses DPR-31 & DPR-41

In accordance with 10 CFR 50.30, Florida Power & Light Company submits herewith three (3) signed originals and forty (40) copies of a request to amend Appendix A of Facility Operating Licenses DPR-31 and DPR-41. A description of the proposed changes, followed by the revised Technical Specification pages, is attached. This proposed amendment assumes the use of the South Dade Meteorological tower and replaces our amendment request dated June 4, 1976 (L-76-1976).

The proposed amendment has been reviewed by the Turkey Point Plant Nuclear Safety Committee and the Florida Power & Light Company Nuclear Review Board. They have concluded that it does not involve an unreviewed safety question.

Very truly yours,

Robert E. Uhrig

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/GDW/cf
Attachment

cc: Mr. James P. O'Reilly, Region II
Robert Lowenstein, Esquire

A009
A004
1s 40/40

7904230172

STATE OF FLORIDA)
) ss.
COUNTY OF DADE)

Robert E. Uhrig, being first duly sworn, deposes and says:

That he is a Vice President of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this said document are true and correct to the best of his knowledge, information, and belief, and that he is authorized to execute the document on behalf of said Licensee.

Robert E. Uhrig

Subscribed and sworn to before me this

17th day of April, 1979

Betty Brittain

NOTARY PUBLIC, in and for the county of Dade, State of Florida

My commission expires: NOTARY PUBLIC STATE OF FLORIDA at LARGE MY COMMISSION EXPIRES MARCH 27, 1982 BONDED THRU MAYNARD BONDING AGENCY

ATTACHMENT

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Proposed Tech Spec Change
Appendix I

The objective of this proposal is to implement the requirements of 10 CFR 50, Appendix I. Draft guidance from the NRC was followed when appropriate, depending on the specific design and operation of Turkey Point Units 3 and 4. For example, the solidification issue has not been addressed. At present, a waste solidification program is not in place at Turkey Point, however, the need for such a program is being evaluated and may lead to further correspondence.

CHANGE INDEX

Page #	Description
1-3	Revised "Channel Check" definition.
1-6	Added new definitions 1.19 and 1.20 to define "Gaseous Radwaste Treatment System" and "Ventilation Exhaust Treatment System".
3.9-1 thru 3.9-16	Specification 3.9 on "Radioactive Materials Release" is completely rewritten.
Table 4.1-1 Sheets 2 and 3	A footnote is added for Item 18A, "Process Radiation".
Table 4.1-3 Sheets 1 and 2	A new Table is added to specify surveillance frequencies for liquid effluent monitoring equipment.
Table 4.1-4 Sheets 1 and 2	A new Table is added to specify surveillance frequencies for gaseous effluent monitoring equipment.
4.12-1 thru 4.12-3, Table 4.12-1 & 4.12-2, and Figure 4.12-1	Specification 4.12 on "Environmental Radiation Survey" is completely rewritten and retitiled "Radiological Environmental Monitoring".
4.16-1	Added new surveillance Specification on "Liquid and Gaseous Radioactive Waste Systems".
B3.9-1 thru B3.9-5	The Bases for Specification 3.9 is completely rewritten.
B4.12-1	The Bases for Section 4.12 is completely rewritten.
B4.16-1	Bases for new surveillance Specification 4.16 are added.
6.13	An additional reporting requirement is added.
6-20	Additional reportability categories (10) and (11) are added to Specification 6.9.2.a.
6-21	Additional reportability category (5) is added to Specification 6.9.2.b.
6-22	Additional "Special Report" categories "c" and "d" are added to Specification 6.9.3.

CHANGE INDEX

Page #	Description
6-23	Table 6.9-1 is added to specify nonroutine reporting levels for activity concentrations in environmental samples.
6-24 & 6-25	Specifications 6.9.4 on "Unique Reporting Requirements" is revised.
6-26	New Table 6.9-2 provides a sample page for the "Environmental Radiological Monitoring Program Annual Summary".

number of operable channels and the number of channels which when tripped will cause reactor to trip.

1.7 INSTRUMENTATION SURVEILLANCE

(1) Channel Check
A channel check shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrumentation channels measuring the same parameter.

(2) Channel Functional Test
A channel functional test consists of injecting a simulated signal into the channel to verify that it is operable, including alarm and/or trip initiating action.

(3) Channel Calibration
Channel calibration consists of the adjustment of channel output such that it responds, with acceptable range and accuracy, to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including alarm or trip, and shall be deemed to include the channel functional test.

1.8 SHUTDOWN

(1) Cold Shutdown
The reactor is in the cold shutdown condition when the reactor is subcritical by at least 1% (Δk/k) and T_{avg} is less than 200F.

(2) Hot Shutdown
The reactor is in the hot shutdown condition when it

1.16 INTERIM LIMITS

1.16.1 Fuel Residence Time Limit

The fuel residence time for Unit 3 shall be limited to 27,000 EFPH. The fuel residence time for Unit 4 shall be limited to 30,000 EFPH.

1.16.2 Reactor Coolant Pumps Operation

The reactor shall not be operated with less than three reactor coolant pumps in operation.

1.17 LOW POWER PHYSICS TESTS

Low power physics tests are tests below a nominal 5% of rated power which measure fundamental characteristics of the reactor core and related instrumentation.

1.18 SOURCE CHECK

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

1.19 GASEOUS RADWASTE TREATMENT SYSTEM

A gaseous radwaste treatment system is the gas decay tank system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

1.20 VENTILATION EXHAUST TREATMENT SYSTEM

A ventilation exhaust treatment system is any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventillation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment. Such a system is not considered to have any effect on noble gas effluents. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be ventilation exhaust treatment system components.

3.9 RADIOACTIVE MATERIALS RELEASE

Applicability: Applies (1) to the controlled release of all liquid and gaseous waste discharge from the plant which may contain radioactive materials and (2) to the handling of containers of radioactive materials.

Objective: To establish conditions for the release of liquid, gaseous, and solid waste containing radioactive materials and to assure that all such releases are within the limits specified in 10CFR20. In addition, every reasonable effort shall be made to control the rate of release of radioactive materials in liquid and gaseous waste discharged from the plant to unrestricted areas as low as practicable.

Specifications:

1. LIQUID WASTES

a. The concentration of radioactive material released at any time from the site to unrestricted areas (see Figure 3.9-1) shall be limited to the concentrations specified in 10CFR20, APPENDIX B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} μCi/ml total activity after dilution.

1. The radioactivity content of each batch of radioactive liquid waste to be discharged shall be determined prior to release by sampling and analysis in accordance with Table 3.9-1. The results of pre-release analyses shall be used with the calculational methods in the in-plant procedures to assure that the concentration at the point of release is limited to the values in Specification 3.9.1.a.

2. The radioactivity concentrations of liquids discharged from continuous release points shall be determined by collection and analysis of samples in accordance with Table 3.9-1. The results of the analyses shall be used with the calculational methods in the in-plant procedures to calculate the concentrations at the point of release.

3. With the concentration of radioactive material released from the site to unrestricted areas exceeding the above limits, immediately restore concentration within the above limits and provide prompt notification to the Commission pursuant to Specification 6.9.2.a.

b. The dose or dose commitment per reactor to an individual from any radioactive materials in liquid effluent released to unrestricted areas (See Figure 3.9-1) shall be limited, during any calendar quarter, to $\leq$ 1.5 mrem to the total body and to $\leq$ 5 mrem to any organ.

1. Doses due to liquid releases to unrestrictd areas shall be projected at least once per 31 days.

2. Cumulative dose contributions from liquid effluents shall be determined in accordance with the in-plant procedures at least once per 31 days.

3. If the calculated dose from the release of radioactive materials in liquid effluents exceeds any of the above limits, a report shall be filed with the Commission pursuant to Specification 6.9.2.b.

c. The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.9-2 shall be operable with their alarm/trip setpoints (if applicable) set to ensure that the limits of Specification 3.9.1.a are not exceeded. The setpoints shall be determined in accordance with methods described in the in-plant procedures and shall be posted in the reactor control room.

1. The concentration of radioactive materials in liquid effluents released from the site shall be continuously monitored by the instruments shown in Table 3.9-2.

2. The liquid effluent continuous monitors having provisions for automatic termination of liquid releases, as listed in Table 3.9-2, shall be used to limit the concentration of radioactive material released at any time from the site to unrestricted areas to the concentrations specified in Specification 3.9.1.a.

3. To ensure that the limits of Specification 3.9.1.a are met, the alarm/trip setpoint on a radioactive liquid effluent monitor will be set at a more conservative value. If this value is exceeded, the radioactive liquid release being monitored by the affected monitor will be suspended or the monitor declared inoperable.

4. When one or more radioactive liquid effluent monitors are inoperable, the ACTIONS shown in Table 3.9-2 will be taken.

5. Each radioactive liquid effluent monitor shall be demonstrated operable by performance of operations at the frequencies shown in Table 4.1-3.

d. Appropriate subsystems of the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when a radioactivity analysis of a sample of the waste exceeds 1 X 10^{-2} μCi/ml, excluding tritium and dissolved noble gases.

1. If the radioactive liquid waste is being discharged without treatment and in excess of the above limits, a report shall be filed with the Commission pursuant to Specification 6.9.2.b.

e. The semiannual Radioactive Effluent Release Report shall include (1) in accordance with the program of Table 3.9-1, a summary of all releases of radioactive liquid effluents and (2) calculated dose contributions summed quarterly.

TABLE 3.9-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLING[h] FREQUENCY	MINIMUM[h] ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD) (μCi/ml)[a,b]
A. Batch Waste Release Tanks[c]	PR Each Batch	PR Each Batch	Principal Gamma Emitters[d]	5×10^{-7}
			I-131	1×10^{-6}
	PR One Batch/M	M	Dissolved and Entrained Gases	1×10^{-5}
	PR Each Batch	M Composite[e]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	P Each Batch	Q Composite[e]	Sr-89, Sr-90	5×10^{-8}
B. Plant Continuous Releases[f]	W	W	Principal Gamma Emitters[d]	5×10^{-7}
			I-131	1×10^{-6}
	M[g]	M[g]	Dissolved and Entrained Gases	1×10^{-5}
	W[g]	M[g] Composite[e]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	W[g]	Q[g] Composite[e]	Sr-89, Sr-90	5×10^{-8}

TABLE 3.9-1 (Cont.)

TABLE NOTATION

a. The lower limit of detection (LLD) is defined in Table Notation "a" of Table 4.12-2.

b. For radionuclides identified by gamma spectrum analysis it may not be possible to measure certain radionuclides near their LLD limit when they are in the presence of other radionuclides at higher concentration. When a radionuclide's calculated LLD is greater than its listed LLD limit, the LLD limit may be increased inversely proportionally to the magnitude of the gamma yield (i.e., 5×10^{-7} µc/ml/I, where I is the gamma abundance expressed as a decimal fraction), but in no case shall the LLD limit as calculated in this manner for a specific radionuclide, be greater than 10% of the MPC value specified in 10CFR20, Appendix B, Table II, Column 2. If the LLD limit exceeds 10% of 10CFR20 MPC, the activity of the radionuclide should be calculated using measured ratios with those radionuclides which are routinely identified and measured. If a ratio activity cannot be determined, the calculated LLD should be assigned as the activity of the radionuclide.

c. A batch release is the discharge of liquid wastes of a discrete volume.

d. The principal gamma emitters for which the LLD limit specification will apply are exclusively the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Cs-134, and Cs-137. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level.

e. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released. Prior to analysis, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

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

g. Sampling and analysis is only necessary when primary to secondary leakage is occurring.

h. Frequency designations are defined in Table 4.1-1, Sheet 3.

i. If performance of an isotopic analysis is not possible, liquid releases may be made for up to 7 days on the basis of a gross beta-gamma analysis

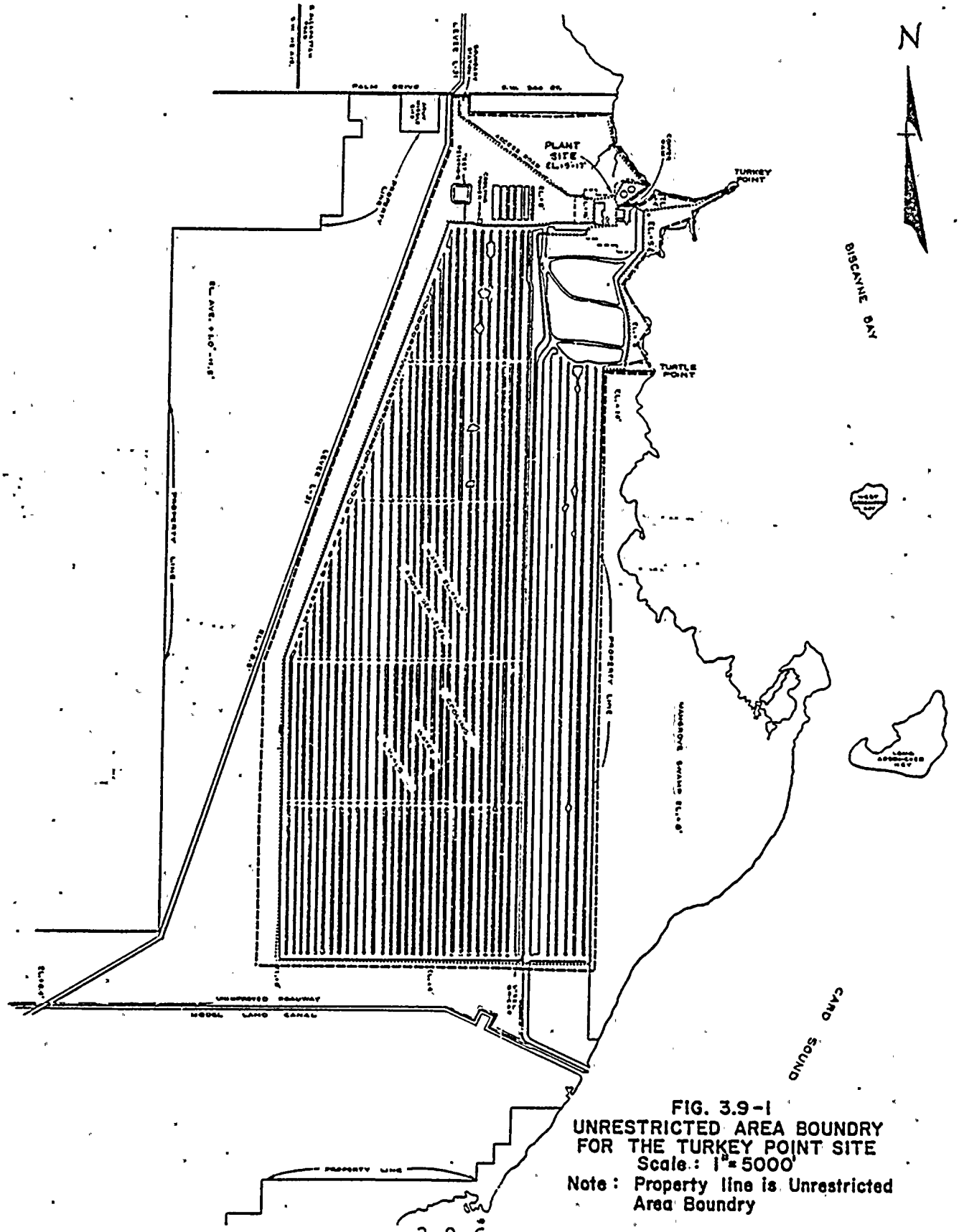

FIG. 3.9-1
UNRESTRICTED AREA BOUNDRY
FOR THE TURKEY POINT SITE
Scale: 1" = 5000'
Note: Property line is Unrestricted Area Boundry

TABLE 3.9-2

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. Gross Radioactivity Monitors Providing Automatic Termination of Release			
a. Liquid Radwaste Effluent Line	(1)	At all times*	1
b. Steam Generator Blowdown Effluent Line	(1)	At all times*	2
2. Gross Radioactivity Monitors Providing Alarm But Not Providing Automatic Isolation			
a. Component Cooling Water System	(1)	At all times*	3
3. Flow Rate Measurement Devices			
a. Steam Generator Blowdown Effluent Line	(1)	At all times*	4

* During releases via this pathway

TABLE 3.9-2 (Cont.)
TABLE NOTATION

ACTION 1 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases may be resumed for up to 14 days, provided that prior to initiating a release:

1. At least two independent samples are analyzed in accordance with Specification 3.9.1.a.1 and;

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

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 2 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases via this pathway may continue indefinitely if there is no primary to secondary leakage indicated. If primary to secondary leakage is indicated, releases may continue for up to 14 days provided grab samples are analyzed for gross radioactivity (beta or gamma) at a limit of detection of at least 10^{-7} μCi/gram:

1. At least once per 8 hours when the specific activity of the secondary coolant is > 0.01 μCi/gram DOSE EQUIVALENT I-131.

2. At least once per 24 hours when the specific activity of the secondary coolant is ≤ 0.01 μCi/gram DOSE EQUIVALENT I-131.

ACTION 3 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases via this pathway may be made provided that grab samples are collected during releases at least once per 8 hours and analyzed for gross radioactivity (beta or gamma) at a limit of detection of at least 10^{-7} μCi/ml.

ACTION 4 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases via the affected pathway may continue indefinitely if there is no primary to secondary leakage occurring. If primary to secondary leakage is occurring, releases may continue for up to 14 days provided the flow rate is estimated:

1. At least once per 8 hours when the specific activity of the secondary coolant is > 0.01 μCi/gram DOSE EQUIVALENT I-131.

2. At least once per 24 hours when the specific activity of the secondary coolant is $\leq$ 0.01 µCi/gram DOSE EQUIVALENT I-131.

2. GASEOUS WASTE

a. The dose rate at any time in the unrestricted areas (see figure 3.9-1) due to radioactive materials released in gaseous effluents from the site shall be limited to the following values:

The dose rate limit for noble gases shall be $\leq$ 500 mrem/yr to the total body and $\leq$ 3,000 mrem/yr to the skin, and,

The dose rate limit for all radioiodines and for all radioactive materials in particulate form and radionuclides other than noble gases with half lives greater than 8 days shall be $\leq$ 1,500 mrem/yr to any organ.

1. The release rate, at any time, of noble gases in gaseous effluents shall be controlled by the offsite dose rate as established above.

2. The release rate of radioactive materials, other than noble gases, in gaseous effluents shall be determined by obtaining representative samples and performing analyses in accordance with the sampling and analysis program, specified in Table 3.9-3.

3. The dose rate in unrestricted areas, due to radioactive materials other than noble gases released in gaseous effluents, shall be determined to be within the required limits by using the results of the sampling and analysis program, specified in Table 3.9-3, in performing the calculations of dose rate in unrestricted areas.

4. With the dose rate(s) exceeding the above limits, immediately decrease the release rate to comply with the limit(s) given in Specification 3.9.2.a and provide prompt notification to the Commission pursuant to Specification 6.9.2.a.

b. The air dose per reactor in unrestricted areas due to noble gases released in gaseous effluents shall be limited, during any quarter, to $\leq$ 5 mrad for gamma radiation and $\leq$ 10 mrad for beta radiation.

The dose per reactor to an individual from radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases with half-lives greater than 8 days in gaseous effluents released to unrestricted areas shall be limited during any quarter to $\leq$ 7.5 mrem.

1. Doses due to gaseous releases to unrestricted areas shall be projected at least once per 31 days.

2. Cumulative dose contributions from gaseous effluents shall be determined in accordance with the in-plant procedures at least once per 31 days.

3. If the calculated dose from the release of radioactive materials in gaseous effluents exceeds any of the above limits, a report shall be filed with the Commission pursuant to Specification 6.9.2.b.

c. The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.9-4 shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 3.9.2.a are not exceeded. The setpoints shall be determined in accordance with methods described in the in-plant procedures and shall be posted in the reactor control room.

1. The noble gas effluent continuous monitors having provisions for the automatic termination of gaseous releases, as listed in Table 3.9-4 shall be used to limit offsite doses within the values established in Specification 3.9.2.a when monitor setpoint values are exceeded.

2. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than a value which will ensure that the limits of Specification 3.9.2.a are met, declare the channel inoperable.

3. With one or more radioactive gaseous effluent monitoring instrumentation channels inoperable, take the ACTION shown in Table 3.9-4.

4. Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated

operable by performance of the operations at the frequencies shown in Table 4.1-4.

d. The gaseous radwaste treatment system should be used to reduce radioactive materials in gaseous waste prior to their discharge if the projected gaseous effluent dose per reactor due to gaseous effluent releases to unrestricted areas (see Figure 3.9-1) when averaged over 31 days exceeds 0.4 mrad for gamma radiation and 0.8 mrad for beta radiation, and ventilation exhaust treatment system shall be used to reduce radioactive materials in gaseous waste prior to their discharge if the projected gaseous effluent doses per reactor due to gaseous effluent releases to unrestricted areas (see Figure 3.9-1) when averaged over 31 days exceeds 0.6 mrem to any organ.

1. With gaseous waste being discharged for more than 31 days without treatment and in excess of the above limits, a report shall be filed with the Commission pursuant to Specification 6.9.2.b.

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

1. With the calculated dose from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Specifications 3.9.1.b and 3.9.2.b, prepare and submit a Special Report, in lieu of any other report, to the Commission pursuant to Specification 6.9.3 and limit the subsequent releases such that the dose or dose commitment to any real individual from uranium fuel cycle sources is limited to $\leq$ 25 mrem to the total body or any organ (except thyroid, which is limited to $\leq$ 75 mrem) over 12 consecutive months. This Special Report shall include an analysis which demonstrates that radiation exposures to any real individual from uranium fuel cycle sources (including all effluent pathways and direct radiation) are less than the 40 CFR Part 190 Standard. Otherwise, obtain a variance from the Commission to permit releases which exceed the 40 CFR Part 190 Standard.

2. Cumulative dose contributions from liquid and gaseous effluents shall be determined in

accordance with Specification 3.9.1.b and 3.9.2.b and in accordance with in-plant procedures

f. The quantity of radioactivity contained in each gas storage tank shall be limited to $\leq$ 70,000 curies noble gases (considered as Xe-133).

1. With the quantity of noble gas in any gas storage tank exceeding the above limit, immediately suspend all additions of radioactive material to the tank and within 48 hours either reduce the tank contents to within the limit or provide prompt notification to the Commission pursuant to Specification 6.9.2.a.

g. The semiannual Radioactive Effluent Release Report shall include, (1) in accordance with the program of Table 3.9-3, a summary of all releases of radioactive gaseous effluents and (2) calculated dose contributions summed quarterly.

3. CONTAINERIZED WASTES

a. Containers of radioactive waste materials shall be shipped from the site by licensed carriers in conformance with the Code of Federal Regulations.

TABLE 3.9-3

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

GASEOUS RELEASE TYPE	SAMPLING[g] FREQUENCY	MINIMUM[g] ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD) (μCi/ml)[a,b]
A. Gas Decay Tank (Batch)	PR Each Tank	PR Each Tank	Noble Gas Principal Gamma Emitters[c]	1×10^{-4}
			H-3[d]	1×10^{-6}
B. Containment Purge (Batch)	PR Each Purge	PR Each Purge	Noble Gas Principal Gamma Emitters[c]	1×10^{-4}
			H-3[d]	1×10^{-6}
C. Air Ejectors	W[f] Grab Sample	W[f]	Noble Gas Principal Gamma Emitters[c]	1×10^{-4}
D. Plant Vent and #3 Spent Fuel Pit Building	M Grab Sample	M Grab Sample	Noble Gas Principal Gamma Emitters[c]	1×10^{-4}
	M Grab Sample	M Grab Sample	H-3	1×10^{-6}
	Continuous[e]	W Charcoal Sample	I-131	1×10^{-12}
			I-133	1×10^{-10}
	Continuous[e]	W Particulate Sample	Particulate Principal Gamma Emitters[c]	1×10^{-11}
	Continuous[e]	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous[e]	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}

TABLE 3.9-3 (Cont.)

TABLE NOTATION

a. The lower limit of detection (LLD) is defined in Table Notation "a" of Table 4.12-2.

b. For radionuclides identified by gamma spectrum analysis it may not be possible to measure certain radionuclides near their LLD limit when they are in the presence of other radionuclides at higher concentration. When a radionuclide's calculated LLD is greater than its listed LLD limit, the LLD limit may be increased inversely proportionally to the magnitude of the gamma yield (i.e., 1×10^{-4} µc/ml/I, where I is the gamma abundance expressed as a decimal fraction), but in no case shall the LLD limit as calculated in this manner for a specific radionuclide, be greater than 10% of the MPC value specified in 10CFR20, Appendix B, Table II, Column 1. If the LLD limit exceeds 10% of 10CFR20 MPC, the activity of the radionuclide should be calculated using measured ratios with those radionuclides which are routinely identified and measured. If a ratio activity cannot be determined, the calculated LLD should be assigned as the activity of the radionuclide.

c. The principal gamma emitters for which the LLD limit specification will apply are exclusively the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for noble gas emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Cs-134, Cs-137, Ce-141, Ce-144, and I-131 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level for that nuclide.

d. Tritium grab samples shall be taken prior to each batch release, but the sample may be analyzed after the batch release when the sample counting solution has stabilized to allow an accurate determination of activity.

e. 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.

f. Only during times of primary to secondary leakage.

g. Frequency designations are defined in Table 4.1-1, sheet 3.

TABLE 3.9-4

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	PARAMETER	ACTION
1. Gas Decay Tank System				
a. Noble Gas Activity Monitor	(1)	*	Radioactivity Concentration Measurement	10
2. Plant Vent				
a. Noble Gas Activity Monitor	(1)	*	Radioactivity Concentration Measurement	7
b. Iodine Sampler Cartridge	(1)	*	Verify Presence of Cartridge	9
c. Particulate Sampler Filter	(1)	*	Verify Presence of Filter	9
d. Sampler Flow Rate Measuring Device	(1)	*	Sampler Flow Rate Measurement	6
3. #3 Spent Fuel Pit Building Vent				
a. Noble Gas Activity Monitor	(1)	*	Radioactivity Concentration Measurement	7
b. Iodine Sampler Cartridge	(1)	*	Verify Presence of Cartridge	9
c. Particulate Sampler Filter	(1)	*	Verify Presence of Filter	9
d. Sampler Flow Rate Measuring Device	(1)	*	Sampler Flow Rate Measurement	6
4. Air Ejector Vent				
a. Noble Gas Activity Monitor	(1)	*	Radioactivity Concentration Measurement	8
b. Effluent System Flow Rate Measuring Device	(1)	**	System Flow Rate Measurement	6

* During releases via this pathway

** Daily when primary to secondary leakage is occurring

TABLE 3.9-4 (Cont.)

ACTION 6 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases via this pathway may continue for up to 28 days provided the flow rate is estimated at least once per day.

ACTION 7 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases via this pathway may continue for up to 28 days provided grab samples are collected and analyzed for gross activity at least once per 24 hours.

ACTION 8 With the number of channels operable less than required by the Minimum Channels operable requirement, grab samples will be collected and analyzed daily for noble gas when primary to secondary leakage is occurring.

ACTION 9 With the number of channels operable less than required by the Minimum Channels operable requirement, effluent releases via this pathway may continue for up to 28 days, provided samples are continuously collected with auxiliary sampling equipment for periods of approximately seven (7) days.

ACTION 10 With the number of channels operable less than required by the Minimum Channels operable requirement, the contents of the tank may be released to the environment for up to 72 hours provided that prior to initiating the release:

1. At least two independent samples of the tank's contents are analyzed, and

2. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup:

Otherwise, suspend release of radioactive effluents via this pathway.

TABLE 4.1-1 SHEET 2

	Channel Description	Check	Calibrate	Test	Remarks
10.	Rod Position Bank Counters	S†	N.A.	N.A.	With analog Rod Position
11.	Steam Generator Level	S†	R	M†	
12.	Charging Flow	N.A.	R	N.A.	
13.	Residual Heat Removal Pump Flow	N.A.	R	N.A.	
14.	Boric Acid Tank Level	W	R	N.A.	
15.	Refueling Water Storage Tank Level	W†	R	N.A.	
16.	Volume Control Tank Level	N.A.	R	N.A.	
17A.	Containment Pressure	D††	R	M††	Wide Range
17B.	Containment Pressure	D††	R	M††	Narrow Range
18A.	Process Radiation ***	D	N.A.	M	
18B.	Area Radiation	D	A	M	
19.	Boric Acid Control	N.A.	N.A.	R	
20.	Containment Sump Level	N.A.	R	N.A.	
21.	Accumulator Level and Pressure	S†	R	N.A.	
22.	Steam Line Pressure	S†	R	M†	
23.	Environmental Radiological Monitors	N.A.	A(1)	M(1)	(1) Flow
24.	Logic Channels	N.A.	N.A.	M†	

	Channel Description	Check	Calibrate	Test	Remarks
25.	Emer. Portable Survey Instruments	N.A.	A	M	
26.	Seismograph	N.A.	N.A.	Q	Make trace Test battery (change semi-annually)

* Using moveable in-core detector system
** Frequency only
*** R-17A,R-17B, R-18 and R-19 refer to Table 4.1-3; R-14 and R-15 refer to Table 4.1-4
PR - Prior to each release
S - Each Shift
D - Daily
W - Weekly
B/W - Every Two Weeks
M - Monthly
Q - Quarterly
P - Prior to each startup if not done previous week
R - Each Refueling Shutdown
A - Annually
N.A. - Not applicable

† - N.A. during cold or refueling shutdowns. The specified tests, however, shall be performed within one surveillance interval prior to startup.

†† - N.A. during cold or refueling shutdowns. The specified tests, however, shall be performed within one surveillance interval prior to heatup above 200F.

TABLE 4.1-3 (SHEET 1)

MINIMUM FREQUENCY FOR SURVEILLANCE OF RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	CHANNEL CHECK (5)	SOURCE CHECK (5)	CHANNEL CALIBRATION (5)	CHANNEL FUNCTIONAL TEST (5)
1. Gross Beta or Gamma Radioactivity Monitors Providing Alarm and Automatic Isolation				
a. Liquid Radwaste Effluents Line	D*	PR	A(3)	A(1)
b. Steam Generator Blowdown Effluent Line	D*	M	R(3)	R(1)
2. Gross Beta or Gamma Radioactivity Monitors Providing Alarm but Not Providing Automatic Isolation				
a. Component Cooling Water System	D*	M	N/A	A(2)
3. Flow Rate Monitor (4)				
a. Steam Generator Blowdown Effluent Line	D*	N/A	Q	Q

* During releases via this pathway.

TABLE 4.1.3 SHEET 2

TABLE NOTATION

(1) - The CHANNEL FUNCTION TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exist:

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

2. Circuit failure.

3. Instrument controls not set in operate mode:

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

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

2. Circuit failure.

3. Instrument controls not set in operate mode.

(3) - The CHANNEL CALIBRATION shall include the use of a known (traceable to the National Bureau of Standards radiation measurement system) liquid radioactive source positioned in a reproducible geometry with respect to the sensor and emitting beta and gamma radiation with fluences and energies in the ranges measured by the channel during normal operation.

(4) - CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once daily on any day on which continuous, periodic, or batch releases are made.

(5) - Frequency designations are defined in Table 4.1-1 sheet 3.

TABLE 4.1-4 SHEET 1

MINIMUM FREQUENCY FOR SURVEILLANCE OF RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	CHANNEL CHECK (4)	SOURCE CHECK (4)	CHANNEL CALIBRATION (4)	CHANNEL FUNCTIONAL TEST (4)
1. Gas Decay Tank System				
a. Noble Gas Activity Monitor **	PR*	PR	A	A(1)
2. Plant Vent				
a. Noble Gas Activity Monitor	D*	M*	A(3)	A(2)
b. Iodine Sampler	D*	N/A	N/A	N/A
c. Particulate Sampler	D*	N/A	N/A	N/A
d. Sampler Flow Rate Measurement Device	D*	N/A	A	A
3. #3 Spent Fuel Pit Building Vent				
a. Noble Gas Activity Monitor	D*	M*	A(3)	A
B. Iodine Sampler	D*	N/A	N/A	N/A
c. Particulate Sampler	D*	N/A	N/A	N/A
d. Sampler Flow Rate Measurement Device	D*	N/A	A	A
4. Air Ejector Vent				
a. Noble Gas Activity Monitor	D*	M*	A(3)	A(2)
b. Effluent System Flow Rate Measurement Device	D*	N/A	A	A

* During releases via this pathway

** Noble gas activity monitor is located in the plant vent and provides automatic isolation of gas decay tank system release pathway.

TABLE 4.1-4 SHEET 2

TABLE NOTATION

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exist:

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

2. Circuit failure.

3. Instrument controls not set in operate mode.

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

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

2. Circuit failure.

3. Instrument controls not set in operate mode.

(3) The CHANNEL CALIBRATION shall include the use of a known (traceable to the National Bureau of Standards radiation measurement system) gas radioactive source positioned in a reproducible geometry with respect to the sensor and emitting beta and gamma radiation with fluences and energies in the ranges measured by the channel during normal operation.

(4) Frequency designations are defined in Table 4.1-1, Sheet 3.

4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

Applicability: Applies to routine monitoring of plant environs.

Objective: To establish a sampling schedule which will assure cognizance of radiological changes in the environs.

Specification:

1. Environmental samples from the locations shown on Fig. 4.12-1 shall be collected and analyzed in accordance with Table 4.12-1. Maximum values for lower limits of detection shall be in accordance with Table 4.12-2.

   a. With the radiological environmental monitoring program not being conducted as specified in Table 4.12-1, prepare and submit to the Commission, in the Annual Radiological Environmental Monitoring Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, or to malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period. The sample locations may vary over plant life from the locations given on Table 4.12-1. A current list of sample locations used during the reporting period shall be included in the Annual Radiological Environmental Monitoring Report. Sample location changes from the preceding year should be identified along with a brief description of the reason for the change.

   b. With the confirmed* level of radioactivity in an environmental sampling medium at one or more of the locations, outside the closed cooling canal system, specified in Table 4.12-1 exceeding the limits of Table 6.9-1 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days from the end of the affected calendar quarter, a special report pursuant to specification 6.9.3 which includes an evaluation of any release conditions, environmental factors or other aspects which caused the limits of Table 6.9-1 to be exceeded. This report is not required if the measured level of radioactivity

* A confirmatory reanalysis of the original, a duplicate, or a new sample may be desirable, as appropriate. The results of the confirmatory analysis shall be completed at the earliest time consistent with the analysis, but in any case within 30 days.

was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Monitoring Report.

c. With milk or fresh leafy vegetable samples unavailable from any of the sample locations required by Table 4.12-1, a report shall be included in the Annual Radiological Environmental Monitoring Report identifying the cause of the unavailability of samples and identifying replacement locations for obtaining samples. Once new locations have been selected and sample availability is established, the locations from which samples were unavailable may then be deleted from the program and the locations from which the replacement samples were obtained added to the environmental monitoring program as replacement locations.

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

a. With a land use census identifying a location(s) which yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 3.9.2.b.1, prepare and submit a report in the Annual Radiological Environmental Monitoring Report which identifies the new locations.

b. With a land use census identifying a location(s) which yields a calculated dose or dose commitment (via the same exposure pathway) greater than at a location from which samples are currently being obtained in accordance with Specification 4.12.1, prepare and submit a report in the Annual Radiological Environmental Monitoring Report which identifies the new location(s). The new location(s) will be added to the Radiological Environmental Monitoring Program when samples become available. The sampling location having the lowest calculated dose or dose commitment (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.

c. The land use census shall be conducted once per 12 months, by a door-to-door survey, by aerial survey, or by consulting local agriculture authorities.

3. Analyses shall be performed on radioactive materials supplied as part of a Interlaboratory Comparison Program which has been approved by the NRC.

   a. With analyses not being performed as required above, report to the Commission the corrective actions taken to prevent a recurrence in the Annual Radiological Environmental Monitoring Report.

4. The Annual Radiological Environmental Monitoring Report shall include: 1) a summary of the results of analyses performed on the radiological environmental monitoring samples 2) the results of the land use census 3) the results of analyses performed as part of the Interlaboratory Comparison Program.

TABLE 4.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRM

TURKEY POINT

Exposure Pathway and/or sample	Sample Locations(a)	Collection Frequency(b)	Type & Frequency of Analysis
1. Airborne a. Radioiodine and Particulates	8 locations T58,T71,T72,T51,T52 T56,T57,T64(control)	Continuous operation of sampler with sample collection as required by dust loading but at least weekly	Radioiodine canister Analyze at least weekly for I-131. Particulate sampler. Analyze for gross beta radioactivity $\geq$ 24 hours following filter change. Perform gamma isotopic analysis on each sample when gross beta activity is > 10 times the yearly mean of the control sample. Perform gamma isotopic analysis on composite (by location) sample at least quarterly.
2. Direct Radiation	9 locations T58,T71,T72,T51,T52 T56,T57,T64(control) T70	Monthly	Gamma dose. Monthly

TABLE 4.12-1 (Cont.)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

TURKEY POINT

Exposure Pathway and/or sample	Sample Locations (a)	Collection Frequency (b)	Type & Frequency of Analysis
3. Waterborne			
a. Surface			Gamma isotopic analysis and tritium analysis monthly.
(1) Estuarine	3 locations T51,T66,T67 (Control Biscayne Bay and Card Sound	Monthly	
(2) Closed Cooling Canal System	1 location T84	Monthly	
(3) Fresh Water Drainage Canal	1 location T75	Monthly	
b. Ground Water Wells, east, south and west of cooling canals	4 locations T88,T89,T90,T91	Quarterly	Gamma isotopic analysis and tritium analysis quarterly.
c. Drinking	3 locations T73,T74,T64 (control)	Monthly	Gross beta, gamma isotopic analysis and tritium analysis monthly.
d. Sediment			
(1) Closed Cooling Canal System	1 location, T84	Semi-annually	Gamma isotopic analysis semi-annually
(2) Estaurine	2 locations T69,T64 (control)	Semi-annually	

TABLE 4.12-1 (Cont.)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

TURKEY POINT

Exposure Pathway and/or sample	Sample Locations(a)	Collection Frequency(b)	Type & Frequency of Analysis
4. Ingestion			
a. Milk	To be named	Semi-monthly	Gamma isotopic analysis and I-131 analysis semi-monthly
b. Fish and invertebrates Blue Crab Fish	3 locations T81,T69, T64 (control)	Semi-annually	Gamma isotopic analysis on edible portions semi-annually
c. Food Products (1) to be determined	3 locations (2 to be determined by land use census) 1 Control	At harvest time.	Gamma isotopic analysis on edible portions
(2) Leafy Vegetation	1 Location Determined annual garden census and thyroid dose calculation.	At harvest time.	I-131 analysis
5. Land Use Census	NA	NA	As per Specification 4.12.2

TABLE NOTATION 4.12-1

(a) Sample locations are shown on Figure 4.12-1

(b) Frequency definitions follow:

Weekly	-	Not less than 48 times per annum - interval may vary by 3 days
Semi-monthly	-	Not less than 24 times per annum - interval may vary by 7 days
Monthly	-	Not less than 10 times per annum - interval may vary by 15 days
Quarterly	-	Not less than 4 times per annum - interval may vary by 30 days
Semi-annually	-	Not less than 2 times per annum - interval may vary by 60 days

TABLE 4.12-2

Detection Capabilities for Environmental Sample Analysis[a]

Lower Limit of Detection (LLD)[b]

Analysis	Water (pCi/l)	Airborne Particulate or gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta	4[c]	1×10^{-2}				
^{3}H	2000(1000[c])					
^{54}Mn	15		130			
^{59}Fe	30		260			
$^{58,60}Co$	15		130			
^{65}Zn	30		260			
^{95}Zr-Nb	15[e]					
^{131}I	1[c]	7×10^{-2}		1	60	
$^{134,137}Cs$	15(10[c]),18	1×10^{-2}	130	15	60	150
^{140}Ba-La	15[e]			15[e]		

NOTE: This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported.

TABLE 4.12-2

NOTES

[a] Acceptable detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13.

[b] Table indicates acceptable detection capabilities for radioactive materials in environmental samples. These detection capabilities are tabulated in terms of the lower limits of detection (LLDs). The LLD is defined, for purposes of this guide, 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):

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

where

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

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

E is the counting efficiency (as counts per disintegration)

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

2.22 is the number of disintegrations per minute per picocurie

Y is the fractional radiochemical yield (when applicable)

λ is the radioactive decay constant for the particular radionuclide

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

The value of S_b used in the calculation of the LLD for a particular measurement system should be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicated variance. In calculating the LLD for a radionuclide determined by gamma-ray spectrometry, the background should include the typical contributions of other radionuclides normally present in the samples (e.g., potassium-40 in milk samples). Typical values of E, V, Y and Δt should be used in the calculation.

[c] LLD for drinking water.
[d] LLD for leafy vegetables.
[e] Total for parent and daughter.

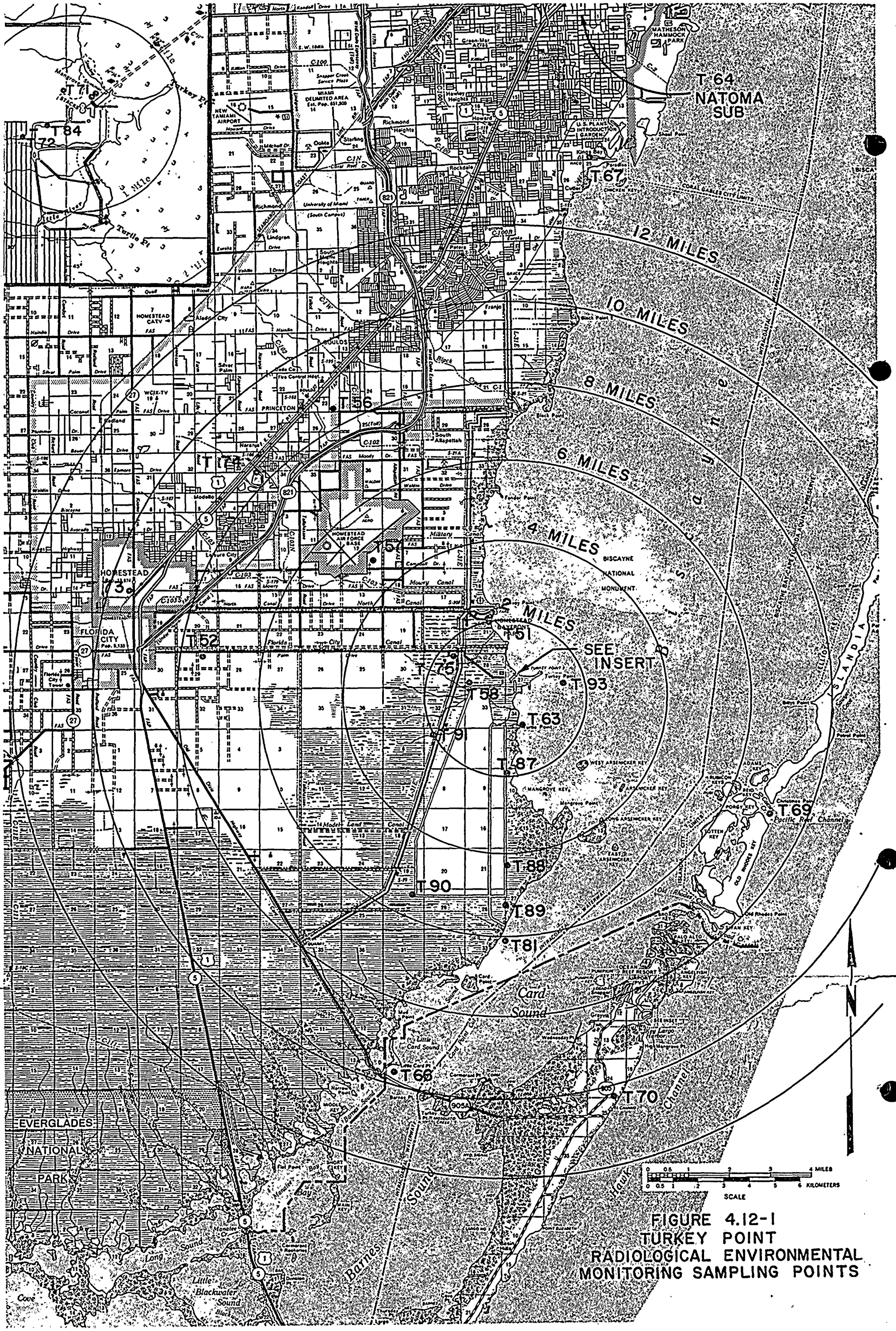

FIGURE 4.12-1
TURKEY POINT
RADIOLOGICAL ENVIRONMENTAL
MONITORING SAMPLING POINTS

4.16 LIQUID AND GASEOUS RADIOACTIVE WASTE SYSTEMS

Applicability: Applies to surveillance of liquid and gaseous radioactive waste treatment systems.

Objective: To verify operability of liquid and gaseous radioactive waste treatment systems.

Specification:

1. The appropriate liquid radwaste subsystems shall be demonstrated operable once per 92 days unless the appropriate liquid radwaste subsystem has been utilized to process radioactive liquid effluents during the previous 92 days.

2. The appropriate gaseous radwaste systems shall be demonstrated operable at least once per 92 days unless the appropriate system has been utilized to process radioactive gaseous effluents during the previous 92 days.

B3.9 BASES FOR LIMITING CONDITIONS FOR OPERATION, RADIOACTIVE MATERIALS RELEASE

A. Liquid Effluents

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

This specification provides for the implementation of the requirements of Sections II.A, III.A and IV.A of Appendix I, 10 CFR Part 50. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonably achievable". The dose calculations in the in-plant procedures implement the requirements in Section III.A of Appendix I that conformation with the guides of Appendix I is to be shown by calculational methods based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the in-plant procedures for calculating the doses due to the actual release rates of radioactive materials in liquid effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977, and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.113.

Dose calculations for the release of liquid effluents are to be done on a per reactor basis. For Turkey Point shared radwaste treatment systems, the liquid effluents are proportioned between the two units.

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC-approved methods in the in-plant procedures to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

B. Gaseous Effluents

This specification is provided to ensure that the dose rate at any time at the exclusion area boundary from gaseous effluents from all units on the site will be within the quarterly dose limits of 10 CFR Part 20 for unrestricted areas. The quarterly dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an unrestricted area, either within or outside the exclusion area boundary, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(b)). For individuals who may at times be within the exclusion area boundary, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the exclusion area boundary. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the exclusion area boundary to $\leq$ (500) mrem/year to the total body or to $\leq$ (3,000) mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to $\leq$ 1,500 mrem/year for the nearest cow to the plant.

This specification applies to the release of gaseous effluents from both reactors at the site. For Turkey Point with its shared radwaste treatment systems, the gaseous effluents from the shared system are proportioned between the two units.

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

underestimated. The dose calculations established in the in-plant procedures for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. The in-plant procedure equations provided for determining the air doses at the exclusion area boundary are based upon the historical average atmospheric conditions. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.111.

This specification provides for the implementation of requirements of Sections II.C, III.A, and IV.A of Appendix I, 10 CFR Part 50. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The in-plant procedure 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 methods based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The in-plant procedure calculational methods for calculating the doses due to the actual release rates of the subject materials are required to be consistent with the methodology provided in Regulatory Guide 1.109, "Calculating of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision I, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate specifications for radioiodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man, in the unrestricted area. The pathways which are examined in the development of these calculations are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

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

Restricting the quantity of radioactivity contained in each gas storage tank provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting total body exposure to an individual at the nearest exclusion area boundary will not exceed 0.5 rem.

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with NRC-approved methods in the in-plant procedures to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

B4.12 BASES FOR RADIOLOGICAL ENVIRONMENTAL MONITORING

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

The detection capabilities required by Table 4.12-2 are state-of-the-art for routine environmental measurements in industrial laboratories. The LLD's for drinking water meet the requirements of 40 CFR 141.

The land use census is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are made if required by the results of this census. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 500 square feet provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were used. 1) That 20% of the garden was used for growing broad leaf vegetation (i.e., similar lettuce and cabbage), and 2) a vegetation yield of 2 kg/square meter.

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

B4.16 BASES FOR LIQUID AND GASEOUS RADIOACTIVE WASTE SYSTEMS

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

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

h. An independent fire protection and loss prevention inspection and audit shall be performed annually utilizing either qualified licensee personnel or an outside fire protection firm.

i. An inspection and audit of the fire protection and loss prevention program shall be performed by an outside qualified fire consultant at intervals no greater than three (3) years.

j. Any other area of facility operation considered appropriate by the CNRB or the Executive Vice President.

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

6.5.2.9 AUTHORITY

The CNRB shall report to and advise the Executive Vice President on those areas of responsibility specified in Section 6.5.2.7 and 6.5.2.8.

6.5.2.10 RECORDS

Records of CNRB activities shall be prepared, approved and distributed as indicated below:

a. Minutes of each CNRB meeting shall be prepared, approved and forwarded to the Executive Vice President within fourteen days following each meeting.

b. Reports of reviews encompassed by Section 6.5.2.7 e, f, g and h above, shall be prepared, approved and forwarded to the Executive Vice President within fourteen days following completion of the review.

c. Audit reports encompassed by Section 6.5.2.8 above, shall be forwarded to the Executive Vice President and to the management positions responsible for the areas audited within thirty (30) days after completion of the audit.

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

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

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

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

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

(8) Errors discovered in the transient or accident analyses or in the methods used for such analyses as described in the safety analysis report or in the bases for the technical specifications that have or could have permitted reactor operation in a manner less conservative than assumed in the analyses.

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

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

(10) Measured values exceed the limits of Specifications 3.9.1.a and 3.9.2.b.

(11) Occurrence of radioactive material contained in gaseous holdup tanks in excess of that permitted by the limiting conditions for operation established in the technical specifications.

b. Thirty Day Written Reports The reportable occurrences discussed below shall be the subject of written reports to the Director of the appropriate Regional Office within thirty days of occurrence of the event. The written report shall include, as a minimum, a completed copy of a licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

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

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

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

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

(4) Abnormal degradation of systems other than those specified in item 2.a(3) above designed to contain radioactive material resulting from the fission process.

NOTE: Scaled sources or calibration sources are not included under this item. Leakage of valve packing or gaskets within the limits for identified leakage set forth in technical specifications need not be reported under this item.

(5) Calculated dose from the release of radioactive materials in liquid or gaseous effluents exceeding the limits of Technical Specification 3.9.

6.9.3 SPECIAL REPORTS

Special reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification where appropriate.

Twenty copies of the following reports should be sent to the Director, Nuclear Reactor Regulation.

a. In-service inspection, reference 4.2

b. Tendon surveillance, reference 4.4

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

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

When radionuclides other than those in Table 6.9-2 are detected and are the result of plant effluents, this report shall be submitted if the quarterly dose to an individual is equal to or greater than the quarterly limits of Specifications 3.9.1.a and 3.9.2.b. 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 Monitoring Report.

d. Measured values exceeding the dose limits of specification 3.9.2.e

TABLE 6.9-1

NON-ROUTINE REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

	Reporting Level (RL)				
Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/Kg,wet)	Milk (pCi/l)	Broad Leaf Vegetation (pCi/Kg, wet)
H-3	2×10^4				
Mn-54	1×10^3		3×10^4		
Fe-59	4×10^2		1×10^4		
Co-58	1×10^3		3×10^4		
Co-60	3×10^2		1×10^4		
Zn-65	3×10^2		2×10^4		
Zr-Nb-95	4×10^2 (1)				
I-131	2	0.9		3	1×10^2
Cs-134	30	10	1×10^3	60	1×10^3
Cs-137	50	20	2×10^3	70	2×10^3
Ba-La-140	2×10^2 (1)			3×10^2 (1)	

(1) Total for parent and daughter.

6.9.4 UNIQUE REPORTING REQUIREMENTS

a. Semiannual Radioactive Effluent Release Report

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

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

The radioactive effluent release reports shall include a summary of the meteorological conditions concurrent with the release of gaseous effluents during each quarter as outlined in Regulatory Guide 1.21, with data summarized on a quarterly basis following the format of Appendix B thereof.

The radioactive effluent release reports shall include an assessment of radiation doses from the radioactive liquid and gaseous effluents released from the unit during each calendar quarter as outlined in Regulatory Guide 1.21. In addition, the unrestricted area boundary maximum noble gas gamma air and beta air doses shall be evaluated. The meteorological conditions concurrent with the releases of effluents shall be used for determining the gaseous pathway doses. The assessment of radiation doses shall be performed in accordance with the in-plant procedures.

(2) The radioactive effluent release report shall include the following information for solid waste:

(a) The total amount of solid waste packaged (in cubic feet)
(b) The total estimated radioactivity (in curies) involved
(c) The dates of shipment and disposition (if shipped off-site)

b. Annual Radiological Environmental Monitoring Report

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

The annual radiological environmental monitoring reports shall include summaries, interpretations, and trend analysis of the results of the radiological environmental surveillance activities for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of the land use censuses required by Specification 4.12.2. If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.

The annual radiological environmental monitoring reports shall include summarized and tabulated results in the format of Table 6.9-2 of all radiological environmental samples taken during the report period. In the event that some results are not available for inclusion within the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program, a map of all sampling locations keyed to a table giving distances and directions from one reactor; the result of land use censuses required by the Specification 4.12.2; and the results of licensee participation in the Interlaboratory Comparison Program required by Specification 4.12.3.

TABLE 6.9-2

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY

Name of Facility _____ Docket No. _____

Location of Facility _____ Reporting Period _____

(County, State)

Medium or Pathway Sampled (Unit of Measurement)	Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean		Control locations Mean (f)[b] Range	Number of Nonroutine Reported Measurements
				Name Distance & Direction	Mean (f)[b] Range		

(a) See Table 4.12-2, note b.

(b) Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses. (f)