Environmental Technical Specifications

Appendix B

to

Operating Licensing No.

For

Florida Power & Light's

St. Lucie Unit No. 1

Docket No. 50-335

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1.0 DEFINITIONS

The definitions for terms used in these environmental technical specifications are listed below.

1.1 National power emergency

Shall mean any event causing authorized Federal officials to require or request that Florida Power & Light supply electricity to points within or without the State of Florida.

1.2 A regional emergency

Shall mean any of the following occurrences within the State of Florida: (1) a catastrophic natural disaster including hurricanes, floods, and tidal waves; or (2) other emergencies declared by State, county, municipal, or Federal authorities during which an uninterrupted supply of electric power is vital to public health and safety.

1.3 Reactor emergency

Shall mean an unanticipated equipment malfunction necessitating prompt remedial action to avoid endangering the public health or welfare.

1.4 Circulating water system

Comprised of the following; velocity cap, intake pipe, intake canal, discharge canal, discharge pipe, "Y" port discharge and miscellaneous mechanical devices. The recirculation canal is included, if constructed.

1.5 Frequency definitions follow:

Daily - Not less than 360 times per annum.

Weekly - Not less than 48 times per annum - interval may vary by 3 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.

Refueling - at refueling intervals not to exceed 24 months.

1.6 Free Available Chlorine

The amount of residual chlorine consisting of hypochlorite ions (OCl^-), hypochlorous acid (HOCl), or a combination thereof.

1.7 Combined Available Chlorine

The amount of residual consisting of chlorine combined with ammonia nitrogen or nitrogenous compounds.

1.8 Total Residual Chlorine

The amount of free and combined available chlorine present in water.

1.9 Intake Temperature

The temperature of the cooling water as measured in the intake canal near the subaqueous intake pipe east of State Road A-1-A.

1.10 Discharge Temperature

The temperature of the cooling water as measured near the terminus of the discharge canal.

1.11 Dissolved Oxygen

Oxygen dissolved in the condenser cooling water, and expressed in milligrams per liter.

1.12 Limiting Condition

Those conditions to be imposed on plant effluents and operating practices which may have an adverse impact on the environment.

1.13 Salinity

The total amount of solid material in grams contained in one kilogram of sea water when all the carbonate has been converted to oxide, the bromine and iodine replaced by chlorine, and organic matter completely oxidized.

1.14 Dose Equivalent I-131

Dose equivalent I-131 shall be that concentration of I-131 (μCi/gram) which alone would produce the same dose as the quantity and isotopic mixture of iodine actually present.

1.15 Channel Calibration

A Channel Calibration shall be the adjustment of the channel output such that it responds with specified range and accuracy to known values of the parameter which the channel monitors. The Channel Calibration shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the Channel Functional Test.

1.16 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 with other indications derived from independent instrument channels measuring the same parameter.

1.17 Channel Functional Test

A Channel Functional Test shall be the injection of a simulated signal into the channel as close to the primary sensor as practicable to verify Operability including alarm and/or trip functions.

1.18 Abnormal Release

An uncontrolled or unplanned release of radioactive material from any plant system designed to act as a boundary for such material in an amount of significance with respect to limits prescribed in Technical Specifications.

1.19 Batch Releases

Discontinuous release of gaseous or liquid effluent which takes place over a finite period of time, ususally hours or days.

1.20 Continuous Release

Release of gaseous or liquid effluent which is essentially uninterrupted for extended periods during normal operation of the facility.

1.21 Determined (or a Determination)

A quantitative evaluation of the release or presence of radioactive material under a specific set of conditions. A determination may be made by direct or indirect measurements. In some cases it may not be practical to make direct measurements of specific radionuclides in effluent or waste; e.g., the concentrations may be too low for measurement in a reasonable or practical volume of sample, certain

nuclides may be masked by other radionuclides in the sample, or as in the case of solid or concentrated wastes, it may be difficult to obtain a representative sample. Under these circumstances, it may be more appropriate to calculate releases using previously established ratios with those nuclides which are readily measurable. Such a procedure would constitute a determination.

2.0 LIMITING CONDITIONS

General

2.0.1 The circulating water system shall be operated to result in an acceptable environmental impact. Flexibility of operation is permitted, consistent with consideration of health and safety, to ensure that the public is provided a dependable source of power even under unusual operating conditions which may set forth in this specification, as provided below in 2.0.2 and 2.0.3.

2.0.2 During a national power emergency, a regional emergency, reactor emergency, or any time when the health, safety, or welfare of the public may be endangered by the inability of Florida Power & Light to supply electricity from any other sources available to it, the operating limits provided in this specification shall be inapplicable. However, during such emergencies, the operating limits shall not be exceeded except as is necessitated by the emergency.

2.0.3 Whenever, in accordance with paragraphs 2.0.1 and 2.0.2 above, Florida Power & Light exceeds the operating limits otherwise imposed, notification hall be made to the Director of the Region II Regional Office of the Office of Inspection and Enforcement, in accordance with 5.6.2.a.

2.1 THERMAL

Maximum Discharge Temperature

Objective:

The purpose of this specification is to limit thermal stress to the aquatic ecosystem by limiting the temperature rise in he Atlantic Ocean, in the area of the subaqueous discharge, due to the plant discharge during operation.

Specification:

The thermal discharge of St. Lucie Unit #1 shall comply to the specifications in and any amendments to Florida Power & Light's National Pollutant Discharge Elimination System (N.P.D.E.S.) Discharge Permit FL 0002208.

Monitoring Requirement:

A continuous temperature measurement system shall be installed near the terminus of the discharge canal at mid-depth. Temperatures shall be transmitted to the control room.

A continuous temperature monitoring station located within 500 feet from the primary monitoring device, shall be used as a backup system if the primary system fails. In this event this station shall be checked every 8 hours until the primary system is restored.

Bases:

The limitations provide reasonable assurance that the overall aquatic ecosystem in the area of the thermal plume will experience an acceptable environmental impact. The placement of the temperature monitoring instrument at the control structure will give the temperature of the discharge water immediately before mixing with the receiving water. The placement of the temperature sensor at mid-depth in the discharge canal has been shown by temperature measurements at other depths in the canal to be representative of the discharge water entering the receiving stream.

2.2 CHEMICAL

Objective:

The purpose of these specifications is (1) to minimize impacts to the quality of the Atlantic Ocean, (2) to protect the local biota from lethal and sublethal effects of exposure to chemical discharges due to operation of the plant, (3) to assure that continued multiple use of the receiving waters by human populations is protected, and (4) to control the quality of the receiving medium.

2.2.1 Biocides

Specification:

Free available chlorine near the terminus of the discharge canal shall not exceed 0.2 mg/l on a daily average or 0.5 mg/l at any one time. If this level is exceeded, adjustments to the injection system shall be made to reduce the concentration and each succeeding chlorination period shall be monitored until the concentration is within the specification.

Monitoring Requirements:

A grab sample of condenser cooling water shall be taken weekly near the terminus of the discharge canal and analyzed for total residual chlorine and free available chlorine. The samples shall be taken during the period of chlorination. The time of beginning the chlorination and when the sample was taken shall be logged.

Bases:

When injected, chlorine is diluted by the cooling water and consumed in the process of controlling slime. To be sure that enough chlorine is injected to control the slime, the residual chlorine concentration will be approximately 1 mg/l at the condenser outlet. This concentration corresponds to a concentration in the immediate vicinity of the discharge of less than 0.2 mg/l. The limits set forth provide reasonable assurance of an acceptable environmental impact.

2.2.2 pH

Specification:

The pH of effluents at the terminus of the discharge canal shall comply to the specifications in and any amendments to Florida Power & Light's National Pollutant Discharge Elimination System (N.P.D.E.S.) Discharge Permit FL 0002208, and the State of Florida's Water Quality Standards.

Monitoring Requirement:

Grab samples shall be taken on a daily basis at the terminus of the discharge canal, and the pH determined with a pH meter of pH recorder.

2.3 (Reserved)

2.4 RADIOACTIVE EFFLUENTS

Objective:

To establish conditions for the release of liquid and gaseous containing radioactive materials and to assure that all such releases are within the limits specified in 10CFR20. In addition, a 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.

2.4.1 Liquid Effluents

Specification:

A. If the release of radioactive materials in liquid wastes, when summed over a calendar quarter exceeds 5 curies, excluding tritium and dissolved gases:

1. An investigation shall be made to identify the cause for such release rates.

2. A program of action to reduce such release rates shall be defined and initiated.

B. If the experienced release of radioactive material in liquid waste, when summed over a calendar quarter, exceeds 20 curies, excluding tritium and dissolved gases, immediate action shall be taken as may be appropriate, including reductions in power level, to assure that such release rates are reduced.

Surveillance Requirement:

See Tables: 2.4.1-A
2.4.1-B

TABLE 2.4.1-A

BATCH RELEASES

FREQUENCY	TYPE OF ACTIVITY OF ANALYSIS	REQUIREMENT OR SENSITIVITY
Each Batch	Gross activity	1×10^{-7} µCi/ml
	Principal Gamma Emitting Nuclides (2)(3)	5×10^{-7} µCi/ml
	Liquid effluent monitor	Set to alarm and automatically terminate release
	Volume of release	Record
	Volume of dilution water	Record
	Resultant concentration in circulating water system	Calculate and record
	Circulating water system	Minimum of one main circulating water pump in operation while releasing.
	Length of time of release	Record
One batch per month	Dissolved and entrained fission and activation gases (3)	1×10^{-5} µCi/ml
Weekly proportional composite (1)	Principal gamma emitting nuclides (2)(3)	5×10^{-7} µCi/ml
Monthly proportional composite (1)	Tritium Gross alpha	1×10^{-5} µCi/ml 1×10^{-7} µCi/ml
Quarterly porportional composite (1)	Strontium 89 Strontium 90	5×10^{-8} µCi/ml 5×10^{-8} µCi/ml

SEE NOTES ON PAGE 2-7

TABLE 2.4.1-B

STEAM GENERATOR BLOWDOWN (CONTINUOUS)

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OR SENSITIVITY
Three times per seven days (max. time between samples is 72 hrs)	Gross activity determination	1×10^{-7} µCi/ml
once per 30 days	Isotopic analysis for Dose Equivalent Iodine - 131 concentration (3)	5×10^{-7} µCi/ml (for I-131 only)
continuous	Gross Activity (5)	while discharging directly to circulating water system
	Circulating water system	Minimum of one circulating water pump in operation while discharging
weekly (6)	Principal gamma emitting nuclides (2) (3) (4)	5×10^{-7} µCi/ml
	Tritium (4)	1×10^{-5} µCi/ml
	Volume of release/week (4)	Record
	Volume of Dilution water/ week (4)	Record
	Resultant concentration in circulating water system (4)	Calculate and Record

SEE NOTES ON PAGE 2-7

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) When operational or other limitations preclude specific gamma radionuclide analysis of each batch, gross radioactivity measurements should be made to estimate the quantity and concentrations of radioactive material released in the batch, and a weekly sample composited from proportional aliquots from each batch released during the week should be analyzed for the principal gamma-emitting radionuclides.

(3) 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.

(4) Only when activity is detected in steam generators by routine gross activity or Iodine-131 equivalent analyses.

(5) When continuous monitor is inoperable daily gross activity grab samples may be substituted.

(6) These requirements only apply when discharging directly to circulating water system. When discharging to steam generator blowdown treatment facility, requirements will be as stated in Table 2.4.1-A "Batch Releases".

2.4.2 Liquid Release Limits - Bases

The specifications in 2.4.1 provide reasonable assurance that the resulting annual exposure to the whole body or any organ of an individual from liquid effluents will not exceed 5 millirems/year based on the generally expected distribution of isotopes. 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 but still remain within the concentration limits specified in 10CFR20. At the same time 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 therefore than annual releases will not exceed a small fraction of the annual average concentration limits for unrestricted areas specified in 10CFR20. The minimum circulating water discharge flow, for one circulating water pump in operation is 121,000 gpm, and for one intake cooling water pump in operation, is 14,500 gpm. The discharge of 5 curies of radioactivity into the circulating water flow in a calendar quarter, assuming an 80% operating factor, would result in an average concentration of radioactivity in the discharge of about 1.2×10^{-7} µCi/cc.

Release batch sampling will provide the data for determining and evaluating activity release rates and for record keeping.

2.4.3 Gaseous Releases

Specification:

2.4.3.1 The rate of release of radioactive materials in gaseous wastes, averaged over a calendar quarter, shall not exceed

A. A total of 7 millicuries per second or,

B. For I-131 and particulate radionuclides with half life greater than 8 days, a rate determined by:

$$\Sigma i \frac{Q_i}{MPC_i} \leq 10{,}000 \frac{m^3}{sec} \quad *$$

*Q_i = release rate of the i^{th} radionuclide, curie/second.

MPC_i = concentration values in Appendix B, Table II, Column 1, 10CFR20.

2.4.3.2 The total release rate of radioactive materials shall not exceed 122 millicuries per second averaged over any 1 hour.

Action:

2.4.3.1.1 An investigation shall be made to identify the causes for such release rates, and

2.4.3.1.2 A program to reduce such release rates, including a reduction in power level if appropriate, shall be defined and initiated immediately.

Surveillance Requirement:

2.4.3.3 See Tables: 2.4.3-A
2.4.3-B
2.4.3-C
2.4.3-D
2.4.3-E
2.4.3-F

TABLE 2.4.3-A

GAS DECAY TANK

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OF SENSITIVITY
Each release	Noble gases (1) (4)	1×10^{-4} μCi/cc
	Particulates T 1/2>8 days (1) (4)	Note (3)
	Iodines (1) (4)	Note (2)
	Tritium	1×10^{-6} μCi/cc
	Volume of Release	Record
	Length of time of release	Record
	Gaseous effluent monitor	Set to alarm and automatically terminate release
Hourly during release	Wind Speed	Record
	Wind Direction	Record
	Differential Temperature	Record
Weekly	Total Activity each gas decay tank in equivalent Xe-133(1)	73,000 curies maximum allowable

SEE NOTES ON PAGE 2-16

TABLE 2.4.3-B

PLANT VENT

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OR SENSITIVITY
Continuous	Gases (5) (Gross Activity)	Monitor
Weekly	Particulate T 1/2 > 8 days (1) (4)	Note (3)
	Iodine-131 (4)	Note (2)
	Noble Gases (1) (4)	1×10^{-4} µCi/cc
Monthly	Tritium	1×10^{-6} µCi/cc
	Iodine 133 (4)	Note(2)
	Iodine 135 (4)	Note (2)
	Gross Alpha (Particulate filter)	Note (3) - composite of all weekly filters
Quarterly	Strontium - 89}(Particulate Strontium - 90} filters)	Composite of all weekly filters

SEE NOTES ON PAGE 2-16

TABLE 2.4.3-C

CONTAINMENT PURGE

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OR SENSITIVITY
Each release	Noble Gases (1) (4)	1×10^{-4} µCi/cc
	Particulate T 1/2 >8 days	Note (3)
	Iodines (1) (4)	Note (2)
	Tritium	1×10^{-6} µCi/cc
	Volume of Release	Record
	Length of time of release	Record
Hourly during release	Wind Speed	Record
	Wind Direction	Record
	Differential Temperature	Record

SEE NOTES ON PAGE 2-16

TABLE 2.4.3-D

CONDENSER AIR EJECTOR VENT

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OR SENSITIVITY
Continuous (7)	Gross Activity (5)	Monitor
Weekly (6)	I-131 (4)	Note (2)
	Particulate T 1/2 > 8 days (1) (4)	Note (3)

SEE NOTES ON PAGE 2-16

TABLE 2.4:3-E

SPENT FUEL STORAGE AREA

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OR SENSITIVITY
Continuous (8)	Gases (5) (Gross Activity)	Monitor
Weekly (8)	Particulates T 1/2 > 8 days (1) (4)	Note (3)
	Iodine - 131 (4)	Note (2)
	Noble Gases (1) (4)	1×10^{-4} µCi/cc
Monthly (8)	Tritium	1×10^{-6} µCi/cc
	Iodine 133 (4)	Note (2)
	Iodine 135 (4)	Note (2)
	Gross Alpha (Particulate Filter)	Note (3) - Composite of all weekly filters
Quarterly (8)	Strontium 89} (Particulate Strontium 90} Filter)	Composite of all Weekly Filters

SEE NOTES ON PAGE 2-16

TABLE 2.4.3.-F

MAIN STEAM

FREQUENCY	TYPE OF ACTIVITY OR ANALYSIS	REQUIREMENT OR SENSITIVITY
Weekly (6) (7)	Particulate T 1/2 >8 days (1) (4)	Note (3)
	Iodine - 131(4)	Note (2)
	Estimate steam release rates from sources such as safety valves, hogging jets, and water box priming jets	Calculate and Record

SEE NOTES ON PAGE 2-16

NOTES:

(1) 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.

(2) The sensitivity of the analysis of radioiodines should be sufficient to permit measurement of a small fraction of the activity which would result in annual exposures of 15 millirems to the thyroid of individuals in unrestricted areas.

(3) The sensitivity of analysis for radioactive material in particulate form should be sufficient to permit measurement of a small fraction of the activity which would result in annual exposures of 15 millirems to any organ of an individual in an unrestricted area.

(4) When quantities of released radioactive materials are at low levels, precluding accurate measurement of principal radionuclides, gross radioactivity measurements should be made as a basis for estimating the quantity of radioactive material released.

(5) When continuous monitor is inoperable, daily grab samples may be substituted.

(6) Required only when activity is detected in the Steam Generators by Routine Gross Activity or I-131 Equivalent Analysis.

(7) Applies during Power operation only.

(8) Applies only when spent fuel is in the pool.

2.4.4 Gaseous Release Limits - Bases

Specifications 2.4.3 provide reasonable assurance that the resulting annual exposure to the whole body or any organ of an individual from gaseous effluents will not exceed 5 millirems/year. 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 unusal operating conditions but still remain within the limits specified in 10CFR20.

At the same time it is expected that, in 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 therefore that annual releases will not exceed a small fraction of the annual average concentration limits for unrestricted areas specified in 10CFR20. These efforts shall include consideration of meteorological conditions during releases.

The potential annual exposures at the limiting site boundary concentrations listed, generated from an array of nuclear-electric sites separated a minimum of 50 kilometers radially on eight compass points, would not exceed 5 mrems to the whole body or to the thyroid of individuals remaining off-site.

The design and operation of the equipment for collection and storage of gases assures capability for holdup for activity decay and control of activity released past the plant vent monitor. Sampling will provide the bases for determination of release rates and valve closure will be initiated if the monitor set point is exceeded, and valve opening is interlocked to Auxiliary Building exhaust fan operation for initial discharge dilution.

The release rate limit of 7 millicures per second is based on a maximum annual average site boundary X/Q of 1.73×10^{-6} seconds per cubic meter which was derived for the 5100 foot distance to the northeast site boundary. After holdup in the gas decay tanks, the predominant nuclide remaining is expected to be Xe-133 which has a Part 20 concentration limit of 3×10^{-7} uc/cc for unrestricted areas. The annual average release rate of 7 millicures per second would result in an annual average concentration at the north site boundary of about 4% of the Part 20 limits.

The specified release rates of I-131 and particulates with half lives greater than eight days would limit concentrations at the nearest site boundary to values of about 1.0% of the limits in Part 20, Appendix B, Table II, Column 1.

The release rate limit of 122 millicures per second averaged over any one hour is a calculated value which would result in an exposure of 2 millirem in that hour assuming inversion conditions. Meteorological conditions at the site are expected to be better than these assumed conditions at least 95% of the time. The limit of 73,000 curies of Xe-133 equivalent in any one gas decay tank is based on a maximum exposure of 0.3 rem due to accidental release of the tank contents under inversion meteorological conditions. The value of X/Q used for inversion conditions was 8.55×10^{-5} seconds per cubic meter, and the equation in Safety Guide No. 4 was used to calculate the resulting dose. $\bar{E}$ for Xe-133 is 0.19 MEV/disintegration.

$$D = 0.25\, C\bar{E}\, X/Q = 0.25 \times 73{,}000 \times 0.19 \times 8.55 \times 10^{-5} = 0.3$$

2.4.5 (Reserved)

2.4.6 Effluent Monitors

2.4.6.1 Liquid Radwaste Monitor

Specification

A liquid radwaste monitor shall be operable during releases and set to alarm and automatically terminate a release to assure that applicable limits of 10 CFR 20 are not exceeded.

	Surveillance	Frequency
(A)	Channel Functional Test of Monitor response, alarm and initiation of valve closure	Prior to each release
(B)	Channel calibration using a known* liquid radioactive solution of expected energies	Annually

*See 2.4.6.7

2.4.6.2 Gaseous Radwaste Monitor

Specification

A gaseous radwaste monitor shall be operable during releases and set to alarm and automatically terminate a release from the Gas Decay Tanks to assure that applicable limits of 10 CFR 20 are not exceeded.

	Surveillance	Frequency
(A)	Channel Functional Test of Monitor response alarm and initiation of valve closure	Prior to each release
(B)	Channel Calibration using known* radioactive sources of expected energies	Annually

*See 2.4.6.7

2.4.6.3 Plant Vent Monitor**

Specification

All radioactive wastes discharged through the plant vent shall be continuously monitored for gaseous activity and sampled for Iodine and particulates per table 2.4.2-B.

	Surveillance	Frequency
(A)	Channel Check (Qualitative assessment of Channel behavior during operation by observation)	Daily
(B)	Channel Functional Test of Monitor Response and alarm	Monthly
(C)	Channel Calibration using known* radioactive sources of expected energies	Refueling

*See 2.4.6.7
**See 2.4.6.8

2.4.6.4 Spent Fuel Storage Area Monitor**

Specification

All gaseous radioactive wastes discharged from the Spent Fuel storage area shall be monitored continuously for gaseous activity and sampled for Iodine and particulates per table 2.4.2-E, when spent fuel is in the pool.

	Surveillance	Frequency
(A)	Channel Check (Qualitative assessment of Channel behavior during operation by observation)	Daily
(B)	Channel Functional Test of Monitor Response and alarm	Monthly
(C)	Channel Calibration using known* radioactive sources of expected energies	Refueling

*See 2.4.6.7
**See 2.4.6.8

2.4.6.5 Condenser Air Ejector Vent**

Specification

The Condenser Air Ejector Vent shall be monitored continuously for gases during power operation.

	Surveillance	Frequency
(A)	Channel Check (Qualitative assessment of Channel behavior during operation by observation)	Daily
(B)	Channel Functional Test of Monitor Response and alarm	Monthly
(C)	Channel Calibration using known* radioactive sources of expected energies	Refueling

*See 2.4.6.7
**See 2.4.6.8

2.4.6.6 Steam Generator Blowdown Monitors**

Specification

The Steam Generator Blowdown shall be monitored continuously for gross activity when blowdown is being sent directly to the circulating water system and the monitor set to automatically stop blowdown or divert to the steam generator blowdown treatment facility on preset activity.

	Surveillance	Frequency
(A)	Channel Check (Qualitative assessment of Channel behavior during operation by observation)	Daily
(B)	Channel Functional Test of Monitor Response and alarm	Monthly
(C)	Channel Calibration using known* radioactive sources of expected energies	Refueling

*See 2.4.6.7
**See 2.4.6.8

2.4.6.7 Process Monitor Calibration

The calibration of continuous gross radioactivity monitoring systems should be performed by normalizing against the results of specific radionuclide analyses using established ratios of the respective radionuclides to total activity. When calibrated in this fashion, the gross radioactivity measurements obtained from continuous monitors may be used to determine the total quantity of radioactivity released.

2.4.6.8 Process Monitor Inoperability

When a continuous monitor is inoperable, daily grab samples may be substituted.

2.4.7 Containerized Wastes

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

Provisions should be made to monitor the curie quantity, and to limit the radiation level of each package of solid waste in order to reduce radiation exposure to personnel and to meet the regulatory requirements of 10 CFR Part 71, "Packaging of Radioactive Material under Certain Conditions," and of the Department of Transportation. Monitoring of solid wastes in storage and preparatory to shipment should be performed to provide assurance that the radiation levels from waste in storage and in transport do not exceed regulatory limits.

3.0 ENVIRONMENTAL SURVEILLANCE

3.1 Non-radiological Surveillance

3.1.A ABIOTIC

3.1.A.1 Biocides

Objective

The purpose of this surveillance is to monitor Total Residual Chlorine and Free Available Chlorine in the discharge canal to insure that no adverse impact on the environment is occurring.

Specification

Total Residual Chlorine and Free Available Chlorine shall be monitored near the terminus of the discharge canal on a weekly basis while a condenser section is being chlorinated.

Reporting Requirement

Total Residual and Free Available Chlorine concentrations shall be reported in the Annual Environmental Operating Report.

3.1.A.2 Heavy Metals

Objective

The purpose of this study is to monitor heavy metals concentrations in the intake canal near the subaqueous intake pipe, and near the terminus of the discharge canal to detect any measurable increase in heavy metals.

Specification

Grab samples shall be taken on a monthly basis at the intake canal near the subaqueous intake pipe, and near the terminus of the discharge canal, and analyzed for Mercury, Arsenic, Chromium, Copper, Iron, Lead, Nickel, Selenium, and Zinc.

Reporting Requirement

Concentrations shall be reported in the Annual Environmental Operating Report.

3.1.A.3 pH

Objective

The purpose of this surveillance is to monitor pH in the receiving waters to insure that pH is not being raised or lowered from the specified limits, in order to prevent an adverse environmental impact.

Specification

pH shall be monitored daily using grab samples or a recorder near the terminus of the discharge canal.

Reporting Requirements

pH measurements shall be reported in the Annual Environmental Operating Report.

3.1.A.4 Dissolved Oxygen

Objective

The purpose of this surveillance is to monitor dissolved oxygen (DO).

Specification

DO shall be monitored weekly, using grab samples, at the intake canal near the subaqueous intake pipe, and near the terminus of the discharge canal.

Reporting Requirements

Concentrations shall be reported in the Annual Environmental Report.

3.1.A.5 Salinity

Objective

The purpose of this specification is to measure salinity concentrations in receiving waters.

Specification

Salinity shall be monitored by grab samples on a weekly basis near the terminus of the discharge canal.

Reporting Requirements

Salinity concentrations shall be reported in the Annual Environmental Operating Report.

3.1.A.6 Temperature

Objective

To provide temperature data to limit thermal stress to the aquatic ecosystem.

Specification

Mid-depth temperatures shall be monitored near the terminus of the discharge canal using a continuous temperature monitoring system. Temperatures shall be transmitted to the control room and recorded.

Reporting Requirement

Both intake and discharge temperatures shall be summarized in the Annaul Environmental Operating Report.

3.1.B BIOTIC

Objective

To determine the effects of plant operation on the planktonic, nektonic, and benthic populations of the Atlantic Ocean near the discharge during plant operation.

Specification

The biological conditions shall be assessed, 1) in terms of abundance and compositions of the marine biotic community, and 2) the relationship between certain chemical and physical properties of the waters and the character of the biological community.

The five sampling locations established during a pre-operational baseline biology program will be utilized for plankton, trawl, and benthic collections. The sampling schedule will be as follows:

a) Benthic Organisms - Benthic organisms will be collected monthly and inventoried as to type and abundance of major taxonomic groups present.

b) Plankton - Plankton samples will be collected monthly. Both zooplankton and phytoplankton species will be identified as to kind and abundance. Chlorophyll "a" analysis will be performed as a measure of primary productivity.

c) Nektonic Organisms - Samples will be collected monthly by trawling, seining, or other suitable method. Types and numbers of organisms present will be determined, including species of migratory fish of commercial and sports fisheries value such as blue fish and mackerel.

d) Macrophytes - Microscopic aquatic vegetation will be collected quarterly and identified as to species and abundance.

e) Water Quality - Analysis will be made on water samples taken at bottom, mid-depth, and surface levels at the same time as the biotic samples are collected. Parameters studied will be temperature, salinity, dissolved oxygen content, turbidity, and selected nutrients.

f) Migratory Sea Turtles - The species, numbers, and nesting characteristics of sea turtles that migrate in from the sea and nest along the east coast of Florida will be determined on the FPL shoreline property, and selected adjacent control areas in 1975 and 1977. In addition, control studies on temperature stress, hatching, and rearing factors will be conducted using turtle eggs from displaced nests.

Based on the data obtained, predictions will be made on the impact of the plant's operation on baseline biological conditions and current uses of the waters.

Florida Power & Light will review the data after two year of plant operation and, if no adverse effects attributable to the plant are definable, the program shall be terminated.

Reporting Requirement

Results of the biological program shall be reported in the Annual Environmental Operating Report.

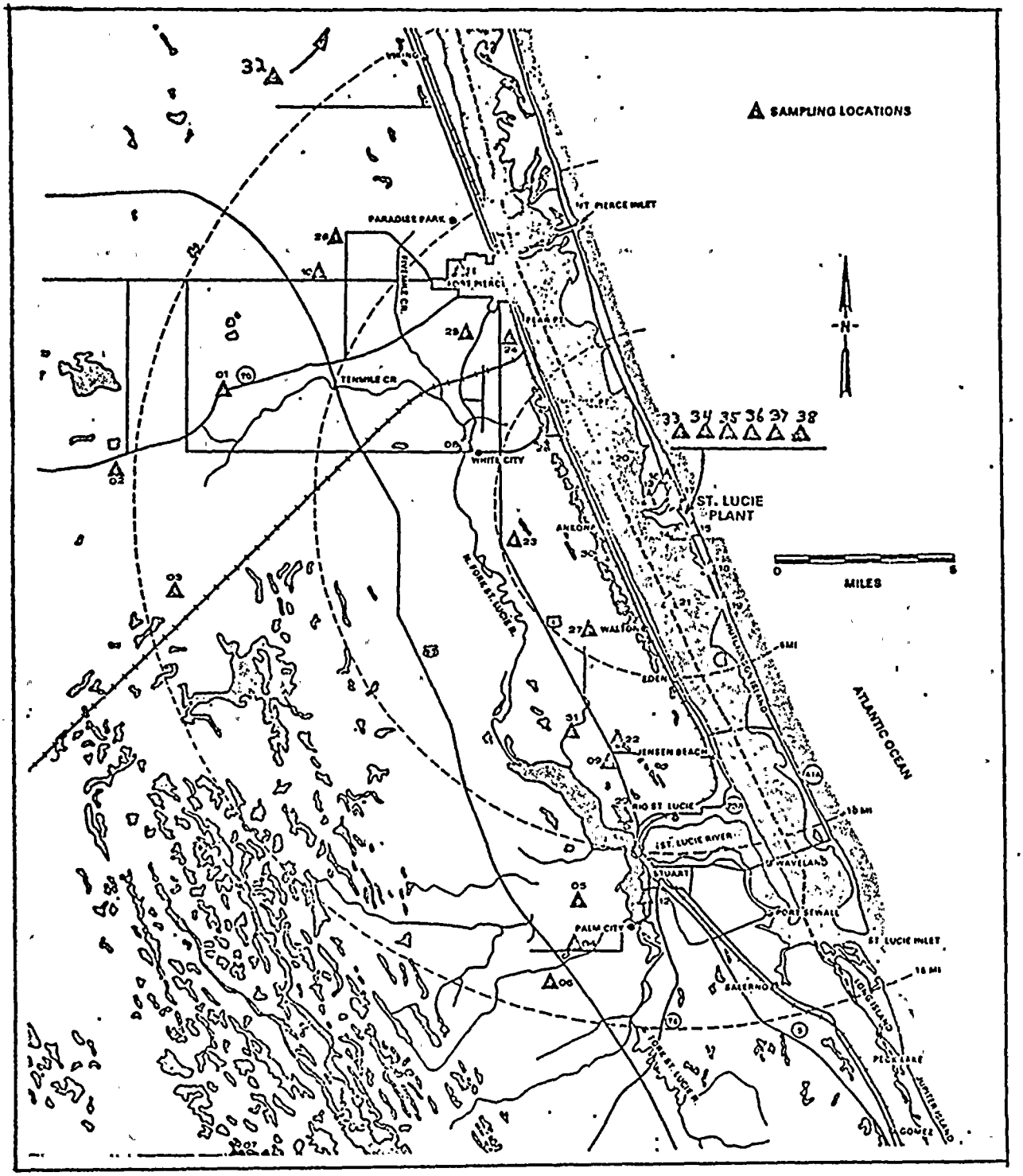
3.2 RADIOLOGICAL ENVIRONMENTAL MONITORING

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

Specification - Environmental samples shall be collected and analyzed according to Table 3.2-1.

Bases - The environmental monitoring program is designed to determine existing radioactivity levels and to detect changes in radiation levels in the air, water or land environment which may be attributed to the operation of the unit. The methods, procedures and techniques developed during the pre-operational phase will be utilized to provide background measurements as a basis for distinguishing significant changes in radioactivity in the site environs.

The environmental monitoring program sample collection frequency and analysis is summarized in Table 3.2.-1. Table 3.2-2 shows practical reporting limits, and Table 3.2-3 shows types of analyses. This schedule is designed to ensure that changes in the environmental radioactivity can be detected. A continuing review and evaluation of the program will verify the suitability and adequacy of the environmental program.



OPERATIONAL RADIOLOGICAL
SURVEILLANCE SAMPLING STATIONS
Fig. 3.2-1

TABLE 3.2-1 SHEET 1

OPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

	Criteria and Sampling Locations (1)	Collection Frequency (2)	Analysis/Counting
1. AIR			
1.1 Particulate and Iodine	Comparison on-site versus off-site & reference locations 3 locations on-site, north, east, & southeast of the plant H 34, H 14, H 33 (6) 6 locations off-site within a radius of 10 miles of plant H 08, H 09, H 10, H 12, H 30, H 32	Weekly	Gross Beta Gamma spectral analysis of monthly composit if indicated by high beta activity (5) Radioactive Iodine
1.2 Direct Radiation	Comparison of on-site versus off-site & reference locations 3 locations on-site, north, east, & southeast of the plant H 34, H 14, H 33 (6) 6 locations off-site within a radius of 10 miles of plant H 08, H 09, H 10, H 12, H 30, H 32	Monthly	Determine direct radiation by exposure by TLD readout (mean of 2 TLDs)
1.3 Precipitation (3)	Comparison of on-site versus off-site reference locations 1 location on-site, site meteorological tower, H 34 3 locations off-site H 08, H 10, H 32	Monthly	Gross Beta Gamma spectral analysis 94) Tritium (4)
2. WATER			
2.1 Surface Water			
2.1.1 Discharge Canal	1 location, east of AlA, H 35 1 location, west of AlA, H 36	Monthly	Gamma spectral analysis Tritium Sr-89 & 90
2.1.2 Ocean	5 locations, H 15, H 16, H 17, H 18, H 19	Quarterly	Gamma spectral analysis Tritium Sr-89 & 90 (if detected in discharge canal)

TABLE 3.2-1 SHEET 2

OPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

	Criteria and Sampling Locations (1)	Collection Frequency (2)	Analysis/Counting
2. WATER (cont'd)			
2.1.3 Intake Canal	1 location, H 37, east of A1A at beginning of open canal	Quarterly	Gamma spectral analysis Tritium Sr-89 & 90 (if detected in discharge canal)
2.1.4 Estuarine	1 location, Big Mud Creek, H 13	Quarterly	Gamma spectral analysis Tritium Sr-89 & 90 (if detected in discharge canal)
2.1.5 River (fresh water)	1 location, St. Lucie River at US 1, H 29,	Quarterly	Gross Beta Tritium
2.1.6 Inland (fresh water)	1 location, Walton Road & Marsh, H 27 1 location, Weatherbee Road & Marsh, H 28	Semi-annually	Gross Beta Tritium
2.2 Ground Water (wells)	1 location, Residence, 7609 Indian River Drive, H 30	Semi-annually	Gross Beta Tritium
2.3 Potable Water (wells)	1 location, City of Ft. Pierce, drinking water supply, H 11 1 location, City of Stuart, drinking water supply, H 12 1 location, Port St. Lucie, drinking water supply, H 31	Quarterly	Gamma spectral analysis Gross Beta Tritium
3. BOTTOM SEDIMENT			
3.1 Discharge Canal	1 location, east of A1A, H 35 1 location, west of A1A, H 36	Quarterly	Gamma spectral analysis Sr-89 & 90

TABLE 3.2-1 SHEET 3

OPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

	Criteria and Sampling Locations (1)	Collection Frequency(2)	Analysis/Counting
3. BOTTOM SEDIMENT (cont'd)			
3.2 Ocean	1 location, mouth of discharge structure, H 15 1 location, offshore, 1 mile north of discharge, H 16 1 location, offshore, 1 mile south of discharge, H 19	Semi-annually	Gamma spectral analysis Sr-89 & 90 (if detected in discharge canal sediment)
3.3 Beach (sand)	1 location, Plantom Beach, opposite discharge, H 33 1 location, east of Blind Creek, 1 mile north of discharge, H 16 1 location, near intake, 1 mile south of discharge, H 19	Quarterly	Gamma spectral analysis Sr-89 & 90 (if detected in discharge canal sediment)
3.4 Estuarine	1 location, Big Mud Creek, H 13	Semi-annually	Gamma spectral analysis Sr-89 & 90 (if detected in discharge canal sediment)
4. AQUATIC BIOTA			
4.1 Crustacea	4 locations, H 17, H 18, H 20, H 21	Semi-annually	Gamma spectral analysis Sr-89 & 90
Lobster or crab or shrimp	1 location, discharge canal, west of AlA, H 36	Quarterly	Gamma spectral analysis Sr-89 & 90
4.2 Fish			
4.2.1 Carnivores (Mangrove Snapper)	4 locations, H 17, H 18, H 20, H 21	Semi-annually	Gamma spectral analysis Sr-89 & 90
4.2.2 Herbivors (Mullett)	4 locations, H 17, H 18, H 20, H 21	Semi-annually	Gamma spectral analysis Sr-89 & 90

TABLE 3.2-1 SHEET 4

OPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

	Criteria and Sampling Locations (1)	Collection Frequency (2)	Analysis/Counting
4. AQUATIC BIOTA (cont'd)			
4.2.2 Herbivors (Mullett)	1 location, discharge canal, west of A1A, H 36	Quarterly	Gamma spectral analysis Sr-89 & 90
5. TERRESTRIAL			
5.1 Milk	1 location within 15 mile radius of plant and in the prevailing wind direction from the plant, H 01 1 location, Florida (state) Milk Shed	Monthly	Gamma spectral analysis Sr-89 & 90 I-131
5.2 Biota			
5.2.1 Food Crop (Citrus)	6 locations, H 10, H 22, H 23, H 24, H 25, H 26	Harvest Time	Gamma spectral analysis Sr-89 & 90
5.2.2 Other Vegetation	5 locations within a 10 miles radius of plant, H 08, H 09, H 10, H 27, H 28	Semi-annually	Gamma spectral analysis Sr-89 & 90
5.3 Soil	5 locations within a 10 mile radius of plant, H 08, H 09, H 10, H 27, H 28	Semi-annually	Gamma spectral analysis Sr-89 & 90

(1) Samples will be taken whenever biologically available.

(2) Frequency definitions follow:

Weekly -	Not less than 48 times per annum - Interval may vary by 3 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 be 30 days.
Semi-annually-	Not less than 2 times per annum - Interval may vary by 60 days.

TABLE 3.2-1 SHEET 5

OPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

(3) Analysis will be performed provided sufficient wet deposition occurs.

(4) Gamma spectral and tritium analysis will be performed provided sufficient size liquid sample is collected.

(5) If mean of gross beta activity of the 9 air samples exceeds 10^{-12} µCi/cc (1pCi/m^3)

(6) East of A1A & plant structures--to be installed when construction activity permits.

TABLE 3.2.-2

PRACTICAL REPORTING LIMITS

Gamma Spectroscopy

Nuclide	Vegetation and Water 3.5 l Geometry	Soil and Biota 1.0 l Geometry
Cerium 144	9.7×10^{-8} µCi/ml	2.0×10^{-7} µCi/ml
Iodine 131	1.7×10^{-8} µCi/ml	4.0×10^{-8} µCi/ml
Ruthenium 106	8.3×10^{-8} µCi/ml	1.8×10^{-7} µCi/ml
Cesium 137	1.7×10^{-8} µCi/ml	4.0×10^{-8} µCi/ml
Cesium 134	1.7×10^{-8} µCi/ml	6.0×10^{-8} µCi/ml
Cobalt 58	1.7×10^{-8} µCi/ml	6.0×10^{-8} µCi/ml
Cobalt 60	1.7×10^{-8} µCi/ml	6.0×10^{-8} µCi/ml
Zirconium 95	1.4×10^{-8} µCi/ml	3.0×10^{-8} µCi/ml
Manganese 54	1.4×10^{-8} µCi/ml	3.0×10^{-8} µCi/ml
Zinc 65	3.1×10^{-8} µCi/ml	7.0×10^{-8} µCi/ml
Potassium 40	1.8×10^{-7} µCi/ml	3.9×10^{-7} µCi/ml
Barium 140	1.7×10^{-8} µCi/ml	4.0×10^{-8} µCi/ml
Radium 226	5.7×10^{-8} µCi/ml	2.0×10^{-7} µCi/ml
Thorium 232	2.8×10^{-8} µCi/ml	1.0×10^{-7} µCi/ml

Other Analyses

Strontium 90	8.0×10^{-7} µCi/gm ash
Tritium	2.0×10^{-7} µCi/ml (1 liter sample)
Gross Alpha (water)	7×10^{-9} µCi/ml (1 liter sample)
Gross Alpha (ash)	7×10^{-6} µCi/gm ash
Gross Beta (water)	3×10^{-9} µCi/ml (1 liter sample)
Gross Beta (ash)	1×10^{-5} µCi/gm ash
Gross Beta - air particulate filters (Based on a total flow of 2200 m^3)	7.7×10^{-12} µCi/cc
Air Iodine Cartridges	7.7×10^{-12} µCi/cc

TABLE

3.2-3

OPERATIONAL ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE PROGRAM

TYPE OF ANALYSIS

1. Gamma Spectroscopy

Ce-144	Ba-140
I-131	K-40
Ru-106	Ra-226
Cs-134	Th-232
Cs-137	Co-58
Zr-95	Co-60
Mn-54	Cr-51
Zn-65	

2. Beta Liquid Scintillation Spectroscopy

H-3

C-14

P-32

3. Chemical Separation and Analysis

Sr-89

Sr-90

4.0 SPECIAL SURVEILLANCE AND SPECIAL STUDY ACTIVITIES

4.1 Impingement of Organisms

Objective

The purpose of this study is to monitor those fish impinged on the intake traveling screens to permit a quantitative and qualitative assessment of the impingement.

Specification

The total weight and number of fish, by species, removed from the traveling screens shall be monitored Monitoring will be done during normal operations using a continuous collection period of 24 hours every two weeks. The study shall be terminated two years after commencing plant operations.

Reporting Requirements

Results of this study shall be summarized in the Annual Environmental Report.

4.2 Land Management

Transmission line right-of-way through the Savannas will be virtually undisturbed after the initial installation. The natural vegetation and water flow will remain the same. Potential erosion of the right-of-way is not expected.

The plant site will be landscaped after consultation with a landscape architect. Grasses indigenous to the area will be planted to prevent erosion in the intake and discharge canal area. Further study is being conducted to determine the appropriate types of trees or suitable plants which should be used as a light screen to minimize turtle disorientation.

5.0 ADMINISTRATIVE CONTROLS

The purpose of this section is to describe the administrative and management controls necessary to provide continuing protection to the environment, and to implement the environmental technical specifications (ETS).

5.1 Responsibility

The Vice President of the Environmental Department has the ultimate responsibility for the implementation of the ETS. He may delegate to other departments and/or organizations the work of establishing and executing portions of the ETS, but shall retain responsibility thereof.

The Environmental Department is responsible for executing the non-radiological biotic and special studies sections of the ETS. The Vice President of Power Resources is responsible for executing the non-radiological abiotic, radioactive effluents, and the Radiological Environmental Surveillance sections.

The Plant Quality Control group shall be responsible for the day-to-day verification of compliance with the ETS. The Manager of Quality Assurance shall be responsible for periodic audits, conducted according to the corporate Quality Assurance program, to insure compliance with the ETS.

5.2 Organization

The corporate organization involved in environmental matters is depicted in Figure 5.2-1.

5.3 Review and Audit

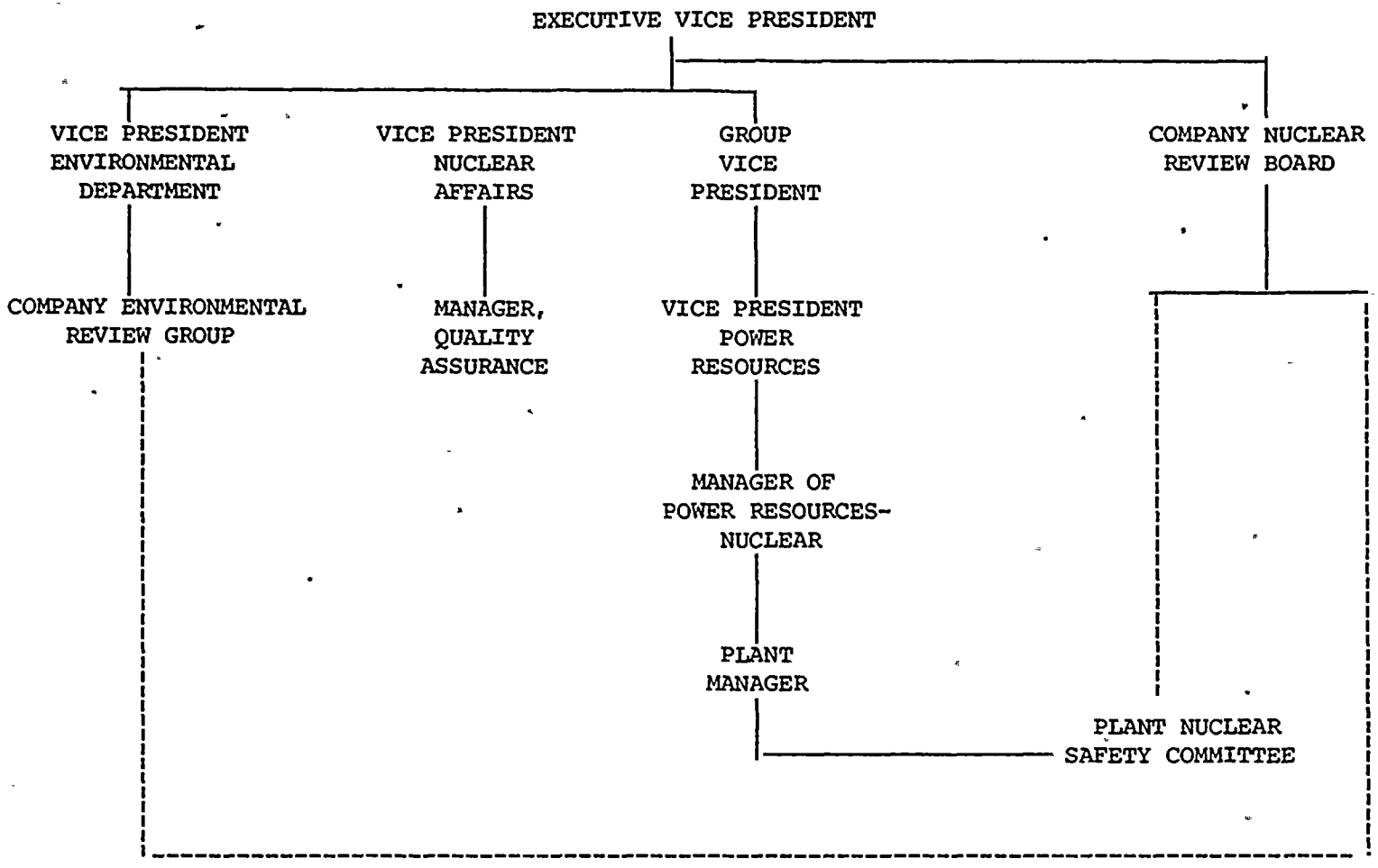
5.3.1 Review of implementation of the ETS shall be made by the Company Environmental Review Group (CERG) or by the Plant Nuclear Safety Committee (PNSC). Secondary reviews shall be made by the Company Nuclear Review Board (CNRB).

5.3.2 PNSC and CNRB membership and responsibilities are described in Appendix A, Technical Specifications.

5.3.3 COMPANY ENVIRONMENTAL REVIEW GROUP (CERG)

A. Function

The Company Environmental Review Group (CERG) shall function to advise the



FLORIDA POWER & LIGHT COMPANY
CORPORATE ORGANIZATION - ENVIRONMENTAL AFFAIRS
FIGURE 5.2-1

2-17-75

Vice President, Environmental Department on all matters related to environmental quality.

B. Membership

1. Manager, Environmental Engineering - Chairman
2. Manager, Environmental Affairs
3. Senior Environmental Engineer, Environmental Engineering
4. Power Resources Test Group Supervisor
5. Environmental Department Biologist
6. Environmental Department Senior Project Coordinator

7. Plant supervisor (Plant Involved)
8. Power Resources Administrative Assistant - Nuclear

C. Alternates

Alternate members shall be appointed in writing by the CERG Chairman. No more than two alternates shall participate in CERG activities at any one time.

D. Meeting Frequency

The CERG shall meet at least semiannually and as convened by the CERG Chairman or designated acting Chairman.

E. Quorum

A quorum of the CERG shall consist of the Chairman, or designated acting Chairman and three members including alternates.

F. Responsibilities

1. Review of all Environmental Department procedures required by Environmental Technical Specifications and changes thereto. Review of any proposed procedures or changes thereto as determined by the Plant Manager to affect the environment.

2. Review results of the environmental monitoring programs prior to their submittal to the NRC.

3. Review of all proposed test and experiments as determined by the Plant Manager to affect the environment.

4. Review of all proposed changes to the Environmental Technical Specifications.

5. Review of all proposed changes or modifications to plant systems or equipment as determined by the Plant Manager to affect the environment.

6. Review of investigation of violations of the Environmental Technical Specifications.

7. Performance of special reviews and investigations and reports thereon as required by the Chairman of the Company Nuclear Review Board.

G. Authority

The Company Environmental Review Group shall:

- Recommend to the Vice President, Environmental Department, written approval or disapproval of the items considered under F.1 through F.5 above.

H. Records

The Company Environmental Review Group shall maintain written minutes of each meeting and copies shall be provided to the Vice President, Environmental Department, Vice President, Power Resources, and the Chairman of the Company Nuclear Review Board.

5.3.4 Periodic audits concerning the implementation of the ETS shall be made as provided in the Quality Assurance Manual.

5.4 Action To Be Taken If A Limiting Condition Is Exceeded

5.4.1 When a Limiting Condition is exceeded, action shall be taken as permitted by the applicable specification until the condition can be met.

5.4.2 Exceeding a Limiting Condition shall be investigated by the Company Environmental Review Group or by the Plant Nuclear Safety Committee.

5.4.3 All reviews and actions taken, with reasons therefore, shall be recorded and maintained as part of the permanent records.

5.4.4 Each instance whereby a Limiting Condition is exceeded shall be reported to the Company Nuclear Review Board.

5.4.5 A report for each occurrence shall be prepared as specified in Section 5.6.2.

5.5 Procedures

5.5.1 Detailed written procedures, including applicable check lists and instructions, shall be prepared and followed for activities involved in carrying out the environmental technical specifications. Procedures shall include sampling, data recording and storage, instrument calibration, measurements and analyses, and actions to be taken when limits are exceeded. Testing frequency of any alarms shall be included.

5.5.2 Plant operating procedures shall include provisions to ensure that plant systems and components are operated in compliance with the environmental technical specifications.

5.6 Reporting Requirements

5.6.1 Routine Reports

Annual Environmental Operating Report

A report on the environmental surveillance programs for the previous 12 months of operation shall be submitted to the Director of the Regional Office of Inspection and Enforcement with a copy to the Director of the Office of Inspection and Enforcement within 90 days after January 1 of each year. The period of the first report shall begin with the date of initial criticality. The report shall include summaries, interpretations, and evaluation of the results of the environmental monitoring programs required by limiting conditions for operation 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. If Harmful effects or evidence or irreversible damage are detected by the monitoring, the licensee shall provide an analysis of the problem and a proposed course of action to alleviate the problem.

A report on the radioactive discharges released from the site during the previous 12 months of operation shall include the following:

Analyses of Effluent releases from sections 2.4.1 and 2.4.3 shall be summarized on a quarterly basis and reported on the format similar to Table 5.6.1-A, B, C, & D.

Supplemental information shall be included covering topics similar to those itemized in Data Sheet 5.6.1-1.

Abnormal releases should be handled as batch releases for accounting purposes and also reported as shown on Data Sheet 5.6.1-1 according to 5.6.2.

Solid wastes shall be summarized on a quarterly basis and reported in a format similar to that of Table 5.6.2-E.

The following information should be reported for shipments of solid waste and irradiated fuel transported from the site during the report period.

1. The annual total quantity in cubic meters and the annual total radioactivity in curies for the categories or types of waste.

    a. Spent resins, filter sludges, evaporator bottoms;
    b. Dry compressible waste, contaminated equipment, etc.;
    c. Irradiated components, control rods, etc.;
    d. Other (furnish description).

2. An estimate of the total activity in the categories of waste in 1) above.

3. The disposition of solid waste shipments. (Identify the number of shipments, the mode of transport, and the destination).

4. The disposition of irradiated fuel shipments. (Identify the number of shipments, the mode of transport, and the destination).

DATA SHEET 5.6.1-1

EFFLUENT AND WASTE DISPOSAL

Supplemental Information

Facility_____ License_____

1. Regulatory Limits

   a. Fission and activation gases:
   b. Iodines:
   c. Particulates, half-lives >8 days:
   d. Liquid effluents:

2. Maximum Permissible Concentrations

   Provide the MPCs used in determining allowable release or concentrations.

   a. Fission and activation gases:
   b. Iodines:
   c. Particulates, half-lives >8 days:
   d. Liquid effluents:

3. Average Energy

   Provide the average ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases, if applicable.

4. Measurements and Approximations of Total Radioactivity

   Provide the methods used to measure or approximate the total radioactivity in effluents and the methods used to determine radionuclide composition.

   a. Fission and activation gases:
   b. Iodines:
   c. Particulates:
   d. Liquide effluents:

5. Batch Releases

   Provide the following information relating to batch releases of radioactive materials in liquid and gaseous effluents.

a. Liquid

1. Number of batch releases:
2. Total time period or batch releases:
3. Maximum time period for a batch release:
4. Average time period for batch releases:
5. Minimum time period for a batch release:
6. Average stream flow during periods of release of effluent into a flowing stream:

b. Gaseous

1. Number of batch releases:
2. Total time period for batch releases:
3. Maximum time period for a batch release:
4. Average time period for batch releases:
5. Minimum time period for a batch release:

6. Abnormal Releases

a. Liquid

1. Number of releases:
2. Total activity released:

b. Gaseous

1. Number of releases:
2. Total activity released:

TABLE 5.6.1-A

GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	Quarter	Quarter
A. Fission & activation gases			
1. Total release	Ci	. E	. E
2. Average release rate for period	µCi/sec	. E	. E
3. Percent of Technical specification limit	%	. E	. E
B. Iodines			
1. Total iodine-131	Ci	. E	. E
2. Average release rate for period	µCi/sec	. E	. E
3. Percent of Technical specification limit	%	. E	. E
C. Particulates			
1. Particulates with half-lives 8 days	Ci	. E	. E
2. Average release rate for period	µCi/sec	. E	. E
3. Percent of Technical specification limit	%	. E	. E
4. Gross alpha radioactivity	Ci	. E	. E
D. Tritium			
1. Total release	Ci	. E	. E
2. Average release rate for period	µCi/sec	. E	. E
3. Percent of Technical specification limit	%	. E	. E

TABLE 5.6.1-B

GASEOUS EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	Quarter	Quarter	Quarter	Quarter
1. Fission gases					
krypton-85	Ci	. E	. E	. E	. E
krypton-85m	Ci	. E	. E	. E	. E
krypton-87	Ci	. E	. E	. E	. E
krypton-88	Ci	. E	. E	. E	. E
xenon-133	Ci	. E	. E	. E	. E
xenon-135	Ci	. E	. E	. E	. E
xenon-135m	Ci	. E	. E	. E	. E
xenon-138	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
Total for period	Ci	. E	. E	. E	. E
2. Iodines					
iodine-131	Ci	. E	. E	. E	. E
iodine-133	Ci	. E	. E	. E	. E
iodine-135	Ci	. E	. E	. E	. E
Total for period	Ci	. E	. E	. E	. E
3. Particulates					
strontium-89	Ci	. E	. E	. E	. E
strontium-90	Ci	. E	. E	. E	. E
cesium-134	Ci	. E	. E	. E	. E
cesium-137	Ci	. E	. E	. E	. E
barium-lanthanum-140	Ci	. E	. E	. E	. E
Others (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E

TABLE 5.6.1-C

LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

	Unit	Quarter	Quarter
A. Fission and activation products			
1. Total release (not including tritium, gases, alpha)	Ci	. E	. E
2. Average diluted concentration during period	µCi/ml	. E	. E
3. Percent of applicable limit	%	. E	. E
B. Tritium			
1. Total release	Ci	. E	. E
2. Average diluted concentration during period	µCi/ml	. E	. E
3. Percent of applicable limit	%	. E	. E
C. Dissolved and entrained gases			
1. Total release	Ci	. E	. E
2. Average diluted concentration during period	µCi/ml	. E	. E
3. Percent of applicable limit	%	. E	. E
D. Gross alpha radioactivity			
1. Total release	Ci	. E	. E
E. Volume of waste released (prior to dilution)	liters	. E	. E
F. Volume of dilution water used during period	liters	. E	. E

TABLE 5.6.1-D

LIQUID EFFLUENTS

		CONTINUOUS MODE		BATCH MODE	
Nuclides Released	Unit	Quarter	Quarter	Quarter	Quarter
strontium-89	Ci	. E	. E	. E	. E
strontium-90	Ci	. E	. E	. E	. E
cesium-134	Ci	. E	. E	. E	. E
cesium-137	Ci	. E	. E	. E	. E
iodine-131	Ci	. E	. E	. E	. E
cobalt-58	Ci	. E	. E	. E	. E
cobalt-60	Ci	. E	. E	. E	. E
iron-59	Ci	. E	. E	. E	. E
zinc-59	Ci	. E	. E	. E	. E
manganese-54	Ci	. E	. E	. E	. E
chromium-51	Ci	. E	. E	. E	. E
zirconium-niobium-95	Ci	. E	. E	. E	. E
molybdenum-99	Ci	. E	. E	. E	. E
technetium-99m	Ci	. E	. E	. E	. E
barium-lanthanum-140	Ci	. E	. E	. E	. E
cerium-141	Ci	. E	. E	. E	. E
Other (specify)	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
	Ci	. E	. E	. E	. E
unidentified	Ci	. E	. E	. E	. E
Total for period (above)	Ci	. E	. E	. E	. E
xenon-133	Ci	. E	. E	. E	. E
xenon-135	Ci	. E	. E	. E	. E

TABLE 5.6.1-E

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL(Not irradiated fuel)

1. Type of waste	Unit	6-month Period
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3 Ci	E E
b. Dry compressible waste, contaminated equip etc.	m^3 Ci	E E
c. Irradiated components, control rods, etc.	m^3 Ci	E E
d. Other (describe)	m^3 Ci	E E

2. SOLID WASTE DISPOSITION

Number of Shipments	Mode of Transportation	Destination

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination

5.6.2 Non Routine Reports

A report shall be submitted in the event that: (a) a limiting condition is exceeded (as specified in Section 2.0 Limiting Conditions), or an unusual or important event occurs that causes a significant environmental impact, that affects potential environmental impact from plant operation, or that has high public or potential public interest concerning environmental impact from plant operation. Reports shall be submitted under one of the report schedules described below.

(1) Prompt Reports

Those events requiring prompt reports shall be reported within 24 hours by telephone, telegraph, or facsimile transmission to the Director of the Regional Office of Inspection and Enforcement and within 10 days by a written report to the Director of the Office of Inspection and Enforcement.

(2) 30-Day Reports

Those events not requiring prompt reports shall be reported within 30 days by a written report to the Director of the Regional Office of Inspection and Enforcement with a copy to the Director of the Office of Inspection and Enforcement.

The reporting schedule for reports concerning limiting conditions shall be reported on the 30-Day schedule. Reports concerning unusual or important events shall be reported on the prompt schedule.

Written 10-day and 30-day reports and to the extent possible the preliminary telephone, telegraph, or facsimile reports shall: (a) describe, analyze, and evaluate the occurrence, including extent and magnitude of the impact, (b) describe the cause of the occurrence and (c) indicate the corrective action (including any significant changes made in procedures) taken to preclude

repetition of the occurrence and to prevent similar occurrences involving similar components or systems.

The significance of an unusual or apparently important event with regard to environmental impact may not be obvious or fully appreciated at the time of occurrence. In such cases, the NRC shall be informed promptly of changes in the assessment of the significance of the event and a corrected report shall be submitted as expeditiously as possible.

5.6.3 Changes in Environmental Technical Specifications

Request for changes in environmental technical specifications shall be submitted to the Director of Nuclear Reactor Regulation for review and authorization. The request shall include an evaluation of the environmental impact of the proposed change.

5.7 Records Retention

5.7.1 Records and logs relative to the following areas shall be made and retained for the life of the plant:

a. Records and drawings detailing plant design changes and modifications made to systems and equipment as described in 5.3.3.F.S.

b. Records of all environmental surveillance data.

c. Records to demonstrate compliance with the limiting conditions in Section 2.

5.7.2 All other records and logs relating to the environmental technical specifications shall be retained for five years following logging or recording. These shall include (but are not limited to) the following:

a. Details or any abnormal operating conditions having an effect on the environment, and actions taken to correct those conditions.

b. Maintenance activities to environment monitoring equipment, including but not limited to:

(1) routine maintenance and component replacement,
(2) equipment failures,
(3) replacement of principal items of equipment.

c. Records of radioactivity levels in liquid and gaseous wastes released to the environment.

d. All reviews, including actions take and reasons therefore, required in Sections 2, 3, and 4 of this specification.