UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

GEORGIA POWER COMPANY
OGLETHORPE ELECTRIC MEMBERSHIP CORPORATION
MUNICIPAL ELECTRIC ASSOCIATION OF GEORGIA
CITY OF DALTON, GEORGIA

DOCKET NO. 50-321

EDWIN I. HATCH NUCLEAR PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 61
License No. DPR-57

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Georgia Power Company, et al, (the licensee) dated June 7, 1978, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-57 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 61, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 16, 1978

ATTACHMENT TO LICENSE AMENDMENT NO. 61

FACILITY OPERATING LICENSE NO. DPR-57

DOCKET NO. 50-321

Remove Appendix B in its entirety. Replace with the attached Appendix B.

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

EDWIN I. HATCH NUCLEAR PLANT

UNITS 1 AND 2

GEORGIA POWER COMPANY

JUNE 1978

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1.0 Definitions

Accuracy: The deviation of a result obtained by a particular method from the value accepted as true.

Aerial Remote Sensing: The measurement or acquisition from aircraft or spacecraft of information on some property of an object or phenomenon by a recording device that is not in physical or intimate contact with the object or phenomenon under study. The technique employs such devices as the camera, radio frequency receivers, and radar systems.

Annually: Once per calendar year at intervals of 12 calendar months, ± 30 days.

Batch Release: The discharge of fluid wastes of a discrete volume.

Biweekly: Once every 2 weeks, ± 4 days.

Calibration: An instrument or device calibration shall be the adjustment, as necessary, of the output such that it responds within the necessary range and accuracy to known values of the parameter(s) which the instrument, sensor, or device monitors.

Closed Cycle Cooling: The condenser cooling method in which the circulating water, after passing through cooling towers, is recirculated back to the condenser intake, with the exception of the blowdown which is discharged to the receiving water body.

Composite Sample: A combination of individual samples obtained over a time period. , o volume of the sample is proportional to either the quantity of effluent releases or the time interval which it represents.

Continuous Release: The discharge of fluid waste of a non-discrete volume, e.g., from a volume or system that has an input flow during the continuous release.

Free Available Chlorine: Chlorine existing in water as hypochlorous acid and hypochlorite ions.

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

Functional Test: The injection of a simulated signal into the instrument as close to the primary sensor as practicable to verify operability including alarm and/or trip function.

Grab Sample: An individual sample collected in less than 15 minutes.

Ground Truth or Ground Data Surveys: Supporting data collected on the ground and information derived therefrom, as an aid to the interpretation of a remotely-recorded survey, such as aerial imagery. To the extent possible, this should be performed concurrently with the airborne surveys.

Infrared, Photographic: Pertaining to or designating that portion of the electromagnetic spectrum with wavelengths just beyond the red end of the visible spectrum; generally defined as being from 0.7 to about 1.0 μm, or the useful limits of film sensitivities.

Limiting Conditions for Operation (LCOs): The limiting conditions specified in Section 2.0 which, if not exceeded, should result in an acceptable environmental impact.

Milk Animal: A cow or goat that is producing milk for human consumption.

Mixing Chamber or Mixing Box: A structure at which various waste streams from each unit are mixed before being discharged to the Altamaha River.

Monthly: Once during each calendar month at intervals of 30 days, ± 6 days.

Normal Operation: Operation of either unit at the station at greater than 5 percent of rated thermal power in other than a safety or power emergency situation.

NPDES Permit: The National Pollutant Discharge Elimination System Permit No. GA 0004120 (or its subsequent revisions) issued by the State of Georgia, Department of Natural Resources, Environmental Protection Division to Georgia Power Company. This permit authorizes Georgia Power Company to discharge controlled waste water from HNP into the waters of the Altamaha River.

Precision: Relates to the reproducibility of measurements within a set, that is, to the scatter or dispersion of a set about its central value.

Quarterly: Once during each successive 3-month period of the calendar year, counting from January 1, at intervals of 13 weeks, ± 14 days.

Scale: The ratio of a distance on a photograph or map to its corresponding distance on the ground.

Semi-annually: Once during each successive 6-month period of the calendar year, counting from January 1, at intervals of 6 months, ± 21 days.

Sensor Check: A sensor check shall permit observation of an established value while disconnected from its normal circuit function and subjecting the sensor to the parameter(s) normally monitored.

Spectral Band: A width, generally expressed in wavelength or frequency, of a particular portion of the electromagnetic spectrum. A given sensor (e.g., radiometer detector or camera film) is designated to measure or to be sensitive to energy received from that part of the spectrum.

Station and Unit: Station refers to HNP Units 1 and 2. Unit refers only to HNP 1 or HNP 2, as defined by its usage. Only the individual unit's instrument is applicable to specifications applied to that unit.

Unusual or Important Event: An event that causes potentially significant environmental impact, or that could be of public interest concerning environmental impact from plant operation.

Weekly: Once during each calendar week at intervals of 7 days, ± 2 days.

2.0 Limiting Conditions for Operation

2.1 Radioactive Effluents

Objective

The objective is to define the limits and conditions for the controlled release of radioactive materials in liquid and gaseous effluents to the environs to ensure that these releases are as low as is reasonably achievable. These releases should not result in radiation exposures in unrestricted areas greater than a few percent of natural background exposures. The concentrations of radioactive materials in effluents shall be within the limits specified in 10 CFR Part 20.

To ensure that the releases of radioactive material above background to unrestricted areas will be as low as is reasonably achievable in accordance with the requirements of 10 CFR Part 50, § 50.36a, the following design objectives apply:

For liquid wastes:

a. The annual dose above background to the total body or any organ of an individual from all reactors at the site should not exceed 5 mrem in an unrestricted area.

b. The annual total quantity of radioactive materials in liquid waste, excluding tritium and dissolved gases, discharged from each reactor at the site should not exceed 5 Ci.

For gaseous wastes:

c. The annual total quantity of noble gases above background discharged from the site should result in an air dose due to gamma radiation of less than 10 mrad and an air dose due to beta radiation of less than 20 mrad at any location near ground level which could be occupied by individuals at or beyond the boundary of the site.

d. The annual total quantity, above background, of all radioiodines and radioactive material in particulate forms with half-lives greater than 8 days from all reactors at the site should not result in an annual dose to any organ of an individual in an unrestricted area from all pathways of exposure in excess of 15 mrem.

e. The annual total quantity of iodine-131 discharged from each reactor at the site should not exceed 1 Ci.

2.1.1 Specifications for Liquid Waste Effluents

a. The concentration of radioactive materials released in liquid waste effluents shall not exceed the values specified in 10 CFR Part 20, Appendix B, Table II, Column 2.

b. The cumulative release of radioactive materials in liquid waste effluents, excluding tritium and dissolved gases, shall not exceed 10 Ci/reactor per calendar quarter.

c. The cumulative release of radioactive materials in liquid waste effluents, excluding tritium and dissolved gases, shall not exceed 20 Ci/reactor in any 12 consecutive months.

d. During release of radioactive wastes, the liquid radwaste effluent radiation monitor shall be set to alarm and to initiate the automatic closure of the waste discharge valve for the corresponding Unit prior to exceeding the limits in Section 2.1.1a above.

e. The operability of the automatic discharge valve in the liquid radwaste discharge line for each Unit shall be demonstrated quarterly.

f. The equipment installed in the liquid radioactive waste system for each Unit shall be maintained and shall be operated to process radioactive liquid wastes prior to their discharge when the projected cumulative release could exceed 1.25 Ci/reactor per calendar quarter, excluding tritium and dissolved gases.

g. The maximum radioactivity to be contained in any liquid radwaste tank that can be discharged directly to the environs shall not exceed 10 Ci, excluding tritium and dissolved gases.

h. If the cumulative release of radioactive materials in liquid effluents, excluding tritium and dissolved gases, exceeds 2.5 Ci/ reactor per calendar quarter, the licensee shall make an investigation to identify the causes of such releases, define and initiate a program of action to reduce such releases to the design objective levels listed in Section 2.1, and report these actions to the NRC within 30 days from the end of the quarter during which the release occurred in accordance with Section 5.7.2.

i. An unplanned or uncontrolled offsite release of radioactive materials in liquid effluents in excess of 0.5 Ci excluding dissolved gases shall be reported to the NRC within 30 days in accordance with Section 5.7.2.

2.1.2 Specifications for Liquid Waste Sampling and Monitoring

a. Plant records shall be maintained of the radioactive concentration and volume before dilution of liquid waste intended for discharge, and the average dilution flow and length of time over which each discharge occurred. Sample analysis results and other reports shall be submitted as required by Section 5.7. Estimates of the sampling and counting errors associated with each reported value shall be included.

b. Prior to release of each batch of liquid waste, a sample shall be taken from that batch and analyzed for the concentration of each principal gamma emitter in accordance with Table 2.1-1 to demonstrate compliance with Section 2.7.1a using the flow rate into which the waste is discharged during the period of discharge.

c. Sampling and analysis of liquid radioactive waste shall be performed in accordance with Table 2.1-1. Prior to taking samples from a liquid waste sample tank, at least two tank volumes shall be recirculated. If eductors are used, the recirculated two tank volumes are based on the flow rate at the discharge of eductors. This will be demonstrated within 12 months after initial fuel loading of Unit 2.

d. The radioactivity in liquid wastes shall be continuously monitored and recorded during release. Whenever a liquid radwaste effluent radiation monitor is inoperable for a period not to exceed 72 hours, two independent samples of each tank to be discharged shall be analyzed and two plant personnel shall independently check valving prior to the discharge. If this monitor is inoperable for a period exceeding 72 hours, no release from the liquid waste sample tank for that Unit shall be made and any release in progress shall be terminated.

e. The flow rate of liquid radioactive waste shall be measured and recorded during release.

f. All liquid effluent radiation monitors shall be calibrated at least quarterly by means of a radioactive source which has been calibrated to a National Bureau of Standards source. Each monitor shall also have a functional test monthly and an instrument check prior to making a release.

Bases

The release of radioactive materials in liquid waste effluents to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as is reasonably achievable in accordance with the requirements of 10 CFR Part 50, § 50.36a. These specifications provide reasonable assurance that the resulting annual dose to the total body or any organ of an individual in an unrestricted area will not exceed 5 mrem. This assurance is based on the fact that the Altamaha River will dilute the liquid effluents upon their release from the site. The effluents will be diluted by a factor of about 5 in the discharge region where fishing can exist. This factor is only for the river dilution. At the same time, these specifications permit the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that, by using this operational flexibility under unusual operating conditions and exerting every effort to keep levels of radioactive material in liquid wastes as low as is reasonably achievable, the annual releases will not exceed a small fraction of the concentration limits specified in 10 CFR Part 20.

The design objectives are based on operating experience and take into account a combination of variables, including defective fuel, primary system leakage, and the performance of the various waste treatment systems. They are consistent with Appendix I to 10 CFR Part 50.

The 5 Ci/yr liquid effluent design objective is more restrictive than the 5 mrem/yr individual dose design objective. This was established by calculating the dose to an individual from eating fish which were caught at a point near the plant discharge, using the methodology of Regulatory Guide 1.109 and a river dilution factor of 5.

Section 2.1.1a requires the licensee to limit the concentration of radioactive materials in liquid waste effluents released from the site to levels specified in 10 CFR Part 20, Appendix B, Table II, Column 2. This section provides assurance that no member of the general public will be exposed to liquid containing radioactive materials in excess of limits considered permissible under the Commission's regulations.

Sections 2.1.1b and 2.1.1c establish the upper limits for the release of radioactive materials in liquid effluents. The intent of these specifications is to permit the licensee the flexibility of operation to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the levels normally achievable when the plant and the liquid waste treatment systems are functioning as designed. Releases up to these levels will result in concentrations of radioactive material in liquid waste effluents that are small percentages of the limits specified in 10 CFR Part 20.

Consistent with the requirements of Design Criterion 64 of Appendix A to 10 CFR Part 50, Sections 2.1.1d and 2.1.1e require the operation of suitable equipment to control and monitor the releases of radioactive materials in liquid wastes during any period that these releases are taking place.

Section 2.1.1f requires that the licensee maintain and operate the equipment installed in the liquid waste systems to reduce the release of radioactive materials in liquid effluents to as low as is reasonably achievable consistent with the requirements of 10 CFR Part 50, § 50.36a. Normal use and maintenance of installed equipment in the liquid waste system provides reasonable assurance that the quantity released will not exceed the design objective. In order to keep releases of radioactive materials as low as is reasonably achievable, the specification requires, as a minimum, operation of equipment whenever it appears that the projected cumulative discharge rate will exceed one-fourth of this design objective annual quantity during any calendar quarter.

Section 2.1.1g restricts the amount of radioactive material that could be inadvertently released to the environment to an amount that will not exceed the ETS limit.

In addition to limiting conditions for operation listed under Sections 2.1.1b and c, the reporting requirements of Section 2.1.1h provide that the licensee shall identify the cause whenever the cumulative release of radioactive materials in liquid waste effluents exceeds one-half the design objective annual quantity during any calendar quarter and shall describe the proposed program of action to reduce such releases to design objective levels on a timely basis. This report must be filed within 30 days following the calendar quarter in which the release occurred.

Section 2.1.1i provides for reporting spillage or release events which, while below the limits of 10 CFR Part 20, could result in releases higher than the design objectives.

The sampling and monitoring requirements given under Section 2.1.2 provide assurance that radioactive materials in liquid wastes are properly controlled and monitored in conformance with the requirements of General Design Criteria 60 and 64. These requirements provide the data for the licensee and the Commission to evaluate the plant's performance relative to radioactive liquid wastes released to the environment. Reports on the quantities of radioactive materials released in liquid waste effluents are furnished to the Commission as required by Section 5.7.1. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such action as the Commission deems appropriate.

All points of planned release of radioactive effluents to the environment are monitored in accordance with Section 2.1.2. These points as well as other liquid release points from the plant are listed in Table 2.1-3.

2.1.3 Specifications for Gaseous Waste Discharges

a. (1) The release rate limit of noble gases from the site shall be:

$$\sum_{i \to n} Q_{is}\left[1.9\,\overline{E}_{\gamma} + 1.0\,\overline{E}_{\beta}\right] + Q_{iv}\left[11\,\overline{E}_{\gamma} + 44\,\overline{E}_{\beta}\right] \leq 1$$

where

Q_S = total release rate from main stack for both Units in Ci/sec (elevated release);

Q_V = total release rate from vents for both Units in Ci/sec (ground release);

i = the individual nuclide;

n = total nuclides;

$\overline{E}_{\gamma}$ = the average gamma energy per disintegration; and

$\overline{E}_{\beta}$ = the average beta energy per disintegration.

Refer to Table 2.1-5 for $\overline{E}_{\gamma}$ and $\overline{E}_{\beta}$ values to be used.

(2) The release rate limit of all radioiodines and radioactive materials in particulate form with half lives greater than 8 days, released from the site to the environs as part of the gaseous wastes, shall be

$$1.0 \times 10^5 \, Q_{ps} + 1.5 \times 10^6 \, Q_{pv} \leq 1,$$

where Q_{ps} = total release rate from the main stack for both Units in Ci/sec (elevated release); and

Q_{pv} = total release rate from vents for both Units in Ci/sec (ground release).

b. (1) The average release rate of noble gases from the site during any calendar quarter shall be

$$\sum_{i \to n} Q_{is} \left[12 \, \overline{E}_\gamma + 3.0 \, \overline{E}_\beta\right] + Q_{iv} \left[66 \, \overline{E}_\gamma + 140 \, \overline{E}_\beta\right] \leq 1.$$

(2) The average release rate of noble gases from the site during any 12 consecutive months shall be

$$\sum_{i \to n} Q_{is} \left[24 \, \overline{E}_\gamma + 6.1 \, \overline{E}_\beta\right] + Q_{iv} \left[130 \, \overline{E}_\gamma + 270 \, \overline{E}_\beta\right] \leq 1.$$

(3) The average release rate of all radioiodines and radioactive materials in particulate form from the site with half lives greater than 8 days during any calendar quarter shall be

$$1.3 \times 10^6 \, Q_{ps} + 1.9 \times 10^7 \, Q_{pv} \leq 1.$$

(4) The average release rate of all radioiodines and radioactive materials in particulate form from the site with half lives greater than 8 days during any period of 12 consecutive months shall be

$$2.6 \times 10^6 \, Q_{ps} + 3.7 \times 10^7 \, Q_{pv} \leq 1.$$

(5) The amount of iodine-131 released during any calendar quarter shall not exceed 2 Ci/reactor.

(6) The amount of iodine-131 released during any period of 12 consecutive months shall not exceed 4 Ci/reactor.

c. Should the conditions of Sections 2.1.3c(1), (2), or (3) listed below occur, the licensee shall make an investigation to identify the causes of the release rates, define and initiate a program of action to reduce the release rates to design objective levels listed in Section 2.1, and report these actions to the NRC within 30 days from the end of the quarter during which the releases occurred in accordance with Section 5.7.2.

(1) If the average release rate of noble gases from the site during any calendar quarter is

$$\sum_{i \to n} Q_{is} \left[47\ \bar{E}_{\gamma} + 12\ \bar{E}_{\beta}\right] + Q_{iv} \left[260\ \bar{E}_{\gamma} + 540\ \bar{E}_{\beta}\right] > 1.$$

(2) If the average release rate from the site of all radioiodines and radioactive materials in particulate form with half lives greater than 8 days during any calendar quarter is

$$5.0 \times 10^{6}\ Q_{ps} + 7.2 \times 10^{7}\ Q_{pv} > 1.$$

(3) If the amount of iodine-131 released during any calendar quarter is greater than 0.5 Ci/reactor.

d. The post-treatment offgas monitors listed in Table 2.1-4 shall be operating and set to alarm and to initiate the automatic closure of the waste gas discharge valve prior to exceeding the limits specified in Section 2.1.3a above. The operability of each automatic isolation valve in the gaseous radwaste discharge line shall be demonstrated quarterly.

e. If no post-treatment offgas monitor is operating, a shutdown of that Unit shall be initiated so that the reactor will be in the hot shutdown condition within 10 hours.

f. If the gross radioactivity rate of noble gases measured at the pretreatment monitor exceeds 260,000 μCi/sec for a period greater than 48 hours, notify the NRC within 10 days in accordance with Section 5.7.2, identifying the causes of this activity.

g. The reactor containment atmosphere for each Unit shall be purged through the standby gas treatment system for that Unit.

h. (1) Potentially-explosive gas mixtures of hydrogen and oxygen contained in the offgas system downstream of the recombiners shall be continuously monitored during reactor power operation for hydrogen concentration. The hydrogen gas monitoring system shall provide alarms locally and in the control room at a set point of 4% hydrogen concentration by volume. At least one continuous gas monitoring system and its associated alarm system shall be operable during reactor power operation. If both of the hydrogen gas monitors or both of the associated alarm systems are inoperable, reactor operation may be continued for a period of time not to exceed 2 weeks, provided that either (a) grab samples are taken and analyzed for hydrogen concentration once every 4 hours, or (b) using a temporary hydrogen gas analyzer installed in the offgas system line downstream of the recombiner, hydrogen concentration readings are taken and logged every 4 hours.

(2) The hydrogen concentration in the offgas system downstream of the recombiners shall not exceed 4% concentration by volume.

If, at any time during reactor power operation, it is determined that the hydrogen concentration limit is being exceeded, action shall be initiated within 4 hours to return the hydrogen concentration to within the prescribed limit. If the hydrogen concentration is not reduced to less than 4% by volume within 24 hours, the offgas system flow shall be stopped.

(3) The installed hydrogen monitoring systems shall have daily sensor checks, monthly functional checks, and quarterly calibrations. The portable hydrogen gas analyzer shall be calibrated immediately prior to installation and shall be subject to daily sensor checks, monthly functional checks, and quarterly calibrations until removed from service.

i. An unplanned or uncontrolled offsite release of radioactive materials in gaseous effluents in excess of 150 Ci of noble gas or 0.02 Ci of radioiodines in gaseous form shall be reported to the NRC within 30 days in accordance with Section 5.7.2.

2.1.4 Specifications for Gaseous Waste Sampling and Monitoring

a. Plant records shall be maintained and reports of the sampling and analysis results shall be submitted in accordance with Section 5.7. Estimates of the sampling and counting errors associated with each reported value should be included.

b. Gaseous releases to the environment shall be monitored continuously for gross radioactivity, and the flow measured and recorded. Whenever these radiation monitors are inoperable, grab samples shall be taken and analyzed daily for gross radioactivity. If the flow measurement devices are inoperable, estimates of flow will be made. If these monitors are inoperable for more than 7 days, these releases from the corresponding release point shall be terminated.

c. An isotopic analysis shall be made of a representative sample of gaseous activity, excluding tritium, at the location of pretreatment monitor and at a point prior to dilution and discharge, (1) within one month of initial criticality, (2) at least monthly thereafter, (3) following each refueling outage, and (4) if the gaseous waste monitors indicate an increase of greater than 50% in the steady state fission gas release after factoring out increases due to power changes.

d. All waste gas effluent monitors shall be calibrated at least quarterly by means of a known radioactive source which has been calibrated to a National Bureau of Standards source. Each monitor shall have a functional test at least monthly and an instrument check at least daily.

e. Sampling and analysis of radioactive material in gaseous waste, including particulate forms and radioiodines, shall be performed in accordance with Table 2.1-2.

Bases

The release of radioactive materials in gaseous wastes to unrestricted areas shall not exceed the concentration limits specified in 10 CFR Part 20 and should be as low as reasonably achievable in accordance with the requirements of 10 CFR Part 50.36. These specifications provide reasonable assurance that the resulting annual air dose from the site due to gamma radiation will not exceed 10 mrad, that an annual air dose from the site due to beta radiation will not exceed 20 mrad from noble gases, and that the annual dose to any organ of an individual from iodines and particulates will not exceed 15 mrem per site. At the same time, these specifications permit the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided with a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10 CFR Part 20. It is expected that by using this operational flexibility under unusual operating conditions and by exerting every effort to keep levels of radioactive material in gaseous wastes as low as reasonably achievable, the annual releases will not exceed a small fraction of the concentration limits specified in 10 CFR Part 20.

The maximum permissible concentration of radioactive iodine in air should be reduced by a factor of 243 to allow for the grass-cow-milk pathway. (This factor is 1220 for the grass-goat-milk pathway.) This factor has been derived for radioactive iodine, taking into account the milk pathway. It has been applied to radionuclides of iodine and to all radionuclides in particulate form with a half life greater than 8 days. The factor is not appropriate either for iodine where milk is not a pathway of exposure or for the other radionuclides.

The design objectives have been developed based on operating experience, taking into account a combination of system variables including defective fuel, primary system leakage, and the performance of the various waste treatment systems.

For Section 2.1.3a(1), dose calculations have been made for the critical sector. These calculations consider site meteorology, buoyancy characteristics, and radionuclide content of the effluent from each Unit. Meteorological calculations for offsite locations were performed, and the most critical location was selected to set the release rate. The controlling distances are 1490 meters to the east for ground releases and 1700 meters to the ESE for elevated releases. The gamma dose contribution was determined using Equation 7.63 in Section 7-5.2.5 of Meteorology and Atomic Energy -1968. The releases from vents are considered to be ground-level releases which could result in a beta dose from cloud submersion.

The beta dose contribution was determined using Equation 7.21, as described in Section 7-4.1 of Meteorology and Atomic Energy - 1968. The beta dose contribution was determined on the basis of an infinite cloud passage with semi-infinite geometry for a ground-level release (submersion dose). The beta and gamma components of the gross radioactivity in gaseous effluents were combined to determine the allowable continuous release rate. Based on these calculations, a continuous release rate of gross radioactivity in the amount specified in Section 2.1.3a(1) will not result in offsite annual doses above background in excess of the limits specified in 10 CFR Part 20.

The average gamma and beta energy per disintegration used in the equation of Section 2.1.3a(1) will be based on the average composition of gases determined from the plant vent and ventilation exhausts. The average energy per beta or gamma disintegration for those radioisotopes determined to be present from the isotopic analyses are given in Table 2.1-5. Where isotopes are identified that are not listed in Table 2.1-5, the gamma energy is determined from Table of Isotopes, C. M. Lederer, J. M. Hollander, and I. Perlman, sixth edition, 1967; and the beta energy shall be as given in USNRDL-TR-802, II. Spectra of Individual Negatron Emitters (Beta Spectra), O. Hogan, P. E. Zigman, and J. L. Mackin.

For Section 2.1.3a(2), dose calculations have been made for the critical sectors and critical pathways for all radioiodines and radioactive material in particulate form with half lives greater than 8 days. The calculations consider site meteorology for these releases.

For radioiodines and radioactive material in particulate form with half lives greater than 8 days, the critical location for ground releases is the east sector at a distance of 1490 meters, where the χ/Q is 3.0×10^{-6} sec/m^3 for the dose due to inhalation. The critical location for elevated releases is the ESE sector at a distance of 1700 meters, where the χ/Q is 6.7×10^{-8} sec/m^3 for the dose due to inhalation. The nearest milk cow is located in the NNE sector at a distance of 4830 meters, where the χ/Q is 6.1×10^{-7} sec/m^3 for ground releases and 4.2×10^{-8} sec/m^3 for elevated releases. The grass-cow-milk-child thyroid chain is controlling.

The assumptions used for these calculations are as follows: (1) onsite meteorological data for the most critical 22.5-degree sector; (2) credit for building wake; and (3) a reconcentration factor of 243 which was applied for possible ecological chain effects from radioactive iodine and particulate releases where applicable.

Section 2.1.3b establishes upper limits for the releases of noble gases, radioiodines, and particulates with half lives greater than 8 days, and for iodine-131 at twice the design objective annual quantity during any calendar quarter, or four times the design objective annual quantity during any period of 12 consecutive months.

The intent of this specification is to permit the licensee the flexibility of operation to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in higher releases than the design objectives.

In addition to the limiting conditions for operation of Sections 2.1.3a and 2.1.3b, the reporting requirements of Section 2.1.3c provide that the cause shall be identified whenever the release of gaseous effluents exceeds one-half the design objective annual quantity during any calendar quarter and that the proposed program of action to reduce such release rates to the design objectives shall be described.

Section 2.1.3d and 2.1.3e are in accordance with General Design Criterion 64 of Appendix A to 10 CFR Part 50.

Section 2.1.3f is intended to monitor the performance of the core. An increase in the activity levels of gaseous releases may be the result of defective fuel. Since core performance is of utmost importance in the resulting doses from accidents, a report must be filed within 10 days following the specified increase in gaseous radioactive releases.

Section 2.1.3g requires that the primary containment atmosphere receive treatment for the removal of gaseous iodine and particulates prior to its release.

Section 2.1.3h requires that hydrogen concentration in the system be monitored at all times.

Section 2.1.3i provides for reporting release events which, while below the limits of 10 CFR Part 20, could result in releases higher than the design objectives.

The sampling and monitoring requirements contained in Section 2.1.4 provide assurance that radioactive materials released in gaseous waste effluents are properly controlled and monitored in conformance with the requirements of General Design Criteria 60 and 64. These requirements provide the data for the licensee and the Commission to evaluate the plant's performance relative to radioactive waste effluents released to the environment. Reports on the quantities of radioactive materials released in gaseous effluents are furnished to the Commission as required by Section 5.7.1. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such action as the Commission deems appropriate.

The points of release to the environment to be monitored in Section 2.1.4 include all the monitored effluent release points provided for in Table 2.1-4.

2.1.5 Specifications for Solid Waste Handling and Disposal

a. Measurements shall be made to determine or estimate the total curie quantity and principal radionuclide composition of all radioactive solid waste shipped offsite.

b. Reports of the radioactive solid waste shipments, volumes, principal radionuclides, and total curie quantity shall be submitted as required by Section 5.7.

Bases

The requirements for solid radioactive waste handling and disposal given under Section 2.1.5 provide assurance that solid radioactive materials stored at the plant and shipped offsite are properly controlled, monitored, and packaged in conformance with 10 CFR Part 20 and 10 CFR Part 71.

TABLE 2.1-1
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS

Liquid Source	Sampling/ Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (μCi/ml) [c]
Monitor Tank Releases	Each Batch	Principal Gamma Emitters	5×10^{-7} [b]
	One Batch/Month	Dissolved Gases [d]	10^{-5}
	Monthly Composite [a]	H-3	10^{-5}
		Gross a [e]	10^{-7}
	Quarterly Composite [a]	Sr-89, Sr-90	5×10^{-8}

a. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged from the plant.

b. For certain radionuclides with low gamma yield or low energies, or for certain radionuclide mixtures, it may not be possible to measure radionuclides in concentrations near the detection limit of 5×10^{-7} mCi/ml. Under these circumstances, it may be necessary to calculate the concentration of such radionuclides to a lower limit of detection of 5×10^{-7} mCi/ml using observed ratios with those radionuclides which are measurable, or the lower limit of detection of 5×10^{-7} mCi/ml may be increased proportionally to the magnitude of the gamma yield (i.e., $5 \times 10^{-7}/I$, where I is the photon abundance expressed as a decimal fraction), but in no case shall the lower limit of detection as calculated in this manner be greater than 10% of the MPC value specified in 10 CFR 20, Appendix B, Table II, Column 2.

c. The detectability limits for activity analysis are based on technical feasibility and on the potential significance in the environment of the quantities released. For some nuclides, lower detection limits may be readily achievable, and when nuclides are measured below the stated limits, they should also be reported.

d. For dissolved or entrained noble gases in water, assume MPC of 4×10^{-5} μCi/ml of water.

e. Impurities present in waste effluents can have a negative effect upon alpha counting due to the high self-absorption of alpha particles. Under these circumstances, it may be more appropriate to calculate the gross alpha activity by taking the gamma activity of either Nb-95, Cs-134 or Co-60 observed in the effluent sample times the previously observed ratio of alpha activity to gamma activity of the corresponding radionuclide in the high purity primary coolant. This ratio of alpha activity to gamma activity is observed periodically in samples taken from the high purity primary coolant for the reactor unit.

Direct gross alpha measurements shall be made until postoperational test results, reported in the semiannual effluent reports, indicate that in no case shall the LLD as calculated in this manner be greater than 10% of the MPC value specified in 10 CFR Part 20, Appendix B, Table II, column 2.

TABLE 2.1-2
RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS

Gaseous Source	Sampling/ Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (μCi/ml)[a]
Enviromental Release Points	Monthly (Gas Samples)	Principal Gamma Emitters	10^{-4}[b, c]
		H-3	10^{-6}
	Weekly (Charcoal Sample)[d]	I-131	10^{-12}
	Monthly (Charcoal Sample)	I-133, I-135	10^{-10}
	Weekly (Particulates)[e,d]	Principal Gamma Emitters (Ba-La-140, I-131, and others)	10^{-11}
	Monthly Composite[e] (Particulates)	Gross α[f]	10^{-11}
	Quarterly Composite[e] (Particulates)	Sr-89, Sr-90	10^{-11}

a. The detectability limits for activity analysis are based on technical feasibility and on the potential significance in the environment of the quantities released. For some nuclides, lower detection limits may be readily achievable, and when nuclides are measured below the stated limits, they should also be reported.

b. Analyses shall also be performed following each refueling, initial startup, or similar operational occurrence which could alter the mixture of radionuclides.

c. For certain radionuclides with low gamma yield or low energies, or for certain radionuclide mixtures, it may not be possible to measure radionuclides in concentrations near the detection limit of 1×10^{-4} μCi/ml. Under these circumstances, it may be necessary to calculate the concentration of such radionuclides to a lower limit of detection of 1×10^{-4} μCi/ml using observed ratios with those radionuclides which are measurable, or the lower limit of detection of 1×10^{-4} μCi/ml may be increased proportionally to the magnitude of the gamma yield (i.e., $1 \times 10^{-4}/I$, where I is the photon abundance expressed as a decimal fraction), but in no case shall the lower limit of detection as calculated in this manner be greater than 10% of the MPC value specified in 10 CFR 20, Appendix B, Table II, Column 1.

d. When the average daily gross radioactivity release rate exceeds that given in Section 2.1.3c(1) or where the steady state gross radioactivity release rate increases by 50% over the previous corresponding power level steady state release rate, the iodine and particulate collection device shall be removed and analyzed to determine the change in iodine-131 and particulate release rate. The analysis shall be done daily following such change until it is shown that a pattern exists which can be used to predict the release rate, after which it may revert to weekly sampling frequency.

e. To be representative of the average quantities and concentrations of radioactive materials in particulate form released in gaseous effluents, samples should be collected in proportion to the rate of flow of the effluent stream.

f. Impurities present in waste effluents can have a negative effect upon alpha counting due to the high self-absorption of alpha particles. Under these circumstances, it may be more appropriate to calculate the gross alpha activity by taking the gamma activity of either Nb-95, Cs-134, or Co-60 observed in the effluent sample times the previously observed ratio of alpha activity to gamma activity of the corresponding radionuclide in the high purity primary coolant. This ratio of alpha activity to gamma activity is observed periodically in samples taken from the high purity primary coolant for the reactor unit. Direct gross alpha measurements shall be made until postoperational test results, reported in the semiannual effluent reports, indicate that in no case shall the LLD as calculated this manner be greater than 10% of the MPC value specified in 10 CFR Part 20, Appendix B, Table II, column 1.

TABLE 2.1-3

BWR-LIQUID WASTE SYSTEM
LOCATION OF PROCESS AND EFFLUENT MONITORS AND
SAMPLERS REQUIRED BY ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Process Stream or Release Point	Continuous Monitor and Radiation Alarm	Auto Control to Isolation Valve	Grab Sample Station	Radiation Monitor MPL* Number (Unit 1)	Radiation Monitor MPL* Number (Unit 2)
High Purity Waste Sample (Test) Tank			X		
Floor Drain Waste Sample (Test) Tank			X		
Chemical Waste Sample (Test) Tank			X		
Laundry Drain Collector Tank (HNP-1 Only)			X		
Liquid Radwaste Discharge Pipe	X	X		D11-K604	2D11-K604
Service Water Discharge Pipe	X			D11-K605	2D11-K605
Condensate Storage Tank			X		
Reactor Building Closed Cooling System	X			D11-K606	2D11-K606

*MPL - Master Parts List

TABLE 2.1-4

BWR-GASEOUS WASTE SYSTEM
LOCATION OF PROCESS AND EFFLUENT MONITORS AND
SAMPLERS REQUIRED BY ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Process Stream or Release Point	Continuous Monitor and Radiation Alarm	Grab Sample Station	Auto Control to Isolation Valve	Radiation Monitor MPL*** Number (Unit 1)	Radiation Monitor MPL*** Number (Unit 2)
Main Stack	X	X		(Common for both Units)	
Condenser/Air Ejector (pretreatment)	X	X		D11-K601 A,B	2D11-K601 A,B
Condenser/Air Ejector (post-treatment)	X	X	X	D11-K615 A,B	2D11-K615 A,B
**Mechanical Vacuum Pump *Turbine Gland Seal Condenser *Waste Gas Treatment Building					
*Reactor Building Vent for each Unit *Reactor Building Ventilation Exhaust System *Radwaste Buildings *Turbine and Control Building *Refueling Floor	X	X		D11-K619 A,B	2D11-K619 A,B
Recombiner Building (HNP-1 only)	X	X		D11-P003 A,B	

*As all of the building ventilation systems for each Unit are routed to a single release point, one continuous monitor at the final release point is sufficient.

**The offgases from the mechanical vacuum pump will be discharged downstream of the turbine gland seal condenser vent and both releases will be discharged through the main stack.

***MPL - Master Parts List

TABLE 2.1-5

AVERAGE ENERGY PER DISINTEGRATION

Isotope	$\bar{E}_\gamma$, mev/dis	(Ref)	$\bar{E}_\beta$, mev/dis[(c)]	(Ref)
Kr-83m	0.00248	(a)	0.0371	(a)
Kr-85	0.0022	(a)	0.250	(a)
Kr-85m	0.159	(a)	0.253	(a)
Kr-87	0.793	(a)	1.32	(a)
Kr-88	1.95	(a)	0.377	(a)
Kr-89	2.22	(b)	1.37	(b)
Kr-90	2.10	(b)	1.01	(b)
Xe-131m	0.0201	(a)	0.143	(a)
Xe-133	0.0454	(a)	0.135	(a)
Xe-133m	0.042	(a)	0.19	(a)
Xe-135	0.247	(a)	0.317	(a)
Xe-135m	0.432	(a)	0.095	(a)
Xe-137	0.194	(a)	1.64	(a)
Xe-138	1.18	(a)	0.611	(a)

(a) ORNL-4923, Radioactive Atoms - Supplement I, M. S. Martin, November 1973.

(b) NEDO-12037, "Summary of Gamma and Beta Emitters and Intensity Data; M. E. Meek, R. S. Gilbert, January 1970." (The average β energy was computed from the maximum energy using the ICRP II equation, not the 1/3 value assumption used in this reference.)

(c) The average β energy includes conversion electrons.

3.0 Environmental Monitoring

The objective of the environmental monitoring program is to determine the effect of plant operation on the environment.

3.1 Nonradiological Monitoring

Deviations from the required sampling schedule are permitted because of hazardous conditions, malfunction of sampling equipment, or other legitimate reaons. Every reasonable effort, including the use of replacement equipment shall be made to complete corrective action as soon as possible, but in no case later than the start of the next sampling period. All significant deviations from the sampling schedule shall be documented in the Annual Environmental Surveillance Report.

3.1.1 Abiotic

3.1.1.1 Thermal

Environmental Monitoring Requirement

During normal operation of the station, temperatures of the intake water and the discharge from the cooling system to the river shall be measured as specified in the Program Description developed by the licensee in accordance with Section 5.6.1. This specification applies to the discharge from outfall serial number 001, Cooling Tower Blowdown, as identified in NPDES permit No. GA 0004120.

This monitoring program shall commence with the initial attainment of normal operation of Unit 2 and continue until approval for termination or modification of this monitoring requirement is obtained from NRC in accordance with Section 5.7.3.

Action

The results of the monitoring conducted under this program shall be summarized, analyzed, interpreted, and reported in accordance with Section 5.7.1.

The licensee shall record the temperature of intake water; temperature of discharge water; discharge flow rate; date and time of measurements; date of instrument calibration; accuracy and sensitivity of the temperature sensors; and occurrence and duration of periods when the sensor system is not functioning properly or is out of calibration.

A nonroutine report, as specified in Section 5.7.2b, shall be made if the thermal characteristics of the discharge from outfall serial number 001 fail to comply with the relevant effluent limitations prescribed by the State of Georgia and the U.S. Environmental Protection Agency in the certificates and permits issued to the licensee pursuant to the provisions of Sections 401 and 402 of PL 92-500, as cited in Section 5.5.

Bases

The purposes of the thermal monitoring requirement are to assure that (i) the difference between intake water temperature and discharge water temperature and (ii) the temperature of the cooling water being discharged comply with the requirements of NPDES permit No. GA 0004120 issued to the Georgia Power Company by the Environmental Protection Division, Department of Natural Resources, State of Georiga.

Modeling studies have indicated that discharges from two-unit operation during extreme summer meteorological conditions would not exceed 90°F or a maximum ΔT of 5°F at the edge of the defined mixing zone, as specified in NPDES permit No. GA 0004120.

The FES-OL for the Edwin I. Hatch Nuclear Plant, Unit No. 2, provides an analysis of the potential thermal effects of the cooling system discharge on the water quality and aquatic biota of the adjacent portions of the Altamaha River. The analyses concluded that limiting the temperature rise across the station, the maximum discharge temperature, and the rate of temperature change during station operation based on design parameters and information provided in the ER and other supporting documents woudl not induce calefaction of an excessive portion of the Altamaha River and would not result in excessive, irreversible, or irretrievable damage to the biota or water quality of the receiving waters. Based on the volumes of water discharged during normal operation and the minimum river flow condition, the analyses of thermal effects indicate that the thermal plume is expected to be limited to a relatively small area of the river. Anticipated occasional and temporary temperature excursions of brief duration are not expected to produce significant biological effects in Altamaha River populations.

The above monitoring program will provide the information needed to determine whether the station is operating in an environmentally acceptable manner and as analyzed in the FES-OL. In addition, it will provide input to the programs described in Sections 3.1.1 and 3.1.2 which are portions of the continuing study of the effect of thermal discharges from the HNP on the water quality and aquatic life in the Altamaha River.

3.1.1.2 pH

Environmental Monitoring Requirement

During normal operation of the station, the pH of the intake water and the discharge water shall be measured as specified in the Program Description developed by the licensee in accordance with Section 5.6.1. This specification applies to outfall serial number 001, as identified in NPDES permit No. GA 0004120.

This monitoring program shall commence with the initial attainment of normal operation of Unit 2 and continue until approval for termination or modification of this monitoring requirement is obtained from NRC in accordance with Section 5.7.3.

Action

The results of the monitoring conducted under this program shall be summarized, analyzed, interpreted, and reported in accordance with Section 5.7.1.

The licensee shall record the pH of the intake water; pH of the discharge water; discharge flow rate; date and time of measurements; date of instrument calibration; accuracy and sensitivity of the pH sensors; and occurrence and duration of periods when the sensor system is not functioning properly or is out of calibration.

A nonroutine report, as specified in Section 5.7.2b, shall be made if the pH characteristics of the discharge from outfall serial number 001 fail to comply with the relevant effluent limitations prescribed by the State of Georgia and the U. S. Environmental Protection Agency in the certificates and permits issued to the licensee pursuant to the provisions of Sections 401 and 402 of PL 92-500, as cited in Section 5.5.

Bases

The purpose of the pH monitoring requirement is to assure that the pH of the water being discharged complies with the requirements of NPDES permit No. GA 0004120 issued to the Georgia Power Company by the Environmental Protection Division, Department of Natural Resources, State of Georgia.

This monitoring program will provide the information needed to determine whether the station is operating in an environmentally acceptable manner and as analyzed in the FES-OL. The FES-OL concluded that limiting the pH of plant discharge to the range 6.0 to 9.0 would provide adequate protection for the environment.

3.1.1.3 Biocide

Environmental Monitoring Requirement

During normal operation of the station, the discharge to the river of free available chlorine from the cooling tower system shall be measured as specified in the Program Description developed by the licensee in accordance with Section 5.6.1.

This monitoring program shall commence with the initial attainment of normal operation of Unit 2 and continue until approval for termination or modification of this monitoring requirement is obtained from NRC in accordance with Section 5.7.3.

Action

Results of the monitoring conducted under this program shall be summarized, analyzed, interpreted, and reported in accordance with Section 5.7.1.

The licensee shall record the discharge concentration of free available chlorine; the date and time of measurements; date of instrument calibration; accuracy and sensitivity of the chlorine sensors; and occurrence and duration of periods when the sensor system is not functioning or is out of calibration.

A nonroutine report, as specified in Section 5.7.2b, shall be made if the chlorine characteristics of the discharge from outfall serial number 001, Cooling Tower Blowdown, fail to comply with the relevant effluent limitations prescribed by the State of Georgia and the U. S. Environmental Protection Agency in the certificates and permits issued to the licensee pursuant to the provisions of Sections 401 and 402 of PL 92-500, as cited in Section 5.5.

Bases

The purpose of the biocide monitoring requirement is to assure that the free available chlorine concentration in the cooling tower blowdown complies with the requirements of NPDES permit No. GA 0004120 issued to the Georgia Power Company by the Environmental Protection Division, Department of Natural Resources, State of Georgia. The NPDES permits limits the average free available chlorine concentration to less than 0.2 mg/l and the instantaneous maximum to less than 0.5 mg/l.

The FES-OL for the Edwin I. Hatch Nuclear Plant, Unit No. 2, provides a discussion of the potential effects of free available chlorine discharge on the aquatic biota of the Altamaha River. Based on the concentrations of free available chlorine discharged and the rapid dilution of the discharge in the river, the analysis of chlorine effects indicates that no impact due to chlorine discharge is expected.

The above monitoring program will provide the information needed to determine whether the station is operating in an environmentally acceptable manner and as analyzed in the FES-OL.

3.1.2 Biotic
3.1.2.1 Aquatic
3.1.2.1.1 Benthic Macroinvertebrates

Environmental Monitoring Requirements

The benthic macroinvertebrates shall be sampled to detect and assess the significance of changes in species composition, diversity, distribution, and abundance as related to power station operation.

All samples shall be collected and all analyses shall be performed as specified in the Program Description developed by the licensee in accordance with Section 5.6.1.

This monitoring program shall commence on January 2, 1979, and continue until approval for modification or termination of this monitoring requirement is obtained from NRC in accordance with Section 5.7.3.

Action

Description of the program, results, and interpretative analyses of environmental impacts shall be reported in accordance with the routine report schedule of Section 5.7.1. Results reported shall contain information encompassing but not limited to the following: sampling date; station description and number; river stage; gear type used; substrate type (expressed in general terms); sample size (area sampled in square meters); species or taxon; the

estimated or actual number of each taxon in the sample; the relative abundance of each taxon; and the species diversity index.

Bases

The purpose of the benthic macroinvertebrate monitoring requirement is to determine the impact of the thermal discharge from HNP on the Altamaha River. Benthic macroinvertebrates are useful in assessing water quality. Their sessile nature makes them excellent indicators of a stressed aquatic system, because they cannot avoid adverse conditions. Species diversity values calculated from data collected during the preoperational and postoperational stages of Unit 1 demonstrated that there was not detectable effect from Unit 1 operation (FES-OL for the Edwin I. Hatch Nuclear Plant, Unit No. 2). This program will provide information necessary for the evaluation of the effects of HNP Units 1 and 2 on the benthic macroinvertebrates of the Altamaha River.

3.1.2.1.2 Entrainment of Ichthyoplankton

Environmental Monitoring Requirement

Ichthyoplankton (fish eggs and larvae) shall be collected during the months of February through May at the intake structure to identify taxa, to estimate numbers lost by cooling system entrainment, and to assess the significance of ichthyoplankton entrainment. Gear used in the collection of entrained ichthyoplankton shall be comparable to that used for far-field monitoring of ichthyoplankton conducted during the preoperational ecological survey.

Collections shall be made as specifed in the Program Description developed by the licensee in accordance with Section 5.6.1. On each sampling day, collections shall be made so as to identify day-night variation in concentration of organisms. Specimens shall be identified to the lowest practical taxon. This monitoring program shall commence on January 2, 1979, and continue until approval for modification or termination of this monitoring requirement is obtained from NRC in accordance with Section 5.7.3.

Action

Results of this program shall be summarized, analyzed, interpreted, and reported in accordance with Section 5.7.1. The reports shall contain information encompassing but not limited to the following: sampling date; time of day; species or taxon; life stage (eggs or larvae); and number per 1000 cubic meters (the estimated number of organisms for each taxon per 1000 cubic meters of water filtered or pumped).

Bases

Adverse effects on local planktonic populations due to entrainment were not anticipated (FES, Units 1 and 2, October 1972), and none have been detected during Unit 1 operation (FES-OL, Unit 2, March 1978). Continuation of monitoring for macroinvertebrate drift during Unit 2 operation has been judged unnecessary (FES-OL, Unit 2, March 1978).

The effects on local fish populations caused by entrainment of ichthyoplankton are of higher concern. Shad eggs and the larvae and early juveniles of shad and other species emigrating from areas adjacent to the intake may be sub-

jected to entrainment. All ichthyoplankton that pass through the closed-cycle cooling system are presumably killed by the combined mechanical, chemical, and thermal stresses.

Results of the entrainment monitoring program for Unit 1 showed very low entrainment values. Monitoring of entrainment losses will permit the determination of total losses resulting from combined operation of Units 1 and 2, and will verify the FES-OL conclusion that entrainment losses caused by operation of HNP will not significantly affect fish populations in the Altamaha River.

3.1.2.1.3 Impingement of Organisms

Environmental Monitoring Requirement

Organisms shall be collected from the traveling screens and identified to species or the lowest possible taxon. Mesh size of the collection devices shall approximate that of the traveling screens.

All samples shall be collected and all analyses shall be performed as specified in the Program Description developed by the licensee in accordance with Section 5.6.1.

This monitoring program shall commence on January 2, 1979, and continue until approval for modification or termination of this monitoring requirement has been obtained from NRC in accordance with Section 5.7.3.

Action

Results of this program shall be summarized, analyzed, interpreted and reported in accordance with Section 5.7.1. The reports shall contain the following information: date of the sample; the taxa collected; and the actual or estimated number and weight of each taxon impinged during each sample period.

Organisms collected from the traveling screens shall be disposed of in a manner consistent with requirements of appropriate Federal, State and local regulatory agencies.

Bases

The magnitude of loss and the potential impact to the aquatic ecosystem in the vicinity of the power station resulting from impingement of aquatic organisms on the traveling screens is not precisely known nor is it determinable on a theoretical basis alone. Sampling of organisms collected on the traveling screens will ensure that a reasonable estimate is made of the organisms impinged on the intake traveling screens.

Results of the fish impingement monitoring program for Unit 1 showed very low impingement values. However, as indicated in the Unit 2 FES-OL, accurate estimates cannot be made of incremental impingement losses due to the operation of Unit 2. Monitoring of impingement losses will permit the determination of total losses resulting from combined operation of Units 1 and 2, and will verify the FES-OL conclusion that impingement losses due to operation of HNP will not significantly affect the resident or anadromous fish populations in the Altamaha River.

3.1.2.2 Terrestrial

3.1.2.2.1 Aerial Remote Sensing

Environmental Monitoring Requirement

Plant communities of the site shall be aerially photographed to detect and assess the significance of damage, or lack thereof, related to deposition of cooling tower drift.

This monitoring program shall be conducted as specified in the Program Description developed by the licensee in accordance with Section 5.6.1. The program shall commence at the time of initial commercial operation of Unit 2 and shall continue for at least 2 years, after which the licensee may request modification or termination of this monitoring requirement in accordance with Section 5.7.3.

Action

Results of the monitoring conducted under this program shall be summarized, analyzed, interpreted, and reported in accordance with Section 5.7.1.

The licensee shall record the following information for each flight: date and time of photographs; film type; spectral band; and scale of the photographs.

Bases

Impacts that cause stress to vegetation may occur as a result of cooling tower drift deposition. Reconnaisance and aerial photographic inspection of plant communities in the drift field are the methods recommended for detecting possible adverse effects of drift deposition on vegetation.

As discussed in the Edwin I. Hatch Nuclear Plant, Unit No. 2, FES-OL, no effects on vegetation have been observed to result from operation of the Unit 1 cooling towers. However, a continuation of the current Unit 1 monitoring program will serve to verify the FES-OL conclusion that it is unlikely that drift effects on vegetation will be observed for Unit 2.

3.2 Radiological Environmental Monitoring

Objective

A radiological environmental monitoring program shall be conducted in the vicinity of HNP to determine the nature and extent of any radiological changes in the environment attributable to plant operation.

Specifications

Samples shall be collected and analyzed according to Table 3.2-1. The locations of these sampling stations are described in Table 3.2-1 and are shown in Figure 3.2-1. Appropriate analytical techniques shall be used to achieve the detection capabilities listed in Table 3.2-2.

Contract laboratories and in-house laboratories which perform analyses required by the ETS shall participate in the Environmental Protection Agency (EPA) Environmental Radioactivity Laboratory Intercomparison Studies (Crosscheck Program), or an equivalent program. The results of analyses of these crosscheck samples shall be included in the Annual Environmental Surveillance Report.

A survey shall be conducted annually to deterine the location of all milk animals within 3 miles of the HNP stack in each of the 16 azimuthal sectors. For any of the 16 sectors in which milk animals are not found within 3 miles, the annual survey shall be expanded to locate the nearest milk animal within 5 miles in that sector.

A survey shall be conducted annually downstream of HNP to identify users of Altamaha River water for drinking purposes.

Action

Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment, and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every reasonable effort shall be made to complete corrective action prior to the end of the next sampling period. All significant deviations from the sampling schedule shall be documented in the Annual Environmental Surveillance Report.

If the results of a determination in the crosscheck program do not agree with the NRC's criteria for comparing analytical results (reference 1), the cause of the disagreement shall be investigated, and steps shall be taken, if warranted, to correct the disagreement. The results of this investigation and any corrective action shall be included in the Annual Environmental Surveillance Report.

If the annual survey shows that milk animals are present at a location which yields a calculated thyroid dose greater than the location from which milk samples currently are collected, the new location shall be added to the surveillance program as soon as practicable, provided samples are available. The sampling location having the lower calculated thyroid dose may be deleted from the surveillance program as soon as the new location is added. Also, any location at which milk samples become unavailable may be deleted from the surveillance program. Results of the annual survey, as well as any changes in the locations for taking milk samples, will be discussed in the Annual Environmental Surveillance Report.

Bases

The results of the radiological environmental monitoring program are intended to verify that measurable concentrations of radioactive materials and levels of radiation do not greatly exceed those predictions based on effluent measurements and modeling of environmental exposure pathways. The specified environmental monitoring program provides measurements of radiation and radioactive materials in the exposure pathways for those radionuclides which are expected to produce the highest potential radiation exposures to individuals resulting from plant operation.

The specific detection capabilities are state-of-the-art for routine environmental measurements in industrial laboratories. The lower limit of detection (LLD) for I-131 in milk corresponds to approximately one-fourth of the 10 CFR Part 50, Appendix I design objective dose equivalent of 15 mrem/yr. The LLD for I-131 in grass corresponds to approximately one-fourth of the 10 CFR Part 50, Appendix I design objective dose equivalent for the leafy vegetable pathway. Because there are no known drinking water users downstream of HNP, the LLD for I-131 in water need not be as stringent as that for the milk and the leafy vegetable pathways.

The survey of milk animals is based on the requirement in Appendix I to 10 CFR Part 50 that the licensee "Identify changes in the use of unrestricted areas (e.g., for agricultural purposes) to permit modifications in monitoring programs for evaluating doses to individuals from principal pathways of exposure." The consumption of milk from animals grazing on contaminated pasture and the consumption of leafy vegetation contaminated by airborne radioiodine are major potential sources of exposure. Samples from milk animals are considered a better indicator of radioiodine in the environment that vegetation. Because sufficient milk samples frequently are not available in areas where doses are calculated to be greater than 1 mrem/yr, grass samples will be collected also.

Grass will be collected rather than leafy vegetation because (i) grass will be available almost year-round, whereas leafy vegetation is available only for about 6 months of the year; (ii) sampling stations for grass will be placed as close as practicable to locations with maximum off-site D/Q; and (iii) limited experience indicates that grass tends to be a more efficient collector of I-131 and other radionuclides than leafy vegetation (reference 2).

Asiatic clams, instead of fish, will be collected from the river. Clams will provide a more sensitive indication of the impact of plant effluents for the following reasons: (i) Clams are immobile compared to fish. As a result, they are more representative of the location from which they are collected. (ii) In general, filter feeders such as clams have higher bioaccumulation factors than do fish. (iii) Clams are more readily available for sampling than fish.

Because of the commercial importance of American shad, shad will be collected annually during the spring spawning period.

Sediment will be collected annually because shoreline recreational areas are submerged under water and therefore not in use approximately half the year.

Allowing deviations from the sampling schedule is based on the recognition of unavoidable practical difficulties which, in the absence of the allowed deviations, would result in violation of the ETS.

The requirement for participation in a suitable crosscheck program is based on the need for independent verification of the precision and accuracy of measurements of radioactive material in environmental sample matrices. Such verification will assist in assuring that the results are reasonably valid.

Reporting Requirements

a. Annual Environmental Surveillance Report.

This routine report will be submitted in accordance with Section 5.7.1.

b. Nonroutine Radiological Environmental Surveillance Reports.

If a confirmed* measured radionuclide concentration in an environmental sampling medium averaged over any quarterly sampling period exceeds the reporting level given in Table 3.2-3, a written report will be submitted to the Director of the NRC Regional Office (with a copy to the Director, Office of Nuclear Reactor Regulation) within 30 days from the end of the quarter or after confirmation, whichever is later. If it can be demonstrated (e.g., by comparison with a control station or with preoperational data) that the level is not a result of plant effluents, a nonroutine report is not required, but the measurement will be discussed in the Annual Environmental Surveillance Report. When more than one of the radionuclides in Table 3.2-3 is detected in the medium, the reporting level is exceed if

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \cdots \geq 1.$$

If radionuclides other than those in Table 3.2-3 are detected and are present in the plant effluents, a reporting level is exceeded if the potential annual dose to an individual is equal to or greater than the design objective doses of 10 CFR Part 50, Appendix I. This report will include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous result.

If it is established that milk animals are present at a location which yields a calculated thyroid dose greater than that at the location used for the Limiting Conditions for Operation in Section 2.1.3, a written notification will be submitted to the Director of Operating Reactors, Office of Nuclear Reactor Regulation (with a copy to the Director of the NRC Regional Office) within 30 days identifying the new location (distance and direction).

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*A confirmatory reanalysis of the original, a duplicate, or a new sample may be desirable, as appropriate. The results of the confirmatory analysis will be completed at the earliest time consistent with the analysis.

3.2.1 References

1. NRC "Criteria for Comparing Analytical Measurements," as used in the NRC Confirmatory Measurements Program, obtained from NRC Region II, Radiological and Environmental Protection Branch.

2. Dr. W. Morrison Jackson, "Preoperational Radiological Environmental Measurements at the Farley Nuclear Plant," meeting of the Alabama Chapter of the Health Physics Society, May 1977, paper to be published.

TABLE 3.2-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Sample Medium and Sampling Locations	Frequency	Analysis
AIRBORNE PARTICULATES AND RADIOIODINE Indicator Stations: #9 - Dead River Road (NE - 1.9 miles) #17 - SE Boundary (SE - 1.2 miles) #21 - WSW Boundary (WSW - 0.9 miles) #15 - Roadside Park (NW - 0.8 miles) Nearest Community:[d] #5 - Baxley (S - 10 miles) Control Station: #1 - State Prison (ENE - 11 miles)	Continuous sampler operation with sample collection weekly or as required by dust loading, whichever is more frequent	Particulate Sampler: gross beta radioactivity following filter change,[a] composite (by location) for gamma isotopic[b] quarterly Radioiodine Cannister:[c] analyze weekly for I-131
EXTERNAL RADIATION Same as airborne particulates plus the following three indicator locations: #119 - East Boundary (ESE - 1.1 miles) #126 - South Boundary (S - 0.9 miles) #133 - West Boundary (W - 1.0 miles)	Quarterly	Read out
MILK Indicator Station:[e] Stone's Dairy (SW - 6.5 miles) Control Station: State Prison (ENE - 11 miles)	Biweekly	Iodine-131, Gamma isotopic

TABLE 3.2-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Sample Medium and Sampling Locations	Frequency	Analysis
GRASS	Monthly	Gamma isotopic[f]
Indicator Stations: #17 - SE Boundary (SE - 1.2 miles) #21 - WSW Boundary (WSW - 0.9 miles)		
Control Stations: #5 - Baxley (S - 10 miles)		
CLAMS[g]	Semiannually	Gamma isotopic anlaysis on edible portion
Indicator Station: #172 (approx. 2.5 miles downstream of plant discharge)		
Control Station: #170 (approx. 2 miles upstream of plant discharge)		
AMERICAN SHAD	Annually	Gamma isotopic analysis on edible portions
From area of discharge structure		
RIVER WATER	Monthly[h]	Gamma isotopic, composited for tritium quarterly
Indicator Station: #172 (approx. 2.5 miles downstream of plant discharge)		
Control Station: #170 (approx. 1 to 2 miles upstream of plant discharge)		

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Sample Medium and Sampling Locations	Frequency	Analysis
DRINKING WATER (If it is found that river water downstream of HNP becomes used for drinking, then drinking water samples will be collected and analyzed as follows.)		
One sample each of one to three of the nearest water supplies which could be affected by HNP discharges	Composite sample over 2-week period if I-131 analysis is performed, monthly composite otherwise	I-131 analysis on each composite when the dose calculated for consumption of the river water is greater than 1 mrem/-year. Composite for gross β and gamma isotopic analyses monthly. Composite for tritium analysis quarterly.
SHORELINE SEDIMENT	Annually[i]	Gamma isotopic.
Indicator station: #172 (approx. 2.5 miles downstream of plant discharge)		
Control station: #170 (approx. 1 to 2 miles upstream of plant discharge)		

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a - Particulate sample filters will be analyzed for gross beta 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air or water is greater than 10 times the mean of control samples for any medium, gamma isotopic analysis will be performed on the individual samples.

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

c - Cannisters for the collection of radioiodine in air are subject to channeling. These devices will be carefully checked before operation.

TABLE 3.2-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

d - This station also is considered a control station.

e - The closest reliable station has been Stone's Dairy, 6.5 miles from the plant, where the annual thyroid dose is less than 1 mrem. Up to three additional sampling locations within 5 miles and in different sectors also will be sampled as available.

f - If the gamma isotopic analysis of grass samples is not sensitive enough to meet the LLD for I-131 of 25 pCi/kg, a separate analysis for I-131 will be performed.

g - If clams become unavailable, samples of a commercially or recreationally important species of fish will be collected.

h - Reasonable attempts will be made to use automatic sampling equipment to collect river water at short intervals (e.g., hourly). Should vandalism or other conditions make this impractical, grab samples will be collected weekly and composited.

i - Sediment will be collected annually because shoreline recreational areas are submerged under water and therefore not in use approximately half the year.

TABLE 3.2-2

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS

Lower Limit of Detection

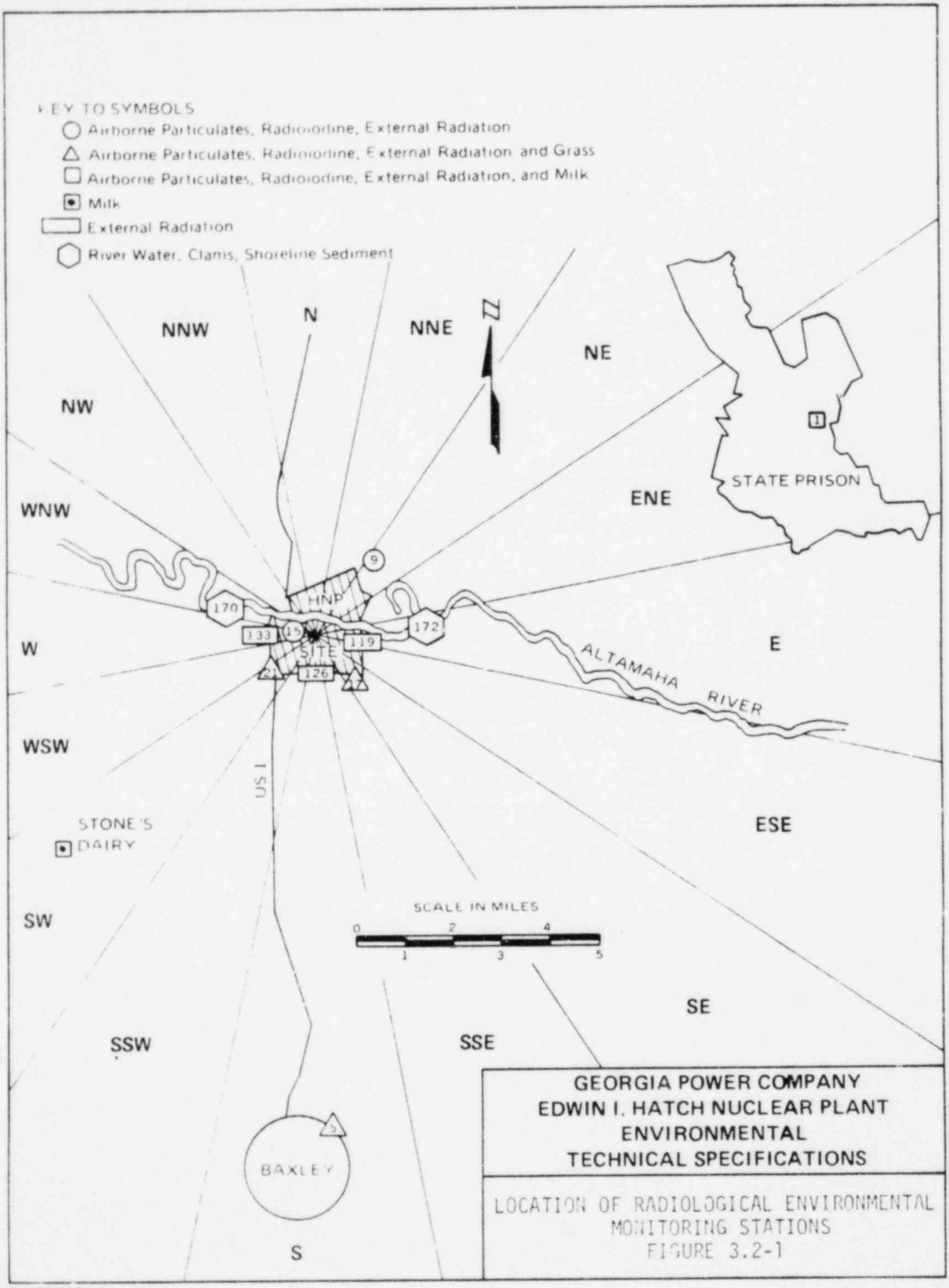
Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Clams (pCi/kg,wet)	Milk (pCi/l)	Grass (pCi/kg, wet)	Sediment (pCi/kg, dry)
Gross Beta		1×10^{-2}				
H-3	330					
Mn-54	15		130			
Fe-59	30		260			
Co-58	15		130			
Co-60	15		130			
Zn-65	30		260			
Zr-Nb-95	20*					
I-131	15*	7×10^{-2}		0.8	25	
Cs-134	15	1×10^{-2}	130	15	80	150
Cs-137	15	1×10^{-2}	130	15	80	150
Ba-La-140	25*			15		

*The LLDs for Zr-Nb-95, I-131, and Ba-La-140 will be lowered to 10, 0.5 and 15 pCi/l, respectively, for drinking water, if drinking water sampling becomes appropriate.

TABLE 3.2-3

REPORTING LEVELS FOR NONROUTINE OPERATING REPORTS

Analysis	Reporting Level				
	Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Clams (pCi/kg, wet)	Milk (pCi/l)	Grass (pCi/kg, wet)
H-3	3×10^4				
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				
I-131	30	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			3×10^2	


KEY TO SYMBOLS
Airborne Particulates, Radioiodine, External Radiation
Airborne Particulates, Radioiodine, External Radiation and Grass
Airborne Particulates, Radioiodine, External Radiation, and Milk
Milk
External Radiation
River Water, Clams, Shoreline Sediment
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
STATE PRISON
HNP
SITE
ALTAMAHA RIVER
US 1
STONE'S DAIRY
BAXLEY
SCALE IN MILES
0 1 2 3 4 5
170
133
15
119
172
126
9
1
5
GEORGIA POWER COMPANY
EDWIN I. HATCH NUCLEAR PLANT
ENVIRONMENTAL
TECHNICAL SPECIFICATIONS
LOCATION OF RADIOLOGICAL ENVIRONMENTAL MONITORING STATIONS
FIGURE 3.2-1

TI 172-3151-1

4.0 Special Surveillance and Study Activities

4.1 Erosion Control Inspection

Requirement

Aerial surveys shall be conducted, as part of the normal inspection program, to examine the transmission line rights-of-way from HNP to the Bonaire Substation for evidence of significant erosion.

This Special Requirement shall be conducted as specified in the Program Description developed by the licensee in accordance with Section 5.6.1. The inspection program shall begin upon commencement of normal transmission line inspection procedures. Semiannual surveys shall continue until stabilization of soil and vegetation is achieved.

Action

A report shall be written after each survey. A summary and discussion of results and control measures taken to limit erosion impact shall be submitted in accordance with Section 5.7.2.

Bases

Periodic maintenance activities or severe weather may cause minor instances along the transmission line rights-of-way where soil or vegetative stabilization will be necessary. The Unit 2 FES-OL recommended that, during normal transmission line surveillance, a record be made of any areas showing erosion or vegetational damage and that reasonable steps be taken to stabilize such occurrences.

4.2 Unusual or Important Events Requirements

Requirements

The licensee shall be alert to the occurrence of unusual or important events. Unusual or important events are those that cause potentially significant environmental impact, or that could be of public interest concerning environmental impact from plant operation. The following are examples: unusual or important bird impaction events on cooling tower structures or meteorological towers; on-site plant or animal disease outbreaks; unusual mortality of any species protected by the Endangered Species Act of 1973; fish kills near the HNP site; and significant violations of relevant permits and certifications.

Action

Should an unusual or important event occur, the licensee shall make a prompt report to the NRC in accordance with Section 5.7.2.

Bases

Prompt reporting to the NRC of unusual or important events, as described, is necessary for responsible and orderly regulation of the nation's system of nuclear power reactors. The information thus provided may be useful or necessary to others concerned with the same environmental

resources. Prompt knowledge and action may serve to alleviate the magnitude of environmental impact or to place it into a perspective broader than that available to the licensee. The NRC also has an obligation to be responsive to inquiries from the public and the news media concerning potentially significant environmental events at nuclear power stations.

4.3 Exceeding Limits of Other Relevant Permits

Requirements

The licensee shall notify the NRC of occurrences of exceeding the limits specified in relevant permits and certificates issued by other Federal, State and local agencies which are reportable to the agency which issued the permit. This requirement shall apply only to topics of NEPA concern within the NRC area of responsibility as identified in the ETS.

This requirement shall commence with the date of issuance of the operating license for Unit 2 and continue until approval for modification or termination is obtained from the NRC in accordance with Section 5.7.3.

Action

The licensee shall make a report to the NRC in accordance with Section 5.7.2 in the event of a reportable occurrence of exceeding a limit specified in a relevant permit or certificate issued by another Federal, State or local agency.

Bases

NRC is required under NEPA to maintain an awareness of environmental impacts causally related to the construction and operation of facilities licensed under its authority. Further, some of the ETS requirements are couched in terms of compliance with relevant permits (such as the NPDES permit) issued by other licensing authorities. The reports of exceeding limits of relevant permits also alert the NRC staff to environmental problems that might require mitigative action.

5.0 Administrative Controls

This section describes administrative and management controls established to implement the HNP Environmental Technical Specifications (ETS). Measures specified in this section include assignments of responsibility, review and audit functions, procedures, and reporting requirements.

Corporate responsibility for implementation of the ETS and for assuring that the station is operated in such a way as to provide protection for the environment rests with the Senior Vice President - Power Supply.

Responsibilities for compliance with the ETS and for the environmental monitoring program required by the ETS are given below.

Independent audit shall be provided for all matters, as discussed in Section 5.3.2, by the Manager of Quality Assurance.

5.1 Responsibility

5.1.1 The Plant Manager is responsible for monitoring plant effluents; for operating the plant within the Limiting Conditions for Operation (LCOs) specified in Section 2; and for the collection and measurements associated with all radiological samples described in Section 3.2, except for clams, American shad, shoreline sediment, and the annual surveys. These exceptions are the responsibility of the Manager of Environmental Affairs. The Plant Manager also is responsible for implementing the special surveillance activities described in Sections 4.2 and 4.3.

5.1.2 The Manager of Environmental Affairs is responsible for the the environmental monitoring programs specified in Sections 3 and 4, except as noted in Sections 5.1.1 and 5.1.3. He also is responsible for Section 4.1 and for those aspects of Section 3.2 that are not assigned either (i) to the Plant Manager by Section 5.1.1 or (ii) to the Nuclear Engineer by Section 5. The Manager of Environmental Affairs is responsible for coordinating these programs with appropriate groups.

5.1.3 The Nuclear Engineer is responsible for the interpretation, evaluation, and routine reporting of the results of the radiological environmental monitoring program described in Section 3.2.

5.1.4 The Manager of Quality Assurance is responsible for conducting periodic audits of plant operations and the environmental monitoring activities to ensure conformance with the ETS.

5.2 Organization

A chart showing company organization relative to environmental matters is presented in Figure 5.2-1. Changes affecting company organization depicted in Figure 5.2-1 will not require NRC approval prior to implementation, but such changes shall be reported to NRC within 30 days in accordance with with Section 5.7.2.

5.3 Review and Audit

5.3.1 Independent Review

5.3.1.1 The Plant Manager is responsible for routine review of plant operations to ensure that HNP is operated in compliance with the LCOs specified in Section 2.

5.3.1.2 The Manager of Environmental Affairs shall review the following:

a. The conduct of the environmental monitoring programs, on a routine basis, to ensure that the specifications in Sections 3 and 4 are being implemented.

b. Proposed changes to plant systems or equipment, provided such changes are identified by the Plant Review Board as having a potential adverse environmental impact.

c. Procedures for implementing the responsibilities specified in Section 5.1.2, and proposed changes thereto.

d. Proposed changes to the ETS.

e. Proposed changes to the Environmental Programs Description Document.

5.3.1.3 The Safety Review Board (SRB) shall review the following:

a. Proposed changes to the ETS.

b. Results of the environmental monitoring programs prior to their submittal in each Annual Environmental Surveillance Report.

c. Violations of ETS to determine whether adequate corrective action is being taken to prevent recurrence.

d. Procedures or changes thereto, which could affect the monitoring of station operation, that may be considered by the Manager of Environmental Affairs, the Nuclear Engineer, or the Plant Review Board to be appropriate for SRB review.

5.3.1.4 The Plant Review Board (PRB) shall review the following:

a. Proposed changes to plant systems or equipment.

b. Procedures for implementing the responsibilities specified in Section 5.1.1, and proposed changes thereto.

c. Proposed changes to the ETS.

d. Unplanned releases of a radioactive material from the site.

5.3.1.5 The Nuclear Engineer shall review the following:

a. Proposed changes to plant systems or equipment, provided that such changes are identified by the PRB as having a potential radiological environmental impact.

b. Proposed changes to Section 3.2 of the ETS.

5.3.2 Audit Responsibility

5.3.2.1 The Manager of Quality Assurance is responsible for an audit, conducted at least once a year, of the activities of the Plant Manager, the Manager of Environmental Affairs, and the Nuclear Engineer related to compliance with the ETS.

5.3.2.2 Audits of facility activities shall be performed at least once a year under the cognizance of the SRB to ensure conformance of facility operation to all provisions of the ETS.

5.4 Action to be taken if a Limiting Condition for Operation is Exceeded

5.4.1 Remedial action, as permitted by the ETS, shall be taken until the LCO can be achieved.

5.4.2 Violation of an LCO will be reported immediately to the Plant Manager.

5.4.3 A separate report of each LCO violation shall be prepared by the Plant Manager. Copies of such reports will be submitted to the Manager of Power Generation, the Manager of Environmental Affairs, the Nuclear Engineer, and the Chairman of the SRB for review and approval of corrective actions, as specified in Section 5.3.1.3c.

5.4.4 The Plant Manager shall report such violations to the NRC in accordance with Section 5.7.2.

5.5 State and Federal Permit and Certificates

Section 401 of PL 92-500, the Federal Water Pollution Control Act Amendments of 1972 (FWPCA), requires any applicant for a Federal license or permit to conduct any activity that may result in any discharge into

provisions of Sections 301, 302, 306, and 307 of the FWPCA. Section 401 of PL 92-500 further requires that any certification provided under this section shall set forth any effluent limitations and other limitations and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with the applicable limitations. Certifications provided in accordance with Section 401 set forth conditions on the Federal license or permit for which the certification is provided. Accordingly, the licensee shall comply with the requirements set forth in the currently applicable 401 certification dated December 22, 1972, and amendments thereto issued to the licensee by the Georgia Environmental Protection Division. In accordance with the provisions of the Georgia Water Quality Control Act, the FWPCA and the rules and regulations promulgated pursuant to each of these acts, the Georgia Environmental Protection Division, under authority delegated by the U.S. EPA, issued NPDES permit No. GA 0004120 to the licensee. The NPDES permit authorizes the licensee to discharge from HNP Units 1 and 2 to the Altamaha River in accordance with effluent limitations, monitoring requirements, and other conditions stipulated in the permit, effective June 1, 1977, through March 31, 1982.

Subsequent revisions to the certifications will be accommodated in accordance with the provisions of Section 5.7.3.

5.6 Procedures

Detailed written procedures, including applicable check lists and instructions, shall be prepared and followed for all activities involved in implementing the ETS. Procedures shall apply to sampling, data recording and storage, instrument calibration, measurement and data recording and storage, instrument calibration, measurement and analysis, and actions to be taken when limits are approached or exceeded. Testing frequency of any alarm shall be included. These frequencies shall be determined from experience with similar instruments in similar environments and from manufacturers' technical manuals.

Plant operating procedures may be referenced in the above procedures in areas pertaining to maintenance and calibration of instrumentation and in other such areas of interface with the above procedures.

All procedures shall be maintained in a manner convenient for review and inspection. Procedures which are the responsibility of the Plant Manager shall be kept at the plant. Procedures which are the responsibility of the Manager of Environmental Affairs and the Nuclear Engineer shall be kept at the GPC General Office.

5.6.1 Environmental Programs Description Document

Based on these procedures, the licensee shall prepare and follow an environmental programs description document (EPDD) describing the monitoring programs that are required by Sections 3.1 and 4.1. This document shall include descriptions of sampling equipment locations, frequencies and number of replications, sample analyses, data recording and storage, and instrument calibrations where appropriate.

These program descriptions shall be approved by the NRC, and subsequent modifications to these programs shall be made by the licensee in accordance with Sections 5.6.4 and 5.6.5.

5.6.2 Quality Assurance of Program Results

Procedures shall be established to assure the quality of ETS program results, including analytical measurements. These procedures shall document the program in policy directives, designate responsible organizations or individuals, describe purchased services (e.g., contractual laboratory or other contract services), and provide for audits of results and procedures by licensee personnel. In addition, these quality assurance procedures shall provide for systems to identify and correct deficiencies in technical monitoring programs or related administrative activities, to investigate anomalous or suspect results, and to review and evaluate program results.

5.6.3 Compliance with Procedures

In addition to the procedures specified in Section 5.6, the station operating procedures shall include provisions to ensure that each Unit and all its systems and components are operated in compliance with the conditions established in the ETS.

5.6.4 Changes in Procedures, EPDD, and Station Design or Operation

Changes in the procedures, EPDD, and station design or operation may be made in accordance with Section 5.3 and subject to conditions described below:

a. The licensee may (i) make changes in the station design and operation; (ii) make changes in the EPDD developed in accordance with Section 5.6.1; and (iii) conduct tests and experiments not described in the EPDD without prior NRC approval, unless the proposed change, test, or experiment involves either a change in the objectives of the ETS, an unreviewed environmental question of substantive impact, or affects the requirements of Section 5.6.5.

b. A proposed change, test, or experiment shall be deemed to involve an unreviewed environmental question if it concerns (i) a matter which may result in a significant increase in any adverse environmental impact previously evaluated in the final environmental statement, as modified by staff's testimony at the hearing, supplenents thereto, environmental impact appraisals, or in initial or final adjudicatory decisions; or (ii) a significant change in effluents or power level; or (iii) a matter not previously reviewed and evaluated in the documents specified in (i) of this paragraph which may have a significant adverse environmental impact.

c. The licensee shall maintain records of changes to the EPDD and to facility design or operation made pursuant to this section. The licensee also shall maintain records of tests and experiments carried out pursuant to paragraph (a) of this section. These records shall include a written evaluation which provides the bases for the determination that the change, test, or experiment does not involve an unreviewed environmental question of substantive impact, or does not constitute a change in the objectives of the ETS, or does not affect the requirements of Section 5.6.5. The licensee shall furnish to the NRC, annually or at such shorter intervals as may be specified in the license, a report containing descriptions, analyses, interpretations, and evaluations of such changes, tests, and experiments.

d. Changes in the EPDD which affect sampling frequency, location, gear, or replication shall be reported to the NRC within 30 days after their implementation, unless otherwise reported in accordance with Section 5.7.3. Changes which affect sampling technique or data recording and storage shall be reported to the NRC at the end of the year. These reports shall provide a description of the changes made, the reasons for making the changes, and an evaluation of the environmental impact of these changes,

e. Proposed changes or modifications to plant systems or equipment shall be reviewed in accordance with Section 5.3.

f. Proposed changes to procedures for implementing the responsibilities specified in Section 5.1.1 shall be reviewed and approved by the PRB. Temporary changes to the procedures that do not change the intent of the original procedure may be made with the concurrence of two individuals holding senior reactor operator licenses. Such changes shall be documented and subsequently reviewed by the PRB and approved by the Plant Manager on a timely basis.

g. Proposed changes to procedures for implementing the responsibilities specified in Section 5.1.2 shall be reviewed by the staff of Environmental Affairs. Such proposed changes shall subsequently be reviewed and approved by the Manager of Environmental Affairs. Proposed changes to procedures for implementing the responsibilities specified in Section 5.1.3 shall be reviewed by the staff of the Nuclear Engineer. Such proposed changes shall subsequently be reviewed and approved by the Nuclear Engineer. When deemed appropriate by the Manager of Environmental Affairs or the Nuclear Engineer, such proposed changes also shall be reviewed by the SRB prior to implementation.

5.6.5 Consistency with Initially Approved Programs

Any modifications or changes to the initially approved EPDD developed in accordance with Section 5.6.1 shall be governed by the need to maintain consistency so that direct comparisons of current and previous data are technically valid. Such modifications or changes shall be justified and supported by adequate comparative sampling programs or studies which demonstrate the comparability of results or which provide a basis for making adjustments that would permit direct comparisons.

These demonstrations of comparability shall be submitted to the NRC in accordance with Sections 5.6.4 and 5.7.1.

5.6.6 NRC Authority to Require Revisions

The NRC may require modifications or revisions of the EPDD developed in accordance with Section 5.6.1, or may require modification or revision of changes made by the licensee in accordance with Section 5.6.4, as a result of NRC reviews of the results of these programs, if such modifications or revisions are judged necessary to maintain consistency with the initially approved program descriptions or with the intent of the ETS. The NRC also may require modifications or revisions of the EPDD because of changes in plant operation or changes in environmental conditions or concerns associated with plant operation.

5.7 Plant Reporting Requirements

5.7.1 Routine Reports

a. Annual Environmental Surveillance Report

A report on the environmental surveillance program for the previous calendar year shall be submitted to the NRC within 90 days after January 1 of each year. The report shall include summaries, analyses, and interpretations or statistical evaluations where appropriate of the results of the environmental monitoring activities for the report period.

The Annual Environmental Surveillance Report also will include the following:

1. Comparison with preoperational studies, with operational controls (as appropriate), and with previous environmental monitoring reports.

2. An assessment of the observed impacts of plant operation on the environment.

3. A summary of

A. all instances of ETS noncompliance and corrective actions taken to remedy them;

B. changes to Federal and State permits and certificates made in accordance with Section 5.7.3;

C. changes to the EPDD;

D. changes in station design or operation which could involve an environmental impact or change in the findings of the final environmental statement;

E. changes to the ETS; and

G. copies of all reports regarding station discharges made in accordance with NPDES permit No. GA 0004120 (and subsequent revisions); these shall include reports made in accordance with Parts 1B and III of the NPDES permit.

If harmful effects or evidence of irreversible damage are detected by monitoring, the licensee shall provide a further analysis of the problem and a proposed course of action to alleviate the problem.

Results of analysis of all nonradiological environmental data collected shall be summarized and tabulated on an annual basis. In the event that some results are not available within 90 days after January 1, the report shall be submitted noting and explaining the missing results. The missing data shall be submitted as soon thereafter as possible in a supplementary report.

b. Radioactive Effluent Release Report

A report on the radioactive discharges released from the site during the previous 6 months of operation shall be submitted to the NRC within 60 days after January 1 and July 1 of each year. The reports shall include a summary, as outlined in Regulatory Guide 1.21, "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," of the quantities of radioactive liquid and gaseous effluents and solid waste released from the plant.

5.7.2 Nonroutine Reports

A report shall be submitted to the NRC in the event that (i) an LCO, if applicable, is exceeded; (ii) a report level is reached or a condition changes, as specified in Section 3; or

(iii) an unusual or important event occurs, as specified in Section 4.2. Reports shall be submitted under one of the report schedules described below:

a. Prompt Report - Those events requiring prompt reports shall be reported within 24 hours by telephone, telegraph, or facsimile transmission, and followed within 10 days by a written report.

b. Thirty Day Report - Nonroutine events not requiring a prompt report, as described in Section 5.7.2a, shall be reported to NRC either (i) within 30 days of their occurrence; or (ii) within the time limit designated in the appropriate specification; or (iii) within the time limit specified by the reporting requirement of the corresponding certification or permit issued pursuant to Section 401 or 402 of PL 92-500. The report submitted to NRC in accordance with (iii) of this paragraph will consist of a copy of the report made to the Georgia Department of Natural Resources, Environmental Protection Division.

Written reports and, to the extent possible, preliminary telephone, telegraph, or facsimile reports shall (i) describe, analyze, and evaluate the occurrence, including extent and magnitude of the impact; (ii) describe the cause of the occurrence; and (iii) indicate corrective action (including any significant changes made in procedures) taken to preclude recurrence and to prevent similar occurrences involving similar components or systems.

5.7.3 Changes In Environmental Technical Specifications and Permits

5.7.3.1 Changes in Environmental Technical Specifications

Requests for changes in ETS shall be submitted to the NRC for review and authorization in accordance with 10 CFR 50.90. The request shall include an evaluation of the environmental impact of the proposed change and a supporting justification. Implementation of such requested changes in ETS shall not commence prior to incorporation by the NRC of the new specifications in the license.

Proposed changes to the ETS shall be reviewed and approved by the Manager of Environmental Affairs, the PRB, and the SRB. Proposed changes to Section 3.2 also will be reviewed and approved by the Nuclear Engineer. Prior to approval, the possible impact of the proposed changes will be evaluated. To avoid conflicts and to maintain consistency between the safety and the environmental aspects of plant operation, proposed changes to Section 2 will be reviewed in the same manner as proposed changes to the Safety Technical Specifications.

5.7.3.2 Changes in Permits and Certificates

Changes or additions to required Federal, State, local, and regional authority permits and certificates for the protection of the environment that pertain to the requirements of the ETS shall be reported to the NRC within 30 days. In the event that the licensee initiates or becomes aware of a request for changes to any water quality requirements, limits, or values stiplulated in any certificate or permit issued pursuant to Section 401 or 402 of PL 92-500 which are also the subject of an ETS reporting requirement, NRC shall be notified concurrently with the authorizing agency. The notification to the NRC shall include an evaluation of the environmental impact of the revised requirement, limit, or value being sought.

If, during NRC's review of the proposed change, it is determined that a potentially severe environmental impact could result from the change, the NRC will consult with the authorizing agency to determine the appropriate action to be taken.

5.8 Records Retention

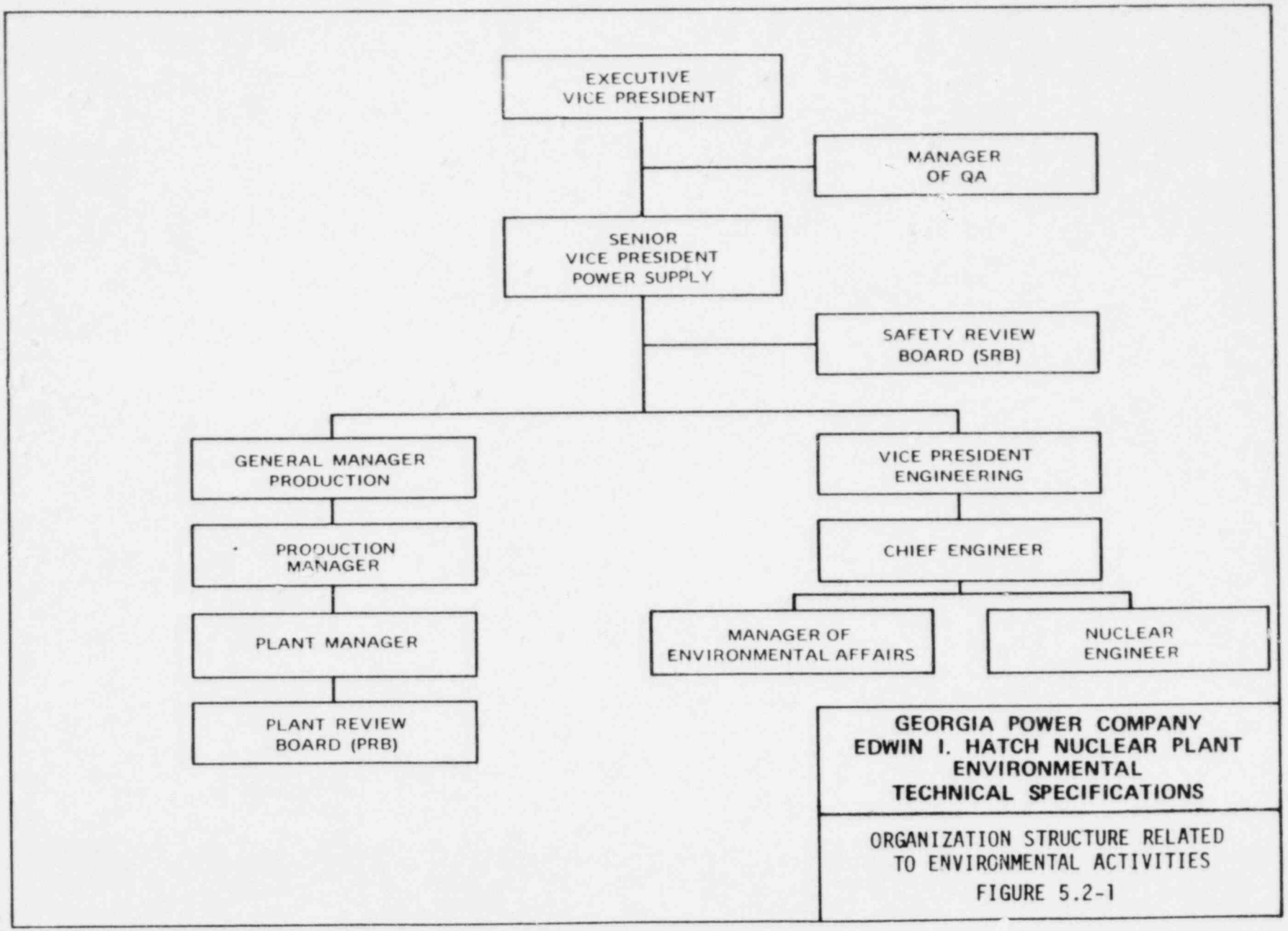
5.8.1 Records and logs relative to the following areas shall be made and retained for the life of the plant in a manner convenient for review and inspection. These logs shall be made available to the NRC on request.

a. Records and drawings detailing plant design changes and modifications made to systems and equipment as described in Section 5.6.4.

b. Records of all data from environmental monitoring and surveillance programs required by the ETS.

5.8.2 All other records and logs relating to the ETS shall be retained, in a manner convenient for review and inspection, for 5 years following logging or recording.

5.8.3 These records shall be stored at the plant or at the GPC General Office, as appropriate, under the control of the responsible organization.


EXECUTIVE VICE PRESIDENT
MANAGER OF QA
SENIOR VICE PRESIDENT POWER SUPPLY
SAFETY REVIEW BOARD (SRB)
GENERAL MANAGER PRODUCTION
PRODUCTION MANAGER
PLANT MANAGER
PLANT REVIEW BOARD (PRB)
VICE PRESIDENT ENGINEERING
CHIEF ENGINEER
MANAGER OF ENVIRONMENTAL AFFAIRS
NUCLEAR ENGINEER
GEORGIA POWER COMPANY
EDWIN I. HATCH NUCLEAR PLANT
ENVIRONMENTAL
TECHNICAL SPECIFICATIONS
ORGANIZATION STRUCTURE RELATED TO ENVIRONMENTAL ACTIVITIES
FIGURE 5.2-1