VIRGIL C. SUMMER NUCLEAR STATION
OPERATING LICENSE ENVIRONMENTAL REPORT

AMENDMENT 5

INSTRUCTION SHEET

The following instructional information and check list is being furnished to help insert Amendment No. 5 into the Virgil C. Summer Nuclear Station OLER.

Since in most cases the original OLER contains information printed on both sides of a sheet of loose leaf paper, a new sheet is furnished to replace sheets containing superseded material. As a result, the front or back of a sheet may contain information that is merely reprinted rather than changed.

Discard the old sheets and insert the new sheets, as listed below. Keep these instruction sheets in the front of Volume I to serve as a record of changes.

REMOVE	INSERT
Pages 3.6-9	Pages 3.6-9
3.7-1 - 3.7-2	3.7-1 - 3.7-2
6.1-3 - 6.1-4	6.1-3 - 6.1-4
6.1-5 - 6.1-6	6.1-5 - 6.1-6
6.1-7 - 6.1-8	6.1-7 - 6.1-8
6.1-9 - 6.1-10	6.1-9 - 6.1-10
6.1-37	6.1-37
6.1-39	6.1-39
6.1-55	6.1-55
6.1-56	6.1-56
Figure 6.1-1	Figure 6.1-1
Pages 7.1-13 - 7.1-14	Pages 7.1-13 - 7.1-14
7.1-22	7.1-22
7.1-25	7.1-25

TABLE 3.6-1

CHARACTERISTICS OF STEAM GENERATOR BLOWDOWN
(Based on continuous discharge)

Constituent	Concentration (mg/l) Maximum[(1)]	Average	Average Discharge (lbs/yr)
pH @ 25°C	10.0	8.9	N/A
Free Hydroxide ($CaCO_3$)	0.15	0.15	82
Sodium	0.5	0.1	55
Chloride	0.5	0.15	82
Ammonia	0.5	0.25	137
Hydrazine	150	Negligible	Negligible
Silica	5	1.0	548
Iron	1.0	0.5	273
Copper	1.0	0.5	273
Suspended Solids	9.0	3.0	
Flow (gpm)	250	125	N/A

| 5

(1) Maximum valves are based on startup conditions which may occur once per year, discharging approximately three steam generator volumes - equivalent to 0.4×10^6 lb/yr.

3.7 SANITARY AND OTHER WASTE YSTEMS

3.7.1 SANITARY TREATMENT FACILITIES

The sanitary system handles domestic wastes from the rest room and cafeteria facilities.

The waste is collected in a lift station and pumped to the waste treatment area. Treatment consists of aeration followed by stabilization and chlorination. The effluent from the chlorine contact tank is combined with the other wastes and discharged to the Monticello Reservoir via the circulating water discharge channel.

The following criteria were used as a basis for design of the sanitary waste system:

1.	Plant work force	225 maximum, including refueling personnel
2.	Gallons per capita per day	100
3.	Pounds of BOD per capita	0.20

The following is an estimate of the characteristics of the anticipated domestic sewage flow:

1.	Solids Concentrations (estimated based on normal domestic sewage)	
	a. Settlable	20 ml/l
	b. Suspended solids	200 mg/l
	c. Dissolved solids	800 mg/l
	d. Floating (oils and greases)	50 mg/l
2.	Oxygen Demand of Waste	
	a. BOD_5	240 mg/l
	b. COD	800 mg/l
3.	Color	That of normal domestic sewage
4.	pH	That of normal domestic sewage

5.	Alkalinity	200 mg/l
6.	Non-biodegradable organic	Trace
7.	Surfactants	That of normal domestic sewage
8.	Phosphorus	8.0 mg/l
9.	Nitrogen	4.0 mg/l
10.	Toxic compounds	None anticipated

The waste is normal domestic sewage and can be treated by conventional methods. Secondary treatment is provided by the use of an aerated lagoon, followed by a stabilization pond.

The stabilization pond was sized assuming a loading rate of 15 pounds of BOD_5/acre/day. The effluent from this stabilization pond is chlorinated before combination with effluents from the other treatment facilities and discharge to Monticello Reservoir.

Based on the assumed loadings, the percentage of reductions and final effluent characteristics are anticipated as follows:

	Percent Reduction	Concentrations (mg/l)	
Suspended Solids	80	30	5
BOD_5	90	25	
Dissolved oxygen	Not applicable	5	
Chlorine residual	Not applicable	0.5	

3.7.2 STORM DRAINAGE

Plant site drainage, with the exception of rain falling upon a thin strip of land along the service water pond, is intercepted and conducted away from the Monticello Reservoir and the service water pond, to the south and west of the plant. The storm drainage system is designed for

Water quality parameters and their frequency of measurement for each station are shown in Table 6.1-1. In addition to these measurements, temperature, conductivity, transparency, dissolved oxygen, and pH will be monitored at biological sampling stations during the field surveys.

Water quality parameters to be measured as part of the abiotic monitoring program were selected primarily for some or all of the following reasons:

1. The parameters will provide a measure of existing environmental levels of materials which may be released in various quantities from the Virgil C. Summer Nuclear Station.
2. Baseline or construction data are available for comparison with preoperational data.
3. The parameters are particularly important for assessment of the 1
   well being of biological communities.
4. The State of South Carolina has prescribed concentration limitations for those parameters in state surface waters.

Measurement of the selected parameters will provide the basis for a comprehensive assessment of the impact of plant operation on the water quality in the study area.

Water samples will be collected with a Van Dorn sampler. If appropriate, preservatives will be added to the samples before they are sent to the laboratory for analysis. Instrumentation and laboratory techniques used in measuring each parameter are indicated in Table 6.1-1.

6.1.1.2 Ecological Parameters

6.1.1.2.1 General Monitoring Program

A monitoring program similar to the baseline study will be implemented 1
in Parr and Monticello Reservoirs and in the Broad River near the Parr

Hydroelectric Project facilities. This program will be instituted one year prior to the initial commercial operation of the Virgil C. Summer Nuclear Station. 1

The general field monitoring program will involve in-depth, seasonal field studies of the following biological parameters: vascular hydrophytes, phytoplankton, zooplankton, ichthyoplankton, benthic macroinvertebrates, and fish. The planned scope of the biological sampling program and the primary list of references for species identification are summarized in Table 6.1-2. 3 Important spawning areas will be identified and assessed during the preoperational monitoring studies. The locations of all sampling stations, with the exception of the control station (Station P), are shown in Figure 6.1-1. This control station will be on the Broad River in Chester County, above the Neals Shoals Dam 29 river miles upstream of Parr Dam.

Sampling stations in the Broad River and Parr Reservoir will be the same as those surveyed during all or portions of the baseline monitoring program. Seven sampling stations will be located in the main portion of 5 Monticello Reservoir. These stations will be positioned at various distances from the intake and discharge structures of the Virgil C. 1 Summer Nuclear Station. Placement of the stations in this manner will help assure that spatial variations of levels of plant impacts can be detected. In addition to these seven sites, Station H will be located in 5 the northern portion of Monticello Reservoir. This station will provide data on biological communities in the portion of the reservoir that will be unaffected by water level fluctuations caused by operation of the FPSF and heat input from the Virgil C. Summer Nuclear Station. Sampling stations and scope will be modified should results indicate that such a change is justified.

species will be made in the field when possible; representative specimens of unknown macrophytes will be collected, marked as to their point of observation, and sent to the laboratory for identification to the lowest practicable taxon. Stand densities will be estimated.

Results of field observations will be compiled as a species list for the study area. A map of the area will also be prepared to show those locations which were observed to support significant macrophyte populations, if any exist.

6.1.1.2.1.2 Phytoplankton

Phytoplantkon will be sampled according to the schedule in Table 6.1-2; 5
the purpose is to determine the species composition, diversity, and biomass. Duplicate composite samples of the water column from the bottom of the photic zone to the water surface will be collected at each station using a pump.

In the laboratory, each phytoplankton sample will be concentrated by settling in one liter columns for 120 hours. Forty milliliters of commercial formalin will be added to the column contents to promote sedimentation. After settling, the supernatant will be siphoned from the top of the column, and the phytoplankton concentrate placed into a Sedgwick-Rafter (S-R) cell and analyzed by identifying and counting phytoplankton in one to three standardized whipple disc strips at 300X. Proportional count diatom slides will be prepared with Hyrax mounting medium to determine S-R cell diatom densities and identification. Glycerine jelly slide mounts may be used for some phytoplankton identifications.

Phytoplankton densities represent the number of cells per liter of water 5
the equation is expressed as :

$$\text{Phytoplankton/liter} = \frac{C \times SR\text{-}V}{WD\text{-}V} \times \frac{CV}{OS\text{-}V} \times \frac{TV}{TV\text{-}FV} \times 1000$$

where:

C = average number of organisms counted from 3 strips.

SR-V = Sedgwick-Rafter cell volume (mm^3).

WD-V = Standardized Whipple disc strip-volume (mm^3).

CV = Concentrate volume (ml).

OS-V = Original sample volume (liters).

TV = Total column height (ml).

FV = Formalin volume (ml).

Plankton biomass will be determined in the laboratory after enumeration of the organisms. The water samples will be filtered through a Millipore HA filter, or equivalent, of known weight, using standard apparatus. 1
The samples will then be dried to constant weight, ashed, and reweighed so that the ash free dry weight can be calculated.

Data collected on phytoplankton populations in both Parr Reservoir and the Broad River will be compared to baseline and construction monitoring data. Analysis of data from Monticello Reservoir will focus on the trophic conditions and succession of species assemblages in the newly created impoundment.

6.1.1.2.1.3 Zooplankton

Zooplankton will be sampled quarterly to determine the species composition, diversity, and biomass. Duplicate zooplankton samples will be obtained by vertically towing a plankton net from the bottom to the 2
water surface. Laboratory procedures for identification and enumeration will be similar to those described for phytoplankton.

Data collected on zooplankton populations in Parr Reservoir and the Broad River will be compared to baseline and construction monitoring data. Analysis of data from Monticello Reservoir will focus on the trophic conditions and evolution of species in the newly created impoundment.

6.1.1.2.1.4 Ichthyoplankton

Fish eggs and larvae will be sampled according to the schedule in Table 5
6.1-2. The sampling transects specified for Monticello Reservoir are located near the intake and discharge structures for the FPSF and the Virgil C. Summer Nuclear Station. In addition, there will be general sampling locations along the shoreline in the upper end of Monticello Reservoir. Sampling will be accomplished by pumping a known volume of water through a net or by towing a net through the water. The specific method employed will be determined according to observed conditions. 1
However, in each case, a known volume of water will be filtered.

In the laboratory, fish larvae and eggs will be separated from plankton and debris. When the samples contain less than 100 larvae, each specimen will be measured and weighed. If larger numbers of organisms are obtained, subsampling will be accomplished. Data analysis will be conducted to document taxonomic composition and relative abundance. Densities of eggs and larvae will be compared by statistical tests to determine significant spatial and temporal variations in distribution. The data will be used to evaluate spawning time of taxa encountered and the utilization of the various portions of the reservoir as spawning habitat.

6.1.1.2.1.5 Benthic Macroinvertebrates

The benthic macroinvertebrates will be sampled on a quarterly basis to determine species composition, diversity, abundance, and biomass.

Triplicate benthos samples will be collected with an Ekman dredge from sampling stations. All samples will be sieved with a U.S. Standard No. 30 wire mesh sieve and preserved.

Macroinvertebrates will be sorted in the laboratory, and then placed under a dissecting microscope for identification and enumeration. The mean number of organisms collected in the samples will be computed and reported as numbers per square meter. Species diversity and equatability will be calculated from the data.

The data from Parr Reservoir and the Broad River will be compared to baseline and construction monitoring information to determine the impact of fluctuating water levels. Data collected from surveys at stations in Monticello Reservoir will be used to document the process of colonization by benthic organisms in the newly created impoundment.

6.1.1.2.1.6 Fish 1

The fish population of Parr and Monticello Reservoirs and the Broad River will be sampled according to the schedule in Table 6.1-2. 5 The objectives will be to determine the following: species composition, distribution, relative abundance, age and growth, length-weight relationships, condition factors, sex ratios and gonad conditions, standing crop, and parasitism. Items 2-6 described below will be accomplished for collected specimens of the species which are listed in Table 6.1-3.

1. <u>Fish Collection</u>

Fish will be collected with electrofishing equipment, gill nets, fyke nets, and hoop nets. Rotenoning will be conducted annually. Shoreline areas around transects will be sampled by electrofishing for one hour at each location. Stunned fish will be retrieved and held for processing. Stations will also be sampled by gill, fyke, and hoop nets, as appropriate for conditions at that site. Nets will be set perpendicular to the shoreline for approximately 24 hours. At the end of this period, the nets will be retrieved, and captured fish will be held for processing. Fish collected by these techniques will be identified, counted, and the locality and date of collection recorded. Species composition, distribution, and relative abundance will be determined from these data.

Fish samples will be collected by roteoning at Stations C, I, K, and P to establish standing crop estimates and to refine abundance information derived from other sampling methods. 5 An area will be completely blocked off with square mesh nets. Fish will be collected outside the nets with electrofishing gear. The total length will be measured, and individual fish will be marked for later recognition by clipping the lower lobe of the caudal fin. The marked fish will be released within the enclosed area and allowed to remain for a period of 24 hours. The enclosed area will be checked the following morning for dead fish. 1

A rotenone solution will be applied to the blocked area and thoroughly mixed. It will be assumed that all fish (marked and unmarked) are equally susceptible to the toxicant. Distressed fish will be collected, sorted to species, counted, weighed, measured, sexed, and a scale sample taken. All marked specimens will be counted.

2. Age and Growth

Scales will be removed from the left side between the lateral line and dorsal fin of most important fish species. In the laboratory, impressions of scales from each fish in the sample will be made on cellulose acetate slides. The impressions will be projected on a plane surface so that the annuli can be counted and distances between them measured. Calculations of fish length at successive annulus formation will be in accordance with the method of Lee (1). Other age and growth determination techniques will be implemented for those species for which scale studies are not possible.

The data obtained as a result of fish scale analysis will provide insight into the growth rate of each fish sampled for successive periods during its lifetime. Such information will allow a general assessment of changes in habitat quality from the standpoint of fish growth rates.

3. Length-Weight Relationship

Fish collected will be measured and weighed.

4. Condition Factor

Condition factors (K) will be calculated for individual fish, and the mean condition factor for each species in each centimeter group will be determined. The formula $K_{(TL)} = W/L^3$ will be used for all condition factor determinations (where the weight, W, is in grams; and the total length, L, is in centimeters). 1

5. Sex Ratios and Gonad Condition

Specimens will be sexed in the field. Gonads will be classified according to the method presented in Table 6.1-4.

6. Standing Crop Estimate

A system of mark and recapture using the Petersen estimate formula (2) will be employed to determine the standing crop.

7. Parasites

A visual examination for ectoparasites from all captured fish will be conducted.

TABLE 6.1-1

WATER QUALITY MONITORING PROGRAM FOR THE PRE-OPERATIONAL PHASE OF THE VIRGIL C. SUMMER NUCLEAR STATION[1]

Station Number[2]	Parameter	Analysis Technique[3]
	CONTINUOUS MONITORING	
12	Water Temperature Dissolved Oxygen Conductivity pH	Continuous Recording Meters
17	Water Temperature	Continuous Recording Meter
	MONTHLY MONITORING	
1, 5A, 11, 12	Water Temperature	EPA
	Dissolved Oxygen	EPA (electrode)
	Conductivity	ASTM D1125-64, A
	pH	ASTM D1293-65
	Transparency	Secchi Disc
	Turbidity	ASTM D1889-71
	BOD	SM 507
	TSS	ASTM D1888-67, A
	TDS	ASTM D1887-67, A
	Total Alkalinity	ASTM D1067-70, C
	Total Hardness	ASTM D1126-67, B
	QUARTERLY MONITORING	
2, 14, 16, 18	Same parameters as monthly, above, at Stations 1, 5A, 11, 12	
	plus	
1, 2, 5A, 11 12, 14, 16, 18	Ammonia	ASTM D1426-74, B
	Nitrate	SM 419D
	Orthophosphate	ASTM D515-72, B
	Boron	SM 107B (1971ed)
	Cadmium	EPA
	Chromium	EPA
	Copper	EPA
	Lead	EPA
	Mercury	EPA
	Total Phosphorus	ASTM D515-72, B

2

5

5

1

5

2

5

TABLE 6.1-2

SUMMARY OF SCOPE OF WORK FOR THE PREOPERATIONAL BIOLOGICAL SAMPLING PROGRAM

Program Component	Sampling Station	Sampling Frequency	References Species Identification	
Vascular Hydrophytes	Shorelines of Parr and Monticello Reservoirs	Quarterly	Reference 10	
Phytoplankton	I, K, L, M, N, and O	Monthly	References 11-19	5
	B, C, D, H, I, and P	Quarterly		
Zooplankton	B, C, D, and H through P	Quarterly	References 20-22	
Ichthyoplankton	B, C, I, K and N	Weekly[1]	References 23, 24	
	H. J, L, M, O and P	Biweekly[1]		1 5
	B, C, and H through P	Biweekly[2] Monthly[3]		
Benthic Macroinvertebrates	B, C. D, and H through P	Quarterly	References 25-34	
Fish	B, C, D, and H through P[4]	Quarterly[5]	References 35-39	5

1 Late February through June.

2 July through September.

3 October through January.

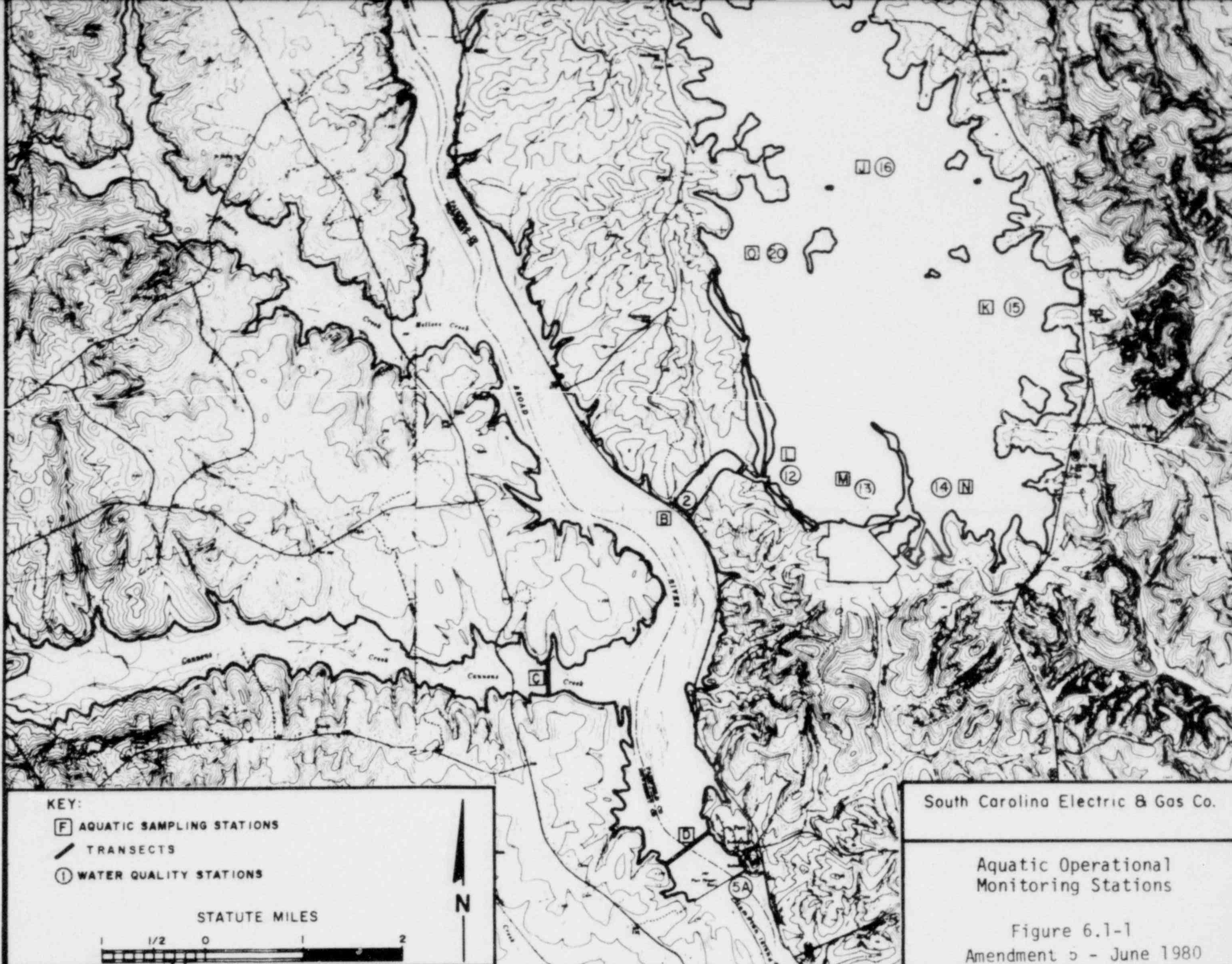
4 Electrofishing will be conducted at these stations; locations for rotenoning are discussed in Section 6.1.1.2.1.6.

5 In addition to the spring (April) quarterly sampling, fish are sampled at Stations I and M three weeks prior to and three weeks after the scheduled sampling. 5

Exposure Pathway and/or Sample	Criteria for Selection of Sample Number and Location	Sampling and Collection Frequency	Sample Locations: Location[1]	Sample Locations: Mi/Dir	Type and Frequency of Analysis	
WATERBORNE, (continued)	B 1 Control sample to be taken at a location on the receiving river, sufficiently far upstream such that no effects of pumped storage operation are anticipated.		22[3]	12-15 NNW		1
	C 1 Indicator sample from location immediately upstream of the nearest downstream municipal water supply		17	24.7 S		5
	D 1 Indicator sample to be taken in the upper reservoir of the pumped storage facility.	Grab sampling monthly [5]	23[3]	<1 E	As in V above.	1 4
	E 1 Indicator sample to be taken in the upper reservoir's non-fluctuating recreational area.		24[3]	4.7 N		1
	F 1 Control sample to be taken at a location on a separated unaffected watershed reservoir.		18[3]	16.5 S		1
V. Ground Water	A 2 Indicator samples to be taken within the exclusion boundary and in the direction of potentially affected ground water supplies.	Quarterly grab sampling[7]	26 27	Onsite Onsite	Gamma isotopic and tritium analyses quarterly.[7]	1 4

Exposure Pathway and/or Sample	Criteria for Selection of Sample Number and Location	Sampling and Collection Frequency	Sample Locations: Location[1]	Sample Locations: Mi/Dir	Type and Frequency of Analysis	
WATERBORNE, (continued)	B 1 Control sample from an unaffected location.		16	28.0 W		1
VI. Drinking Water	A 1 Indicator sample from nearby public ground water supply source.	Monthly grab sampling[5]	28	1.3 ESE	Monthly[5] gamma isotopic and gross Beta analyses and quarterly[7] tritium analyses	1 4
	B 1 Indicator (finished water) sample from the nearest downstream water supply.	Monthly grab sampling[5]	17	24.7 S		5
INGESTION						
VII. Milk[5]	A 1 Indicator sample to be taken at the location of one of the dairies most likely to be affected.[2] [5]	Semi-monthly when animals are on pasture,[8] monthly other times.[5]	14[4]	5.2 W	Gamma isotopic and I-131 analysis semi-monthly[8] when animals are on pasture; monthly[5] at other times	1 4
	B 1 Control sample to be taken at the location of a dairy 10-20 miles distant and not in the most prevalent wind direction.[2]		16	28.0 W		1
	C 1 Indicator grass (forage) sample to be taken at one of the locations beyond but as close to the exclusion boundary as practicable where the highest offsite sectoral ground level concentrations are anticipated.[2]	Monthly when available[5]	6	1.1 ESE	Gamma Isotopic	1 4


RECREATION
AREA DAM
BROAD
BROAD



South Carolina Electric & Gas Co.

Aquatic Operational Monitoring Stations

Figure 6.1-1

Amendment 5 - June 1980

7.1.2.7 Class 7.0: Spent Fuel Handling Accident

7.1.2.7.1 Fuel Assembly Drop in Fuel Storage Pool

In this accident, it is postulated that a fuel assembly drop occurs as a result of the mishandling of a spent fuel assembly. The accident is assumed to result in damage to one row of fuel rods in the assembly. The activity released from the damaged fuel rods bubbles through the spent fuel pool water covering the assembly, and most of the radioactive iodine is entrained. The remaining radioactivity is released to the fuel handling building atmosphere above the pool where it is exhausted through the fuel handling building charcoal exhaust system.

The activity release for this accident is based on the following assumptions:

1. The gap activity (1 percent of the total noble gas and halogen activity in the rod) in one row of fuel rods from an average assembly which had operated at full power for 650 days is released to the spent fuel pool at the time of the accident.
2. The accident occurs 1 week following reactor shutdown.
3. The spent fuel pool water retains a large fraction of the halogen gap activity because of solubility and hydrolysis. Noble gases are not retained by the water. An iodine decontamination factor of 500 is used in the analysis.
4. The fission products not retained in the water are released to the air above the pool and exhausted to the plant vent through charcoal filters with an iodine removal efficiency of 99 percent.

The calculated activity release for this accident is given in Table 7.1-7. The calculated doses are tabulated in Table 7.1-3.

The possibility of a fuel-handling incident in the fuel handling building is equally as remote as that within the reactor building as discussed in Section 7.1.2.6.1. Design considerations and administrative controls are essentially the same as those discussed earlier. Only one assembly can be handled at a time, and the design is such that the assembly is continuously immersed.

Spent fuel at rest in the storage racks is positioned by positive restraints in an always subcritical array (no credit taken for boric acid in the water), and it is impossible to insert a spent fuel assembly in other than prescribed locations.

7.1.2.7.2 Heavy Object Drop Onto Fuel Rack

This accident is defined as the dropping of a heavy object onto the spent fuel storage racks such that all of the fuel rods in an average assembly are damaged. Again, the spent fuel pool water would retain a large fraction of the halogen activity with any escaping activity being exhausted to the plant vent through charcoal filters.

The activity release for this accident is based on the same assumptions as listed in Section 7.1.2.7.1 for the spent fuel assembly drop accident, except that it is assumed that the gap activity from all the fuel rods in an average assembly is released at the time of the accident, 30 days following reactor shutdown.

Crane design will preclude this event. 5

TABLE 7.1-1

CLASSIFICATION OF POSTULATED ACCIDENTS AND OCCURRENCES

No. of Class	Description	Examples	
1	Trivial incidents	Small spills Small leaks inside containment	
2	Miscellaneous small releases outside containment	Spills Leaks and pipe breaks	
3	Radwaste system failures	Equipment failure Serious malfunction or human error	
4	Events that release radioactivity into the primary system (BWR)	Fuel failures during normal operation Transients outside expected range of variables	
5	Events that release radioactivity into the primary and secondary system (PWR)	Class 4 and steam generator leak	
6	Refueling accidents inside containment	Drop fuel element Drop heavy object onto fuel Mechanical malfunction or loss of cooling in transfer tube	
7	Accidents to spent fuel outside containment	Drop fuel element Drop heavy object onto fuel* Drop shielding cask	5
8	Accident initiation events considered in design-basis evaluation in the Safety Analysis Report	Reactivity transient Rupture of primary piping Flow decrease Steam line break	
9	Severe hypothetical failures	See Section 7.1.2.9	

* Not Applicable, see Section 7.1.2.7.2

Accident Class	Description	Whole Body Dose: Exclusion Distance (Rem)	Whole Body Dose: Population Dose 50 Miles (Man-Rem)	Thyroid Inhalation Dose Exclusion Distance (Rem)	
6.0	Refueling Accidents				
6.1	Fuel Bundle Drop	3.3×10^{-7}	1.5×10^{-3}	1.6×10^{-7}	
6.2	Heavy Object Drop onto Fuel Storage	7.5×10^{-6}	3.5×10^{-2}	3.0×10^{-6}	
7.0	Spent Fuel Handling Accident				
7.1	Fuel Assembly Drop in Fuel Storage Pool	3.0×10^{-5}	1.4×10^{-1}	1.5×10^{-5}	
7.2	Heavy Object Drop onto Fuel Rack*				5
7.3	Fuel Cask Drop Outside Buildings	3.2×10^{-7}	1.5×10^{-3}	6.1×10^{-4}	
8.0	Accident Initiation Events Considered in SAR				
8.1	Loss of Coolant Accidents				
	Small Pipe Break	1.1×10^{-5}	7.8×10^{-2}	1.9×10^{-4}	
	Large Pipe Break	2.2×10^{-2}	1.0×10^{2}	1.3	
	Break in Instrumentation Line from Primary		Not Applicable		
8.2	Control Rod Accidents				
	Rod Ejection Accident (PWR)	2.3×10^{-3}	1.1×10^{1}	1.4×10^{-1}	
	Rod Drop Accident (BWR)		Not Applicable		

* Not Applicable, see Section 7.1.2.7.2 5