Extra

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

EMERGENCY PLAN/CRISIS MANAGEMENT PLAN

PROCEDURE FOR ENVIRONMENTAL SURVEILLANCE FOLLOWING A LARGE UNPLANNED RELEASE OF GASEOUS RADIOACTIVITY

1.0 Purpose

To provide a procedure for identifying gaseous plumes and obtaining field data indicative of the radiation exposure to the general public following an unplanned release of gaseous activity in excess of the limits established by Section 20.403(b)(2) of 10CFR20.

2.0 References

2.1 Station Directive 3.8.5 Emergency Plan.

2.2 NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

2.3 NUREG-0610, Draft Emergency Action Level Guidelines for Nuclear Power Plants.

2.4 Section 20.403(b)(c) of 10CFR20.

2.5 Procedure NE/O/B/1000/R21, Radio Operations.

3.0 Limits and Precautions

3.1 The Field Monitoring Coordinator (FMC) or Environmental Surveillance Coordinator shall report to the Station Health Physicist (Technical Support Center) once the Emergency Plan and Organization has been implemented.

3.2 The FMC shall report to the Off-Site Radiological Coordinator (System Health Physicist or designee) once the Crisis Management Center has been established.

3.3 The FMC shall call the Field Monitoring Supervisor(s) and team members to report to the Environmental Lab once the Emergency Plan has been implemented. The names and telephone numbers of these individuals are listed in Enclosure 5.1.

3.4 The field monitoring teams shall use particulate masks when airborne particulate activity becomes > 3×10^{-9} µC/ml Beta-Gamma, or > 6×10^{-13} µC/ml Alpha.

120

8102190

4.3 The field teams upon obtaining their emergency kits and emergency vehicles shall before leaving the site:

4.3.1 Verify radio communications with the Technical Support Center or Crisis Management Center Base Station using proper radio procedures (Procedure NE/O/B/1000/R21).

NOTE: If a radio becomes inoperable in the field, telephone locations listed in Enclosure 5.3 shall be used until the radio can be repaired or replaced.

4.3.2 Ensure the Portable Power Generators are operational, fully fueled, and additional fuel available in spare gas can.

4.3.3 Ensure the back-up power supplies (DC-AC power inverters) are operating and operated satisfactorily as per Enclosure 5.4.

4.3.4 Battery check survey instruments and response check if applicable.

4.3.5 Ensure vehicle is fueled to maximum capacity.

4.4 Action Plan

4.4.1 The Field Monitoring Coordinator's team shall consist of the FMC, two alternates, three Supervisors and two Radio Operators (Enclosure 5.1).

4.4.1.1 The radio operator(s) shall maintain communications with the Field Teams using proper radio procedures (Procedure NE/O/B/1000/R21).

4.4.2 Coordinator Action

4.4.2.1 The FMC shall be located in the Oconee Training Center and report to the Station Health Physicist once the Technical Support Center is established. Once the Crisis Management Center is established the FMC will report to the Off-Site Radiological Coordinator.

4.4.2.2 The FMC shall direct the efforts of the Field Teams in obtaining pertinent field measurements and implement monitoring strategies and sample collection requirements.

4.4.2.3 The FMC shall advise the Dose Assessment Coordinator of results of field measurements.

4.4.2.4 The FMC shall assure adequate staffing and resources for the Field Teams.

4.4.3.5.4 Air Sampling Results in CPM of gross activity of particulate filters (Eberline E-120).

4.4.3.5.5 Smear Results in CPM (Eberline E-120).

4.4.3.6 Illustrate and maintain up to date locations of teams on the plexiglass covered map.

4.4.3.7 If the radioactive plume cannot be detected within the downwind sector, the adjoining two sectors shall be monitored by Teams A, B and C. Teams D, E and F shall monitor the remaining sectors to help locate the plume and/or to determine secondary contamination.

4.4.3.8 Instruct teams on frequency of sampling at designated locations using the following: Air sampler, Stabilized Assay Meter (SAM-2), Eberline E-120 with HP-210 detector.

4.4.3.9 Instruct teams to collect and replace TLD's and the CP-100 Charcoal Cartridges and particulate filters from air samplers located in the environment as part of the normal environmental monitoring program. (Procedures NE/O/B/1000/R10 and NE/O/B/1000/R2, respectively). Collect only those air samples and TLD's which are necessary for plume detection. Locations of TLD's and Air Samplers are listed in Enclosure 5.8.

4.4.4 Team Action

4.4.4.1 Upon verification that all equipment is operating satisfactorily, the Field Teams shall proceed to their predetermined survey points (Enclosure 5.5) within the sector(s) designated by the Field Monitoring Coordinator or Supervisor.

4.4.4.2 The Field Teams shall maintain open communications with the Field Monitoring Coordinator or Supervisor informing him of sample results at each of the predetermined sampling locations. Sample results will be recorded in the Team's Field Monitoring Data Log (Enclosure 5.9).

4.4.4.3 At each sampling location the teams shall:

4.4.4.3.1 Using the Eberline E-120 with HP-210 detector, perform a general area Beta-Gamma survey to determine noble gas concentrations in mR/hr. Record on Field Monitoring Data Sheet (Enclosure 5.9) and report the dose rates to the FMC in mR/hr.

measure activity with Eberline E-120 with HP-210 Detector. Record the activity on Enclosure 5.7, then report the data in CPM to the FMC. Retain samples for later analysis.

4.4.4.3.8 Collect water samples in cubitainers at locations and times designated by the FMC. Label the cubitainers and retain for later analysis.

4.4.4.3.9 Place TLD's at locations and times designated by the FMC.

4.4.4.3.10 Collect air samples and TLD's that are located in the environment as part of the normal environmental monitoring program as directed by the FMC. Record locations and collection times. Locations are listed in Enclosure 5.8.

4.4.4.3.11 Return all samples to the Crisis Management Center as directed by the FMC. Samples shall be transported to the Environmental Lab, Huntersville, N.C. for further analysis. The Crisis Management Center Administration and Logistics Group shall be responsible for transporting the samples expeditiously to the Environmental Lab.

4.4.4.3.12 The teams shall be supplemented, relieved, or secured as directed by the FMC.

5.0 Enclosures

5.1 Field Monitoring Organization (Names and Telephone Numbers of Members) and Traing Documentaton.

5.2 Contents of Emergency Kits for Field Monitoring Teams.

5.3 Telephone Locations Within 10 Mile Radius of ONS.

5.4 Handling and Operation of DC-AC Power Inverter.

5.5 Predetermined Sampling Locations by Sector and Distance from ONS (1, 3 and 5 Miles)

5.6 Procurement of Helicopter(s) for Emergency Environmental Surveillance.

5.7 Sample Results from Field Monitoring Teams.

5.8 Air Sampler and TLD Locations for Normal Environmental Monitoring Program.

5.9 Field Monitoring Team Log Sheet

5.10 Sample Time Required For Minimum Sample Volume.

4.4.4.3.2 Take an air sample (10^6 ml) using the RADeCO Portable Air Sampler equipped with a Silver Zeolite Cartridge and particulate filter. Use Enclosure 5.10 to ascertain sample time based on the flow rate (CFM) of the Air Sampler for obtaining a 10^6 ml sample volume. Use the stopwatch to ensure correct time of sample. Record time of sample, sample time (min.), air flow (cfm) and sample volume ($\geq 10^6$ ml) on Enclosure 5.9.

4.4.4.3.3 Place the silver zeolite filter in a poly sample bag and take a contact instrument reading using the Stabilized Assay Meter (SAM-2). Count the sample for ^{131}I for two minutes and record results in CPM on Enclosure 5.9.

4.4.4.3.4 Convert Counts Per Minute to µCi/ml as follows:

$$\mu Ci/ml = \frac{(NCPM)\ (*4.728 \times 10^{-7})}{(\text{Efficiency of SAM-2})\ (\text{Sample Volume in ml})}$$

Where:

NCPM = Count Rate of Sample - Count Rate of Background

* = Accounts for efficiency of Ag Zeolite filter and the conversion of NCPM to µCi

Efficiency = Counting Efficiency of SAM-2 (written on instrument)

Sample Volume (ml) = 10^6 ml or Flow Rate (CFM) x Time (min) x (2.83×10^4)

4.4.4.3.5 Record results to the FMC in µCi/ml.

4.4.4.3.6 Place the particulate filter from the air sampler in the same poly bag, take a contact instrument reading using the Eberline E-120 and HP-210 Detector for gross contaminants. Record results on Enclosure 5.9. Label bag and retain filters for later analysis.

4.4.4.3.7 Take smears at each location, place them in poly bags, label the bags, and

4.4.3 Supervisor Action

4.4.3.1 The Field Monitoring Supervisor shall assist the FMC and be prepared to serve as the FMC in his absence.

4.4.3.2 The Field Monitoring Supervisor shall obtain meteorological information from the Station Health Physicist in the Technical Support Center. When the Crisis Management Center is established meteorological information shall be obtained from the Off-Site Radiological Coordinator. Meteorological conditions shall be updated every 15 minutes. Meteorological data shall include wind speed, wind direction and air temperature (ground level and 120 feet).

4.4.3.3 The Supervisor shall dispatch Field Teams to predetermined survey points within the designated (downwind) sector(s). The predetermined sampling locations and responsible teams are listed by sector and distance (1, 3 and 5 miles) from the Station in Enclosure 5.5. The sector(s) to be monitored or the "plume" path shall be determined by the Station Health Physicist or Off-Site Radiological Coordinator and is based on meteorological conditions which are subject to change at any time.

4.4.3.4 Field Teams D, E and F may or may not be dispatched immediately. Team D shall be used to identify secondary contamination or plume dispersion outside of the downwind sector. Team E, the boat team, will be used to monitor plume activity over Lake Keowee. Team F is the helicopter team and will monitor the plume from the air if determined necessary by the ORC (see Enclosure 5.6 on availability of helicopter for emergency use).

4.4.3.5 The Supervisor or Radio Operator shall record all team data as received on Enclosure 5.7 such as:

4.4.3.5.1 Location and time of sample.

4.4.3.5.2 Dose Rates in mR/hr (Eberline E-120 with HP-210 Detector).

4.4.3.5.3 Air Sampling Results in μCi/ml of ^{131}I (SAM-2 measurements of Silver Zeolite Cartridges).

3.5 If the teams expect to be exposed to ^{131}I in excess of 10 MPC (9×10^{-8} µC/ml), each team member shall ingest a 130 milligram tablet of potassium iodide.

3.6 Team members shall use protective clothing at contamination levels > 2000 dpm/100 cm^2 Beta-Gamma, > 500 dpm/100 cm^2 Alpha.

3.7 Environmental sampling during emergency conditions shall not replace, but rather supplement normal environmental monitoring.

3.8 The Eberline Geiger Counters (E-120 with HP-210 detector), Stabilized Assay Meters (SAM-2 with RD-22 detector) and Portable Air Samplers (RADeCO H-809 F) shall be calibrated quarterly as per Health Physics Procedure(s). Following calibration each instrument shall be affixed with a calibration label giving the date of calibration, source term, date of next calibration and initialed by the person performing the calibration.

3.9 An inventory of the emergency kits shall be conducted quarterly to ensure that items listed in Enclosure 5.2 are readily available. Documentation of the inventory shall be affixed to the kits listing the date of the inventory, deficiencies, corrective action and person conducting the inventory.

3.10 Annual training in the use of this procedure and the associated equipment and instrumentation shall be conducted. Upon completion of the training Enclosure 5.1 will be completed for documentation.

4.0 Procedure

4.1 Upon request for off-site environmental monitoring by the Station Health Physicist and/or the Off-Site Radiological Coordinator, the FMC shall report to the Technical Support Center (TSC). The Field Monitoring Supervisor(s) and six (6) field teams shall report to the Environmental Lab to obtain the emergency kits to initiate surveillance. Each emergency kit contains the items listed on Enclosure 5.2.

4.2 Five (5) field teams consisting of 2 technicians per team and one (1) helicopter team (1 person) shall be formed as follows:

Teams	Call Sign	Transportation *
A	"Alpha"	Environmental Vehicle #8191 (1980 Ford Bronco)
B	"Bravo"	Admin. Services Vehicle #6888 (1978 Ford Bronco)**
C	"Charlie"	Admin. Services Vehicle #4205 (1974 Chevy Blazer)**
D	"Delta"	Maintenance Vehicle #7770 (1979 Ford Pickup-Blue)**
E (Boat Team)	"Echo"	Maintenance Vehicle #8134 (1980 Ford Pickup-White)
F (Helicopter)	"Foxtrot"	Administrative Vehicle #7103 (1978 Ford Station Wagon-White)
		Administrative Vehicle #7104 (1978 Ford Station Wagon-Blue)

*Pool of transportation - vehicles not limited to specific teams.

**Vehicles equipped for DC-AC Power Inverters.

ENCLOSURE 5.1
FIELD MONITORING ORGANIZATION AND TRAINING DOCUMENTATION

FIELD MONITORING COORDINATOR(S)

Primary: J. J. Sevic - Office: 803/832-5363(417); Home: 803/882-1588

Alternate(s): J. R. Leonard - Office: 704/875-1357(487); Home: 704/392-8271
G. Mode - Office: 803/831-2282; Home: 704/399-2966

FIELD MONITORING SUPERVISOR(S)

M. R. Killough - Office: 803/882-5363(417); Home 803/882-1310

T. Carroll - Office: 803/882-5363(103); Home 803/882-6067

L. J. Benge - Office: 803/882-5363(417); Home 803/654-7664

FIELD MONITORING TEAM MEMBERS	Date of Annual Training	Initial
A. Chemistry & Environmental (ONS)		
1. Bobby Lee - Ext. #161; Home: 638-6806		
2. Gina Holliday - Ext. #161; Home: 654-5975		
3. Pat Sarrat - Ext. #161; Home: 859-9055		
4. Gary Sain - Ext. #161; Home: 878-4421		
5. Bobby Childress - Ext. #161; Home 654-1507		
6. Linda Day - Ext. #161; Home: 882-0642		
7. Lynette Fant - Ext. #161; Home: 882-4744		
8. David Manley - Ext. #378; Home: 882-8446		
9. Bill Shivers - Ext. #323; Home: 859-8360		
10. Mike Garrison - Ext. #323; Home 882-7880		
B. Health Physics (ONS)		
1. Steve Alexander - Ext. #177; Home: 868-9161		
2. Tom Gillespie - Ext. #177; Home: 638-9947		
3. Frank Reynolds - Ext. #325; Home: 882-1186		
4. Randy Smith - Ext. #325; Home: 868-9771		

ENCLOSURE 5.1
FIELD MONITORING ORGANIZATION AND TRAINING DOCUMENTATION

		Date of Annual Training	Initial
5.	Tom Smith - Ext. 325; Home: 882-4025		
6.	Janet Hutchins - Ext. #325: Home: 882-0082		
7.	Burgess Laye - Ext. #105; Home: 638-5187		
8.	Paul Tichenor - Ext. #105; Home: 638-6774		
9.	Barry Stewart - Ext. #105; Home: 647-9739		
10.	James Smith - Ext. #105; Home: 638-6629		

ENCLOSURE 5.2

CONTENTS OF EMERGENCY KITS FOR FIELD MONITORING TEAMS

1. Portable radio and antenna (Operations Manual and procedure)
2. Eberline Geiger Counter (E-120) with HP-210 detector
3. Stabilized Assay Meter (SAM-2) with RD 22 detector
4. Portable air sampler (RADeCO H-809 F)
5. Fifteen (15) Silver Zeolite (CP-100G) filter cartridges
6. DC-AC power inverter with connections and/or portable 1800 watt power generator
7. Key to vehicle designated for emergency use
8. Two (2) MSA Ultra-view masks with particulate filters
9. Ten (10) emergency TLD's
10. Two (2) High Range Dosimeters with charger
11. Two (2) Low Range Dosimeters
12. Four (4) sets of protective clothing (Anti-C)
13. Potassium iodide tablets
14. Smears
15. One (1) water sampler for teams "Delta" and "Echo"
16. One (1) stopwatch
17. One (1) calculator
18. Two (2) flashlights with extra batteries
19. Pencils, paper, ruler
20. Five (5) dollars in small change for telephone calls to the station
21. Assorted poly bags
22. Five (5) liter sample bottles

ENCLOSURE 5.2

CONTENTS OF EMERGENCY KITS FOR FIELD MONITORING TEAMS

23. Ten (10) cubetainers

24. One (1) tool kit for Team Delta

25. One Log Book with Data Sheets (Enclosure 5.9)

26. One (1) copy of "Procedure for Environmental Surveillance Following a Large Unplanned Release of Gaseous Radioactivity"

27. Two (2) ten mile radius maps with 1, 3, and 5 mile zones and 22.5° sectors depicted

ENCLOSURE 5.3

TELEPHONE LOCATIONS WITHIN 10 MILE RADIUS

OF OCONEE NUCLEAR STATION

1. South Sector --

   The Grocery Store at intersection of County 1 and County 358. Pay Phone.

2. South Southeast Sector --

   Death Valley Exxon Station at intersection of SC 133 and US 123. Pay Phone.

3. Southeast Sector --

   J. E. Smith's House .5 mile South of Daniel High School on SC 133. Personal phone.

4. East Southeast Sector --

   U-Serve Filling Station in Norris on SC 137. Pay Phone.

5. East Sector --

   A. 76 Service Station in Six Mile on SC 133. Pay phone.

   B. C. T. Yongue's House about .25 mile south and .5 mile west of intersection of SC 133 and SC 137. Personal phone.

6. East Northeast Sector --

   J. W. Adams' House about .5 mile south of SC 183 on County 158. Personal phone.

7. Northeast Sector --

   Six Mile Junction store at intersection of SC 183 and SC 133. Pay Phone.

8. North Sector --

   Gap Hill Landing at end of County 157. Pay Phone.

9. Northwest Sector --

   Burrell's Exxon Station in Salem on SC 130. Pay Phone.

ENCLOSURE 5.3

TELEPHONE LOCATIONS WITHIN 10 MILE RADIUS

OF OCONEE NUCLEAR STATION

10. West Sector --

Country Junction Store at intersection of SC 183 and County 24. Pay Phone.

11. West Southwest Sector --

M. D. Thorne's House .25 mile south of Keowee School on SC 188. Personal phone.

ENCLOSURE 5.4

HANDLING AND OPERATION OF DC-AC POWER INVERTER

Precautions and Handling

1. The power inverter takes DC current from the vehicle's electrical system and converts it to 120 volt AC current. Extreme care must be exercised when operating this piece of equipment.

2. Never set power inverter up on it's side.

3. NEVER TURN POWER INVERTER ON WHILE VEHICLE ENGINE IS OFF.

4. All other loads on vehicle electrical system must be off while power inverter is energized.

5. Ensure the fins on back of inverter have enough air space to adequately cool the internal components when inverter is in operation.

6. The DC-AC power inverter is a delicate instrument and should be carefully handled and transported at all times.

Operation

1. In order for power inverter to operate, the vehicle's engine must be running.

2. Operation

   a. Turn off vehicle engine.

   b. Insure power inverter is turned off.

   c. Remove the two yellow male "dummy" fittings from vehicle female fittings. (These are twist type connections.)

   d. The two connections on the power inverter and the vehicle are colored coded. Connect the red (Positive) power inverter male fitting to the red vehicle female fitting. Connect the black power inverter fitting to the black vehicle fitting. (Insure both connections are snug and that no connections are loose.)

   e. Turn on vehicle engine and let it idle.

   f. Remove all other loads from vehicle electrical system prior to turning on the power inverter (turn off lights, heater, air conditioner, car radio, etc.)

ENCLOSURE 5.4

HANDLING AND OPERATION OF DC-AC POWER INVERTER

g. Turn on power inverter and let it warm up for approximately 20 seconds.

h. Plug in air sampler to power inverter 120 volt "load" outlet. Turn on air sampler and collect sample.

i. Turn off air sampler, unplug sampler, and turn off power inverter.

j. Turn off vehicle engine.

k. Disconnect color coded male fittings on the inverter from female fittings on the vehicle.

l. Reconnect yellow male "dummy" fittings to vehicle female fittings.

m. Repeat operation procedure at next sample location.

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS NORTH (A) AND NORTH NORTHEAST (B) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
N	A-1	E	1	Lake Keowee - Midlake due west of Warpath Landing
N	A-2	B or E	3	Gap Hill Landing
N	A-3	E	3	West Shoreline of Lake Keowee from Gap Hill Landing
N	A-4	E	5	East Shoreline of Lake Keowee - Due East from Crow Creek Island
N	A-5	E	5	Midlake at Crow Creek Island
N	A-6	C or E	4	Old Town Landing
N	A-7	D	10	Keowee Toxaway State Park (Hwy 11 and 133)
	A-8	D or E	9	Hwy 11 bridge over Lake Keowee
NNE	B-1	A or E	1	Warpath Landing - Lake Keowee
NNE	B-2	B	3	Junction of Hwy 157 (Gap Hill Rd) and 500 KV Transmission Line
NNE	B-3	B	3	Lake Hill Acres Campground - Hwy 157 (Gap Hill Rd)
NNE	B-4	C	5	Junction of Hwy 133 and 327 (Keowee Church Rd)
NNE	B-5	C	5	Hwy 327, Keowee Church
NNE	B-6	D	9	Junction of Hwy 133 and 49 (Shady Grove Ch)

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS NORTHEAST (C) AND EAST NORTHEAST (D) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
NE	C-1	A	1	Hwy 183 1 mile N of Lake Hartwell at Steel Gate (West Side of Road)
NE	C-2	B	3	Junction of Hwy 183 and 157 (Gap Hill Rd)
NE	C-3	C	4	Love & Care Nursing Home (Love & Care Rd)
NE	C-4	C	5	Junction of Hwy 133 and Hunting Hollow Rd
NE	C-5	D	10	Martin Grove Ch., Junction of Hwy 172 & 32
NE	C-6	D	10	Junction of Hwy 32 & 33
ENE	D-1	A	1	Hwy 183 N of Hartwell Bridge @ Keowee Cabins
ENE	D-2	B	3	Junction of Hwy 157 (Gap Hill Rd) and Stewart Rd
ENE	D-3	C	5	Junction of Hwy 137 and Belle Shoals Rd
ENE	D-4	C	5	Hwy 137, 1.5 miles east of Hwy 183 at first road junction
ENE	D-5	D	10	Junction of Hwy 267 and 12 Mile Creek
ENE	D-6	D	10	Junction of Hwy 273 and 12 Mile Creek
ENE	D-7	D	10	Junction Hwy 183 and 287

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS EAST (E) AND EAST SOUTHEAST (ESE) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
E	E-1	A	1	Old Pickens Grocery, Junction of Hwy 182 and 160
E	E-2	B	3	Bridge @ Junction of Hwy 291 (Old Seneca Hwy) & Six Mile Creek
E	E-3	B	3	Entrance to Foxfire Estates off Hwy 291 1 mile N of Hwy 160
E	E-4	C	5	Junction of Hwy 133 and 137
E	E-5	C	5	Junction of Hwy 133 and 337 (Main Bridge Rd)
E	E-6	C	5	Junction of Hwy 337 and Camp Creek Rd
E	E-7	D	10	Holly Springs Ch on Hwy 222
E	E-8	D	10	Junction of Hwy 188 and 137
E	E-9	D	10	Junction of Hwy 93 and 171
ESE	F-1	A	1	Hwy 183 Bridge across Lake Hartwell
ESE	F-2	B	3	Junction of Hwy 160 and Furman L. Smith Rd
ESE	F-3	B	3	Junction of Furman L. Smith Rd and Hwy 101
ESE	F-4	C	5	Junction of Hwy 277 and 337 (Main Bridge Rd)
ESE	F-5	D	10	Junction of Hwy 165 and 44 (Central, S.C.)
ESE	F-6	D	10	Midway Ch Junction of Hwy 395 and 91
ESE	F-7	D	10	Junction of Hwy 93 and 51 (Norris, S.C.)

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS SOUTHEAST (G)
AND SOUTH SOUTHEAST (H) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
SE	G-1	A	1	Hwy 183 @ entrance to Old Pickens Ch
SE	G-2	B	3	Hwy 291 @ entrance to Toby Hills Subdivision
SE	G-3	C	5	Pleasant Hill Ch @ Junction of Hwy 160 and 133
SE	G-4	C	5	Daniel High School @ Junction of Hwy 133 and 15
SE	G-5	D	7	Junction of Hwy 15 and 102 (Central, S.C.)
SE	G-6	D	10	Junction of Hwy 123 and 18
SE	G-7	D	10	Junction of Hwy 123 and 30
SSE	H-1	A	1	Junction of Hwy 183 and 6 (Beaver Ponds)
SSE	H-2	B	3	Hwy 291 two miles S of Hwy 160
SSE	H-3	B	5	Hwy 291 and 27 @ Isaquena Park Entrance
SSE	H-4	B	5	Hwy 27, Lawrence-Ramsey Bridge Access Area
SSE	H-5	C	9	Junction of Hwy 123 and 133 (Clemson, S.C.)
SSE	H-6	C	9	Junction of Hwy 123 and 93 (Clemson, S.C.)
SSE	H-7	C	9	Junction of Hwy 93 and 320 (Littlejohn Colliseum)
SSE	H-8	C	10	Bridge across Lake Hartwell 1 mile E of Hwy 149 and 115 Junction

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS SOUTH (I)
AND SOUTH SOUTHEAST (H) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
S	I-1	A	1	0.5 Miles NE of Junction 130 and 6
S	I-2	A	3	Holden's Landing off Hwy 130
S	I-3	B	5	Junction of Hwy 27 and N Bayshore Dr.
S	I-4	B	5	Junction of Hwy 27 and 359 (Hanover Hills)
S	I-5	B	5	Corinth Baptist Ch Hwy 1 (Old Clemson Hwy)
S	I-6	C	10	Junction of Hwy 37 and 210
S	I-7	C	10	Clemson Oconee Airport, Hwy 37
SSW	J-1	A	1	Junction of Hwy 183 and 130
SSW	J-2	A	3	Junction of Hwy 130 and 38
SSW	J-3	E	3	Lake Keowee, East Shoreline
SSW	J-4	B	5	Hwy 130 @ South end of Newry Dam
SSW	J-5	E	5	Lake Keowee, Midlake west of Newry Dam
SSW	J-6	B	8	Junction of Hwy 130 and 123
SSW	J-7	C	9	Utica Elementary School, Seneca, S.C.
SSW	J-8	C	8	Seneca Water Plant

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS SOUTHWEST (K)
AND WEST SOUTHWEST (L) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
SW	K-1	A	1	Old Hwy 183, 1/4 mile W of Hwy 130
SW	K-2	E	3	Lake Keowee, Midlake beneath Norcross Ga. 500 KV Transmission Line
SW	K-3	B	5	Fairview Ch. Hwy 340
SW	K-4	B	5	Crooked Creek Bridge across Lake Keowee on Hwy 188
SW	K-5	C		Oconee Memorial Hospital @ Hwy 123 & 28
SW	K-6	C		Oconee Nursery, Hwy 28
WSW	L-1	E	1	Lake Keowee, Cove immediately north of skimmer wall
WSW	L-2	E or A	3	End of Hwy 605 @ Lake Keowee
WSW	L-3	B	5	Junction of Hwy 46 and 175
WSW	L-4	B	5	2 Mi S of Hwy 46 and 175 Junction
WSW	L-5	C	10	Junction of Hwy 35 and 28 (West Union)
WSW	L-6	C	10	Junction of Hwy 11 and 28 (West Union)

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS WEST (M)
AND WEST NORTHWEST (N) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
W	M-1	E	1	Due West of ONS on Lake Keowee
W	M-2	A	3	Junction of Hwy 12 and 576
W	M-3	B	5	Junction of Hwy 223 and Crooked Creek
W	M-4	B	6	Junction of Hwy 183 and 40 (Patterson's Grocery)
W	M-5	C	8	Junction of Hwy 11 and 131
W	M-6	C	8	Junction of Hwy 11 and 183
WNW	N-1	E	1	Midlake, due west of connecting Canal Bridge in Lake Keowee
WNW	N-2	A	3	Junction of Hwy 183 and 201
WNW	N-3	A	3	Junction of Hwy 201 and 92
WNW	N-4	B	5	Junction of Hwy 40 and 46
WNW	N-5	B	5	Junction of Hwy 132 and Little River
WNW	N-6	C	9	Pickett Post on Hwy 11 and
WNW	N-7	C		Junction of Hwy 11 and 94

ENCLOSURE 5.5
PREDETERMINED SAMPLING LOCATIONS FOR SECTORS NORTHWEST (O)
AND NORTH NORTHWEST (P) FROM OCONEE NUCLEAR STATION

Sampling Sector	Sampling Location	Responsible Team	Radius from ONS (Mi)	Description of Sampling Locations
NW	O-1	A	1	Junction of Hwy 130 and 183
NW	O-2	A or E	3	Stamp Creek Landing at end of Hwy 92
NW	O-3	B	5	Junction of Hwy 132 and unmarked Rd.
NW	O-4	B	5	Junction of Hwy 130 and 200
NW	O-5	C	10	Tamassee DAR School off Hwy 11
NW	O-6	C	10	Junction of Hwy 11 and 57
NNW	P-1	E	1	West shoreline of cove immediately north of connecting canal on Lake Keowee
NNW	P-2	A	3	Stamp Creek Ch @ Junction of Hwy 128 and 130
NNW	P-3	B	5	Junction of Hwy 200 and Stamp Creek
NNW	P-4	B	5	Church of God @ Junction of Hwy 200 and 128
NNW	P-5	C	10	Junction of Hwy 11 and 171
NNW	P-6	C	10	Junction of Hwy 11 and 127

ENCLOSURE 5.6

PROCUREMENT OF HELICOPTERS FOR EMERGENCY ENVIRONMENTAL SURVEILLANCE

Inland Airways, Greenville S. C., is under contract to Duke Power Company to furnish one helicopter upon request and an additional helicopter within six hours following notification. Once a helicopter is requested, there is a maxim) elapsed time of three hours for the helicopter to arrive at Oconee or other dispatched locations.

Helicopter service is limited to daylight hours and adequate flying weather. The helicopters will hold three people, the pilot and two passengers. To perform surveys, instrumentation may limit the passenger space.

To obtain helicopter(s) for emergency service contact:

		Office	Home
1.	W. M. Yelton*	704-373-4006	704-827-3763
2.	L. W. Johnson*	704-373-4561	704-523-3524
3.	L. M. Whisonant*	704-373-4977	803-324-0260
4.	E. B. Shuler*	704-373-4914	803-366-4614

*These contacts are in Duke Power Company Transmission Dept., Line Division

ENCLOSURE 5.7

SAMPLE RESULTS FROM FIELD MONITORING TEAMS

DATE _____ RADIO OPERATOR _____

TEAM	SAMPLE LOCATION	TIME	DOSE RATE mR/hr	SMEAR SURVEY c/MIN	AIR SAMPLES ^{131}I µCi/ml	AIR SAMPLES GROSS ACTIVITY C/MIN

ENCLOSURE 5.8

AIR SAMPLER AND TLD LOCATIONS FOR NORMAL ENVIRONMENTAL MONITORING PROGRAM

AIR SAMPLE LOCATIONS

1. Site 000 Visitors Center, in N. E. corner of parking lot
2. Site 006 Clemson University Meteorological Station
3. Site 009 Microwave tower off Highway 137 SSE of Six Mile toward Norris
4. Site 014 Duke Power Company Environmental Health Offices on Old Highway 183 at lake

TLD LOCATIONS

1. Site 000 Visitors Center, in N. E. corner of parking lot
2. Site 000.1 Onehalf mile east of Hwy. 183-130 junction on Hwy 183 under power line
3. Site 000.2 Skimmer wall road (south) - one-half mile west of Hwy 183130 junction of old Hwy 183
4. Site 000.6 ONS CCW discharge area
5. Site 000.9 NW Hwy 183 - one mile northwest of ONS on Hwy 183
6. Site 000.10 Skimmer wall road north
7. Site 000.11 Hwy 183 E - power line right-of-way east of Hwy 183 bridge
8. Site 000.12 Old construction living quarters - road by Gate 2 to ONS
9. Site 000.13 Emergency boathouse
10. Site 000.14 Keowee Hydro Intake - fence at top of Keowee Dam
11. Site 000.15 ONS boundary fence - North
12. Site 000.16 ONS boundary fence - North
13. Site 000.17 ONS boundary fence - West

ENCLOSURE 5.8

AIR SAMPLER AND TLD LOCATIONS FOR NORMAL ENVIRONMENTAL MONITORING PROGRAM

TLD LOCATIONS

14.	Site 000.18	ONS boundary fence - West
15.	Site 000.19	ONS boundary fence - South
16.	Site 001	Salem Voluntary Fire Department
17.	Site 002	Walhalla Branch Road SubStation
18.	Site 003	Keowee High School Area - Mike Thorne's boat shed
19.	Site 004	Oconee Memorial Hospital parking lot
20.	Site 005	Newry High School (abandoned)
21.	Site 006	Clemson Meteorological Station
22.	Site 007	Transmission tower base, Hwy 93, Central
23.	Site 008	Duke Power Co. branch office yard, Liberty (Control Station)
24.	Site 009	Microwave tower, Six Mile
25.	Site 010	Duke Power Co. branch office yard, Pickens
26.	Site 011	Warpath Landing

ENCLOSURE 5.9

FIELD MONITORING TEAM LOG SHEET

LOCATION _____

DATE _____

COLLECTED BY _____

_____

General Surveys - Eberline E-120 with HP-210 Detector Instrument No. _____

TIME	DOSE RATE[1] mR/Hr	TIME	SMEAR SURVEY[1] NCPM	TIME	AIR FILTER SURVEY[1] NCPM

I( )nd Particulate Sample - RADeCO Sample No. _____ SAM-2 No. _____

RADeCO AIR SAMPLER					SAM-2		CONVERSION[1]
TIME OF SAMPLE	x AIR FLOW	x 2.83×10^4	= SAMPLE		COUNTS/MIN - BACKGROUND	= NCPM	NPCM to µCi/Ml $\frac{(NCPM)(4.78 \times 10^{-7})}{(SAM\text{-}2\ Eff)(Sample\ Vol\ in\ ml)}$
SAMPLE[1]	TIME(Min)	(CFM)		VOLUME			
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	
		x	x 2.83×10^4 =		-	=	

[1]To be reported to Field Monitoring Supervisor by radio.

ENCLOSURE 5.10

SAMPLE TIME REQUIRED FOR MINIMUM SAMPLE VOLUME

FLOW RATE (CFM)	MINIMUM REQUIRED SAMPLING TIME IN MINUTES
.5	71
1.0	36
1.5	24
2.0	18
2.5	15
3.0	12
3.5	11
4.0	9
4.5	8

NOTE: When estimating time required to get a minimum volume of $1x10^6$ml if flow rate for the air sampler in use is not on table, go to next Lower flow rate.

Example: Air Sampler flow rate = 3.6. Minimum time = 11 minutes