Form 34731 (3-84)

(1) ID No. EP/0/B/1009/04
Change(s) 0 to
0 Incorporated

DUKE POWER COMPANY
PROCEDURE PROCESS RECORD

PREPARATION

(2) STATION Catawba

(3) PROCEDURE TITLE Environmental Monitoring for Emergency Conditions Within the Ten Mile Radius of Catawba Nuclear Station

(4) PREPARED BY _____ DATE 11/11/86

(5) REVIEWED BY _____ DATE 11-11-86

Cross-Disciplinary Review By _____ N/R _____

(6) TEMPORARY APPROVAL (If Necessary)

By _____ (SRO) Date _____

By _____ Date _____

(7) APPROVED BY _____ DATE 11/12/86

(8) MISCELLANEOUS

Reviewed/Approved By _____ Date _____

Reviewed/Approved By _____ Date _____

COMPLETION

(9) DATE(S) PERFORMED _____

(10) PROCEDURE COMPLETION VERIFICATION

- ☐ Yes ☐ N/A Check lists and/or blanks properly initialed, signed, dated or filled in N/A or N/R, as appropriate?
- ☐ Yes ☐ N/A Listed enclosures attached?
- ☐ Yes ☐ N/A Data sheets attached, completed, dated and signed?
- ☐ Yes ☐ N/A Charts, graphs, etc. attached and properly dated, identified and marked?
- ☐ Yes ☐ N/A Acceptance criteria met?

VERIFIED BY _____ DATE _____

(11) PROCEDURE COMPLETION APPROVED _____ DATE _____

(12) REMARKS

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
ENVIRONMENTAL MONITORING FOR
EMERGENCY CONDITIONS WITHIN THE
TEN MILE RADIUS OF CATAWBA NUCLEAR STATION

1.0 PURPOSE

To provide a method for identifying gaseous plumes or liquid effluent, and obtaining field data indicative of the radiation exposure to the general public following a suspected uncontrolled release of radioactivity. This procedure shall also be implemented by the Crisis Management Center once it is activated.

2.0 REFERENCES

2.1 HP/0/B/1000/06 Emergency Equipment Functional Check and Inventory

2.2 HP/0/B/1002/12 Radiological Environmental Sample Collection

2.3 HP/0/B/1003/05 Operating and Calibration Procedure: Eberline Model PIC-6A Portable Ion Chamber

2.4 HP/0/B/1003/12 Operating and Calibration Procedure: Eberline Model E-520 Portable Beta-Gamma Geiger Counter

2.5 HP/0/B/1003/17 Operation and Calibration Procedure: Canberra Series - 10 Portable MCA

2.6 HP/0/B/1003/31 Operation and Calibration: Eberline Model E140N Portable Count Rate Meter

2.7 HP/0/B/1009/16 Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release

2.8 HP/0/B/1009/19 Emergency Radio System Operations, Maintenance and Communications

3.0 LIMITS AND PRECAUTIONS

3.1 The Field Monitoring Teams (FMT) should park vehicles completely off the road when sampling and use vehicle emergency flashers while stopped.

3.2 Five (5) FMTs and one (1) helicopter team (if necessary) shall be formed as follows:

Team Call Signs	Number of Members	Transportation
Alpha	2	Land Vehicle
Bravo	2	Land Vehicle
Charlie	2	Land Vehicle
Delta	2	Land Vehicle
Echo	1	Helicopter
Foxtrot	2	(Onsite Team)

3.3 Each FMT shall use particulate masks and protective clothing whenever activity justifies it or when directed by the Field Monitoring Coordinator (FMC).

3.4 If the team members are expected to be exposed to I-131 in excess of 70 MPC (6.1×10^{-7} µCi/ml), and directed by the FMC, each team member should ingest a tablet of potassium iodide per Reference 2.7.

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

3.6 Minimum labeling requirements for all samples are as follows:

3.6.1 Date and time.

3.6.2 Location.

3.6.3 Volume of the sample (if applicable).

3.6.4 Name of person sampling.

3.7 Each FMT shall maintain open radio communications with the FMC per Reference 2.8. If a radio becomes inoperable telephone the following:

3.7.1 FMC in the TSC at 831-8182 (Lake Wylie/Charlotte).

3.7.2 Station PBX Operator at 831-2282 (Lake Wylie/Charlotte). 861-0331 (Gaston County), 324-3128 (Rock Hill/Fort Mill), and request ext. 2598 for FMC.

3.8 If any equipment becomes inoperable, notify the FMC and wait for further instructions.

3.9 Annual training in the use of this procedure and the associated equipment and instrumentation shall be conducted and documented on TSR-10.

3.10 Portable MCA's shall be picked up at the Health Physics Counting Room when directed by the FMC or Reserve Personnel/Personnel Monitoring (RPPM) Leader. Ensure that the dewars are adequately filled per Reference 2.5.

3.11 Ensure that portable survey instrumentation is on and monitored during transport to all sampling locations.

3.12 When returning kits to the Emergency Kit Storage Room, perform an equipment inventory check using the Environmental Survey Kit Checklist (Reference 2.1). Note deviations and forward to the Respiratory/Instrument Calibration Supervisor.

4.0 PROCEDURE

4.1 Activation

4.1.1 Upon notification and assembly, FMT Foxtrot will obtain a portable radio, a site map and portable survey instruments from the HP Instrument Issue Area.

4.1.1.1 Team Foxtrot will then be dispatched, as per the FMC, up to the exclusion area boundary fence at the estimated plume location.

4.1.2 The remaining FMT members shall:

4.1.2.1 Report to the Emergency Kit Storage Room in the Temporary Administration Building to get Environmental Survey Kits.

4.1.2.2 Ensure the tamper seal on the Environmental Survey kits have not been broken and inventory any that have (Reference 2.1).

4.1.2.3 Immediately place batteries in the portable survey instruments and make a communication check with FMC, using the portable FM radios and the radio in the vans.

4.1.2.3.1 Perform a battery check and survey the area for higher than background radiation levels.

4.1.2.3.2 Report any above background radiation levels to the FMC. As advised by the FMC, move to a low background area to complete source checks.

4.1.2.4 Source check survey instruments and portable MCA for proper operation (References 2.3, 2.4, 2.5, 2.6) if applicable.

4.1.2.4.1 Turn the E140N Count Rate Meter on and continuously monitor the audible signal while locating and tracking the plume.

4.1.2.5 Don TLD, high and low range dosimetry, and fill out dose cards.

4.1.2.6 Ensure the Portable Power Generator is operational and the gas can is fully fueled (Reference 2.1).

4.1.2.7 Obtain emergency vehicles as directed in Enclosure 5.9.

4.1.2.8 Each FMT will be dispatched as per the FMC.

4.1.2.9 The radio operator in the TSC shall complete Radio Operators Log Field Monitoring Data Sheet (Enclosure 5.4), with the appropriate information.

4.2 Locating and Tracking the Plume

4.2.1 At the assigned survey point, the FMT shall perform a general area Beta-Gamma survey. This method should be used to locate center and width of plume.

4.2.1.1 Record date, time, location and dose rate (mr/hr) on the Field Monitoring Data Sheet (Enclosure 5.5).

4.2.2 If survey results are less than or equal to expected background, call in the results to the FMC and wait for further instructions.

4.2.3 If survey results are greater than background, take protective actions as necessary. Then, if directed, take an air sample (volume should be > 10^6 ml) equipped with a Silver Zeolite Cartridge and particulate filter.

4.2.3.1 Insert cartridge with arrow pointing in.

4.2.3.2 Insert filter paper with smooth side facing out.

4.2.3.3 Calculate required sample time per Enclosure 5.6.

4.2.3.4 Place the electrical generator (gas powered or mounted generator in the vans) in service and start the air sampler ensuring the sampler is approximately two feet above the ground or higher.

4.2.3.4.1 Gas power generators should be kept from wet areas and handle with electrical gloves contained in the environmental monitoring kit.

4.2.3.4.2 Mounted electrical generation located in the emergency vans should be operated as follows to.

4.2.3.4.2.1 Ensure the engine of the van is running before energizing the generator.

4.2.3.4.2.2 Ensure the engine is running continuously if the generator is being used.

4.2.3.4.3 Ensure all sampling equipment is off the roadway for safety reasons.

4.2.3.5 When air sampling is complete, place the Silver Zeolite Cartridge in a thin plastic bag (baggie) for analysis. For transporting or storage place this into a labeled "zip-lock" bag.

4.2.3.6 Place filter in a separate poly bag and label.

4.2.3.7 As directed by the FMC, transport the completed sample to a vehicle that is carrying a Canberra Series - 10 Portable MCA for analysis per Reference 2.5.

4.2.3.8 Ensure the correct information is annotated on the Field Monitoring Team Work Sheet for Determining Iodine Activity (Enclosure 5.7).

4.2.3.9 Wait for further instructions from the FMC.

4.3 Special Sampling, as directed:

4.3.1 When sampling away from the emergency vehicles and no one is present to monitor the radio do the following:

4.3.1.1 For the emergency vans, ensure the exterior speaker is on and volume turned up. Switch located near the radio monitor on the right side of the drivers seat.

4.3.1.2 For other Station vehicle or personnel vehicles, carry the portamoble radio to the sampling location.

4.3.2 All sampling outside of Auxiliary, Service and Turbine Buildings should be done in conjunction with Operations Support Center (OSC) personnel.

4.3.3 Take smears and place them in separate poly bags, label and retain for later analysis.

4.3.4 Count smears on E140N and record on Field Monitoring Data Sheet (Enclosure 5.5). Call in results to FMC.

4.3.5 Collect water sample(s) as per Reference 2.2 and retain for later analysis.

4.3.6 Place TLD's in the environment as per Reference 2.2.

4.3.7 Retrieve and replace air sample(s) and/or TLD's that are already located in the environment as per Reference 2.2. Locations are listed in Enclosure 5.1. Retain sample(s) for later analysis.

4.3.8 Collect broad leaf vegetation sample(s) as per Reference 2.2 and retain for later analysis.

NOTE: Leaves in the shape of needles, i.e. pine or spruce needles, are not considered to be broad leaf vegetation.

4.3.9 Collect shoreline sediment sample(s) as per Reference 2.2 and retain for later analysis.

4.3.10 Collect milk sample(s) as per Reference 2.2 and retain for later analysis. Locations are listed in Sample Enclosure 5.2.

4.4 Contamination Control Considerations

4.4.1 Don Anti-Cs inside the vehicle before leaving the vehicle.

4.4.2 Paper Anti-Cs should be used over cloth Anti-Cs and discarded before re-entering the vehicle.

4.4.3 Once a release has occurred, vehicle windows should be closed with ventilation off (unless filtration or recirculation is available on the ventilation) to minimize contamination until the plume area is identified. Depending on weather conditions (extreme heat or cold), this may not be possible.

4.5 Turnover

4.5.1 Each FMT shall be relieved as directed by the FMC.

4.5.2 Inform the relief FMT on the status of the following:

4.5.2.1 Radiation surveys and dose rates in the plume area.

4.5.2.2 Kit Inventory consumed.

4.5.2.3 Equipment operating status.

4.5.2.4 Any sampling problems.

4.5.2.5 Plant status information.

4.5.3 Direct the relief FMT to don TLD's and pocket dosimetry and fill out dose cards.

4.5.4 Return all samples to the Emergency Kit Storage Room as directed by the FMC.

4.5.5 Turn in all data sheets to the FMC or his designee.

5.0 ENCLOSURES

5.1 Air Sampler, TLD, and Water Sample Locations

5.2 Milk Sample Locations

5.3 Predetermined Sampling Locations

5.4 Sample of Radio Operators Log Field Monitoring Survey Data

5.5 Sample of Field Monitoring Data Sheet

5.6 Sample Time Required For Minimum Sample Volume

5.7 Sample of Field Monitoring Team Work Sheet For Determining Iodine Activity

5.8 TSC Field Monitoring Organization

5.9 Emergency Vehicles

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	1	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for 1.1 miles to end of road (TLD & Air CNS #200, need key).
A0	1	5	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. for .7 miles, left on Blue Bird Ln. for .1 miles to end (TLD & Air CNS #201, need key).
A0	1	26	Location at the base of Catawba Nuclear Station Meterological Tower (TLD & Air CNS #205, need key).
B1	3	1	Hwy. 49-N for 8 miles, right Hwy. 160 for 2.8 miles, right on Gold Hill Rd. (98) at Tega Cay sign for 1.2 miles, right on gravel road into Duke Power Company substation (TLD & Air CNS #212, need key).
C2	10	5	Hwy. 274-S for 5.1 miles, left Hwy. 161 for 1.3 miles, right on Rawlinson Rd. (56) for 1.8 miles, left on Hwy. 5 for 1.6 miles, right on Heckle Blvd. (901) for 3.3 miles to end of road, left on Hwy. 72 for 1.2 miles, right on dirt road across from Wayne's Auto Service. Go .1 miles to Duke Power Company substation on left (TLD & Air CNS #217, need key).
A0	1	1	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for 1.1 miles to end of road (TLD & Air CNS #200, need key).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	5	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. for .7 miles, left on Blue Bird Ln. for .1 miles to end (TLD & Air CNS #201, need key).
A0	1	8	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. Go .3 miles to first drive on right past Paradise Pl., TLD across road (TLD CNS #202).
A0	1	11	Left exiting Steam Production entrance on Concord Rd., for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. for .2 miles. TLD is on left in curve (TLD CNS #223).
A0	1	14	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .2 miles. TLD is on right side of road (TLD CNS #224).
A0	1	17	Left exiting Steam Production entrance on Concord Rd. for 1.1 miles to first transmission tower on left after bridge (TLD CNS #225).
A0	1	20	Left exiting Steam Production entrance on Concord Rd. for .7 miles. TLD on left just past fence (TLD CNS #226).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	23	Left exiting Steam Production entrance on Concord Rd. for .4 miles. TLD on left at beginning of guardrail posts (TLD CNS #204).
A1	4	2	Hwy. 49-N for 6.5 miles to the intersection of Pleasant Hill Rd. (1109). TLD is on the transmission tower on left (TLD CNS #232).
A1	4	4	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for .6 miles, left on Zoar Rd. (1105) for .4 miles, right on Thomas Rd. (1104) for .1 miles. TLD is behind second house on.
B1	3	1	Hwy. 49-N for 8 miles, right on Hwy. 160 for 2.8 miles, right on Gold Hill Rd. (98) at Tega Cay sign for 1.2 miles, right on gravel road into Duke Power Company substation (TLD & Air CNS #212, need key).
B1	4	3	Hwy. 49-N for 8 miles, right on Hwy. 160 for 3.9 miles, right on Dam Rd. (99) for 1.9 miles to last gravel road on right in sharp curve before Lake Wylie Dam, left through fence for .2 miles to substation, TLD on right of inner substation fence (TLD CNS #235).
B2	4	2	Hwy. 49-N for 8 miles, right on Hwy. 160 for 2.8 miles to the Home Federal Savings and Loan on left side of road. TLD on barbed wire fence approximately 50 yds. behind bank (TLD CNS #234).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
B2	7	6	Hwy. 49-N for 8 miles, right on Hwy. 160 for 7.1 miles, right on Lee St. for .1 miles, left on Self St. for approximately 100 yds. TLD at Fort Mill Municipal Water Supply on right behind Springs Mill (TLD CNS #247, Water CNS #213).
B2	8	1	Hwy. 49-N for 10 miles, right on Carowinds Blvd. (1441) for 1.3 miles, left on Choate Circle for .3 miles, TLD is on the inside of fence left of the guardhouse (TLD CNS #246).
A0	1	26	Location at the base of Catawba Nuclear Station Meterological Tower (TLD & Air CNS #205, need key).
A0	1	29	Left exiting Steam Production entrance on Concord Rd. for .1 miles. TLD at Shady Shore Dr. on right corner of.
A0	1	32	Right exiting Steam Production entrance on Concord Rd. for .1 miles. TLD is on right side of entrance to Valelake Rd. (TLD CNS #228).
A0	1	35	Right exiting Steam Production entrance on Concord Rd. for .4 miles. TLD on top of hill on right at the intersection of Catawba Nuclear Station Construction entrance (TLD CNS #206).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	38	Go through Construction Maintenance Dept. (Central) Main Gate for approx. 50 ft., left on Alternate 1 for approx. 200 ft. to stop sign, left on gravel road for .1 miles, left into rebar yard for .7 miles on gravel road to end at chain link fence. Follow chain link fence in a northerly direction for approx. 300 yds. TLD is hanging on fence (TLD CNS #229).
A0	1	41	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for .4 miles. TLD on fence on right (TLD CNS #207).
A0	1	44	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for 1 mile to large rock pile at fence. TLD is on fence (TLD CNS #222).
A0	1	45	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for 1.4 miles to end of road. TLD is on fence on the left side (TLD CNS #203).
C1	4	1	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 5.2 miles, left on India Hook Rd. (30) for .9 miles to the S.C. Wildlife Resources Dept. on left (TLD CNS #236).
C1	4	3	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 3 miles, right on Homestead Rd. (657) for 2.5 miles to end of road. TLD is straight across at intersection of Twin Lakes Rd. (TLD CNS #237).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE & RADIUS (Mi)	No.	DESCRIPTION
C1 4	5	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 1.3 miles, right on West Oak Dr. (962) for 1.2 miles to end at fork. TLD on left at fence. (TLD CNS #238).
C2 7	3	Hwy. 274-S for 9.2 miles, right on Herlong Ave. for .3 miles to Piedmont Medical Center emergency entrance to back of hospital. TLD on fence at back right corner of Liquid Oxygen storage area (TLD CNS #248).
C2 8	6	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 1.3 miles, right on Rawlinson Rd. (56) for 1.8 miles, left on Hwy. 5 for .5 miles to Rock Hill Career Development Center on right. TLD on transmission tower in front of building (TLD CNS #249).
C2 10	5	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 1.3 miles, right on Rawlinson Rd. (56) for 1.8 miles, left on Hwy. 5 for 1.6 miles, right on Heckle Blvd. (901) for 3.3 miles to end of road, left on Hwy. 72 for 1.2 miles, right on dirt road across from Wayne's Auto Service. Go .1 miles to Duke Power Company substation on left (TLD & Air CNS #217, need key).
D1 4	2	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 2.3 miles, left on.
D1 5	1	Hwy. 274-S for 5 miles to Carter Lumber Co. TLD on fence near gate (TLD CNS #239).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
D1	5	4	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3 miles. TLD on left at beginning of fence (TLD CNS #241).
D2	10	4	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3.4 miles, left on Hwy. 49-S for 5.2 miles, left on North Congress St. (64) for .7 miles, left on Hwy. 5 for .2 miles to Duke Power Company Appliance Center on left. TLD on fence in back (TLD CNS #250).
E1	5	2	Hwy. 49-S for 3 miles, right on Paraham Rd. (54) for .7 miles to transmission tower on left after bridge (TLD CNS #242).
E1	5	3	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 2.3 miles, left on Kingsburry Rd. (114) for .4 miles to transmission tower on left (TLD CNS #243).
E2	10	2	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 7.4 miles to Duke Power Company Appliance Center on left. TLD on fence in back of building (TLD CNS #251).
F1	4	1	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 1.5 miles to Bethel School. TLD on side of small building in back (TLD CNS #244).
F1	4	3	Hwy. 274-N for 3.4 miles, left on Glenvista Rd. to Crowders Creek boat landing. TLD to east of parking lot (TLD CNS #245).

DUKE POWER COMPANY
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ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
F1	4	4	Hwy. 274-N for 3.1 miles to River Hills Plantation rear entrance at Hamilton's Ferry Rd. TLD behind green building on right corner (TLD CNS #230).
F1	4	6	Hwy. 49-N for 4.1 miles to River Hills Plantation entrance guardhouse (TLD CNS #231).
A0	1	46	Left exiting Steam Production entrance on Concord Rd. for .7 miles. Turn left just after canal bridge. Go to pier (Water CNS #208, need key).
A1	4	6	Hwy. 49-N for 5.6 miles, left at Camp Steere sign after crossing Buster Boyd Bridge for .7 miles to end of road (Water CNS #215).
B1	4	5	Hwy. 49-N for 8 miles, right on Hwy. 160 for 3.9 miles, right on Dam Rd. (99) for 1.6 miles, left on Gray Rock Rd. (251) for .7 miles to Lake Wylie Dam. Walk through plant to upstream side of the dam (Water CNS #211).
B1	4	6	Hwy. 49-N for 8 miles, right on Hwy. 160 for 3.9 miles, right on Dam Rd. (99) for 1.6 miles, left on Gray Rock Rd. (251) for .7 miles to Lake Wylie Dam. Go to river access on downstream side of dam.
B2	7	6	Hwy. 49-N for 8 miles, right on Hwy. 160 for 7.1 miles, right on Lee St. for .1 miles, left on Self St. for approximately 100 yds. TLD at Fort Mill Municipal Water Supply on right behind Springs Mill (TLD CNS #247, Water CNS #213).

DUKE POWER COMPANY
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ENCLOSURE 5.1

AIR SAMPLER, TLD, AND WATER SAMPLE LOCATIONS

AIR SAMPLE LOCATIONS (NEED KEY, CPD-1)

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
C2	7	2	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 8.5 miles to the intersection of Cherry Rd. Go to Rock Hill Municipal Water Supply across intersection on left (Water CNS #214).
C2	7	8	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 7.6 miles, left on Hwy. 161 for 1.1 miles, left on Hwy. 21 for .4 miles, left on Grier McGuire Rd. for .5 miles to end of road.
F3	14	4	Hwy. 274-N for 5 miles, right on Pole Branch Rd. (279) for 2.8 miles, right on Hwy. 273 for 7.2 miles into Belmont, right on Catawba St. for .6 miles, left at next light for .2 miles to Belmont Municipal Water Supply (Water CNS #218).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.2
MILK SAMPLE LOCATIONS

ZONE	& RADIUS (Mi)	MILK	DESCRIPTION
D1	6	M	Hwy. 274-S for 5.1 miles, right on Hwy. 161 for 2.1 miles, left on Rd. 1080 for .5 miles to Pursley Dairy.
D2	8	M	Hwy. 274-S for 5.1 miles, right on Hwy. 161 for 4.7 miles, left at Scism Dairy and Equipment Co. (CASE sign).
E2	6	M	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 3.3 miles, left on Clinton Dairy Rd. to end of road.
F1	3	M	Hwy. 274-N for 2.2 miles, right on Lake Wylie Rd. (1099) for .1 miles to first house on left (Ingram Richmond residence).
F2	7	M	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 3 miles, right on Paraham Rd. (54) for 1.5 miles, left on Hwy. 557 for 1 mile. Barnett Dairy on left.
D1	7	M	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for .1 miles, right on Adnah Church Rd. (81) for 1.4 miles. Woods Dairy is on the left.
F2	13	M	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 9.5 miles through Clover, S.C., right on Lloyd White Rd. (148) for 2.3 miles , left on Crowders Creek Rd. (1103) for 1.3 miles, right on Sparrow Springs Rd. (1125) for .5 miles. Oates Dairy is on the left.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	1	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for 1.1 miles to end of road (TLD & Air CNS # 200, need key).
A0	1	2	Hwy. 274-N for 2.2 miles, right on Lake Wylie Rd. (1099) for 2.2 miles to fork in road, right at fork onto Commodore Pl. for .2 miles, left on Tioga Rd. for .3 miles to end of road.
A0	2	3	Hwy. 274-N for 2.2 miles, right on Lake Wylie Rd. (1099) for 2.2 miles to fork in road where pavement ends.
A0	2	4	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 3 miles to fork in road, left at fork for .6 miles to end at Catawba Yacht Club.
A0	1	5	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. for .7 miles, left on Blue Bird Ln. for .1 miles to end (TLD & Air CNS #201, need key).
A0	1	6	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 2.8 miles, left on Snug Harbor Rd. (1357) for .5 miles, right on Kalabash Rd. for .3 miles, right on Cozy Cove Rd. (1434) for .5 miles to end.
A0	2	7	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 2.8 miles to the intersection of Snug Harbor Rd. (1357).
A0	1	8	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. Go .3 miles to first drive on right past Paradise Pl., TLD across road (TLD CNS #202).
A0	1	9	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
			right on Youngblood Rd. (1102) for 2.3 miles, left on Snug Harbor Rd. (1357) for 1.3 miles to end of road.
A0	2	10	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 2.8 miles, left on Snug Harbor Rd. (1357) for 1.3 miles, left on Crosshavens Dr. for .3 miles to end of road.
A0	1	11	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .3 miles, left on Crepe Myrtle Rd. for .2 miles. TLD is on left in curve (TLD CNS #223).
A0	1	12	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 1.6 miles, left on McKee Rd. (1100) for 1.2 miles, right on Bankhead Rd. for 1.2 miles to end of road.
A0	2	13	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 1.6 miles, left on McKee Rd. (1100) for 1.2 miles, right on Bankhead Rd. for .4 miles to the intersection of Bessbrook Rd.
A0	1	14	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for .3 miles, right on Acacia Rd. for .2 miles. TLD is on right side of road (TLD CNS #224).
A0	1	15	Left exiting Steam Production entrance on Concord Rd. for 1.3 miles, left on Kingfisher Dr. for 1.8 miles to Commodore Yacht Club.
A0	1	16	Left exiting Steam Production entrance on Concord Rd. for 1.3 miles where pavement ends.
A0	1	17	Left exiting Steam Production entrance on Concord Rd. for 1.1 miles to first transmission tower on left after bridge (TLD CNS #225).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	18	Left exiting Steam Production entrance on Concord Rd. for 1.7 miles, right on Sandlapper Rd. for .2 miles. Stop at transmission tower.
A0	2	19	Hwy. 274-S for 1.6 miles, left on Allison Creek Rd. (1081) for 3 miles to end of pavement.
A0	1	20	Left exiting Steam Production entrance on Concord Rd. for .7 miles. TLD on left just past fence (TLD CNS #226).
A0	1	21	Hwy. 274-S for 1.6 miles, left on Allison Creek Rd. (1081) for 1.7 miles, left on Spratt Rd. to end. (Beware of dogs).
A0	2	22	Hwy. 274-S for 1.6 miles, left on Allison Creek Rd. (1081) for 1.6 miles to intersection of Bardale Rd.
A0	1	23	Left exiting Steam Production entrance on Concord Rd. for .4 miles. TLD on left at beginning of guardrail posts (TLD CNS #204).
A0	1	24	Hwy. 274-S for 1.6 miles, left on Allison Creek Rd. (1081) for 1.7 miles, left at Spratt Rd. for .1 miles, left on Morrison Rd., right at first 2 forks then left at next fork to end for a total of .5 miles.
A0	2	25	Hwy. 274-S for 1.6 miles, left on Allison Creek Rd. (1081) for 1.7 miles to intersection of Spratt Rd.
A0	1	26	Location at the base of Catawba Nuclear Station Meterological Tower (TLD & Air CNS #205, need key).
A0	1	27	Right exiting Steam Production entrance on Concord Rd. for .1 miles, left on Valelake Rd. for .1 miles to fork in road, left at fork for .5 miles to end of road.
A0	2	28	Hwy. 274-S for 1.6 miles, left on Allison Creek Rd. (1081) for 1 mile to intersection of Colina Rd.

DUKE POWER COMPANY
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	29	Left exiting Steam Production entrance on Concord Rd. for .1 miles. TLD at Shady Shore Dr. on right corner of Bethel Community Clubhouse sign (TLD CNS #227).
A0	1	30	Right exiting Steam Production entrance on Concord Rd. for .1 miles, left on Valelake Rd. for .1 miles to fork in road, right at fork for .5 miles to end of road.
A0	2	31	Hwy. 274-S for 1.2 miles to the intersection of Campbell Rd. (80).
A0	1	32	Right exiting Steam Production entrance on Concord Rd. for .1 miles. TLD is on right side of entrance to Valelake Rd. (TLD CNS #228).
A0	1	33	Right exiting Steam Production entrance on Concord Rd. for 1 mile, left on Pine Point Dr. for .5 miles.
A0	2	34	Hwy. 274-S for .7 miles to Big Allison Creek Bridge.
A0	1	35	Right exiting Steam Production entrance on Concord Rd. for .4 miles. TLD on top of hill on right at the intersection of Catawba Nuclear Station Construction entrance (TLD CNS #206).
A0	1	36	Right exiting Steam Production entrance on Concord Rd. for .9 miles. Stop at entrance to transmission lines.
A0	2	37	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .3 miles, left on Fremont Rd. for .2 miles to end of road.
A0	1	38	Go through Construction Maintenance Dept. (Central) Main Gate for approximately 50 ft., left on Alternate 1 for approximately 200 ft. to stop sign, left on gravel road for .1 miles, left into rebar yard for .7 miles on gravel road to end at chain link fence. Follow chain link fence in a northerly direction for approximately 300 yards. TLD is hanging on fence (TLD CNS #229).

DUKE POWER COMPANY
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A0	1	39	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for .3 miles to third transmission tower on right.
A0	2	40	Right exiting Steam Production entrance on Concord Rd. for 1.3 miles, right on Hwy. 274-N for 1 mile.
A0	1	41	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for .4 miles. TLD on fence on right (TLD CNS #207).
A0	1	42	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for .8 miles to softball field entrance.
A0	2	43	Hwy. 274-N for 2.2 miles, right on Lake Wylie Rd. (1099) for 1.9 miles, right on Beaver Creek Trail for .3 miles to end of road.
A0	1	44	Hwy. 274-N for .5 miles, right on Liberty Hill Rd. for .4 miles to fork in road, right at fork for 1 mile to large rock pile at fence. TLD is on fence (TLD CNS #222).
A0	1	45	Left exiting Steam Production entrance on Concord Rd. for 1.2 miles, left on Old Concord Rd. for 1.4 miles to end of road. TLD is on fence on the left side (TLD CNS #203).
A0	1	46	Left exiting Steam Production entrance on Concord Rd. for .7 miles. Turn left just after canal bridge. Go to pier (Water CNS #208, need key).
A1	3	1	Hwy. 49-N for 4.8 miles to the N.C. side of Buster Boyd Bridge.
A1	4	2	Hwy. 49-N for 6.5 miles to the intersection of Pleasant Hill Rd. (1109). TLD is on the transmission tower on left (TLD CNS #232).

DUKE POWER COMPANY
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
A1	5	3	Hwy. 49-N for 7.8 miles to Steele Creek Volunteer Fire Department on right.
A1	4	4	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for .6 miles, left on Zoar Rd. (1105) for .4 miles, right on Thomas Rd. (1104) for .1 miles. TLD is behind second house on right in pines (TLD CNS #233).
A1	5	5	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for .3 miles, left on Hamilton Rd. (1106) for .7 miles to the intersection of Hwy. 160.
A1	4	6	Hwy. 49-N for 5.6 miles, left at Camp Steere sign after crossing Buster Boyd Bridge for .7 miles to end of road (Water CNS #215).
A2	10	1	Hwy. 49-N for 11.4 miles to Westinghouse Blvd. Go 1 mile past Westinghouse Blvd. to Roberts Systems 8500 on left.
A3	10	1	Hwy. 49-N for 10 miles, right on Carowinds Blvd. (1441) for 3 miles, left on Hwy. 51 for 2.1 miles to Sugar Creek Bridge.
B1	3	1	Hwy. 49-N for 8 miles, right on Hwy. 160 for 2.8 miles, right on Gold Hill Rd. (98) at Tega Cay sign for 1.2 miles, right on gravel road into Duke Power Company substation (TLD & Air CNS #212, need key).
B1	2	2	Hwy. 49-N for 6.5 miles, right on Pleasant Hill Rd. (1109) for .5 miles, right on Youngblood Rd. (1102) for 1.6 miles, left on McKee Rd. (1100) for 1.2 miles, left on Bankhead Rd. for .4 miles, left on Bessbrook Rd. for .8 miles to end of road.

DUKE POWER COMPANY
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
B1	4	3	Hwy. 49-N for 8 miles, right on Hwy. 160 for 3.9 miles, right on Dam Rd. (99) for 1.9 miles to last gravel road on right in sharp curve before Lake Wylie Dam, left through fence for .2 miles to substation. TLD on right of inner substation (TLD CNS #235).
B1	2	4	Hwy. 49-N for 8 miles, right on Hwy. 160 for 2.8 miles, right on Gold Hill Rd. (98) at Tega Cay sign. Enter Tega Cay following Tega Cay Dr. for 2.6 miles, right on Windjammer Dr. for .6 miles to circle, right at circle for .2 miles, left on Kiwi Point for .2 miles to end of road.
B1	4	5	Hwy. 49-N for 8 miles, right on Hwy. 160 for 3.9 miles, right on Dam Rd. (99) for 1.6 miles, left on Gray Rock Rd. (251) for .7 miles to Lake Wylie Dam. Walk through plant to upstream side of the dam (Water CNS #211).
B1	4	6	Hwy. 49-N for 8 miles, right on Hwy. 160 for 3.9 miles, right on Dam Rd. (99) for 1.6 miles, left on Gray Rock Rd. (251) for .7 miles to Lake Wylie Dam. Go to river access on downstream side of dam.
B2	8	1	Hwy. 49-N for 10 miles, right on Carowinds Blvd. (1441) for 1.3 miles, left on Choate Circle for .3 miles. TLD is on the inside of fence left of the guardhouse (TLD CNS #246).
B2	4	2	Hwy. 49-N for 8 miles, right on Hwy. 160 for 2.8 miles to the Home Federal Savings and Loan on left side of road. TLD on barbed wire fence approximately 50 yds. behind bank (TLD CNS #234).
B2	5	3	Hwy. 49-N for 8 miles, right on Hwy. 160 for 2.8 miles, left on Gold Hill Rd. (98) for 1 mile, stop at the intersection of Whitley Rd.

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PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
B2	10	4	Hwy. 49-N for 10 miles, right on Carowinds Blvd. (1441) for 3 miles, left on Hwy. 51 for 3 miles, right on Hwy. 521 (Polk St.) for 2.9 miles, right on Dorman Rd. for 1.1 miles, stop at the state line.
B2	5	5	Hwy. 49-N for 8 miles, right on Hwy. 160 for 5.6 miles, right on Sutton Rd. (49) for 1.1 miles to the intersection of Gray Rock Rd. (251).
B2	7	6	Hwy. 49-N for 8 miles, right on Hwy. 160 for 7.1 miles, right on Lee St. for .1 miles, left on Self St. for approximately 100 yds. TLD at Fort Mill Municipal Water Supply on right behind Springs Mill (TLD CNS #247, Water CNS #213).
B2	10	7	Hwy. 49-N for 8 miles, right on Hwy. 160 for 10 miles through Fort Mill to the Sugar Creek Bridge.
C1	4	1	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 5.2 miles, left on India Hook Rd. (30) for .9 miles to the S.C. Wildlife Resources Dept. on left (TLD CNS #236).
C1	5	2	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 5.6 miles to Red Burketts Body Shop on right.
C1	4	3	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 3 miles, right on Homestead Rd. (657) for 2.5 miles to end of road. TLD is straight across at intersection of Twin Lake Rd. (TLD CNS #237).
C1	5	4	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 3 miles, right on Homestead Rd. (657) for 2.5 miles to end of road.
C1	4	5	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 1.3 miles, right on West Oak Dr. (962) for 1.2 miles to end at fork. TLD on left at fence (TLD CNS #238).

DUKE POWER COMPANY
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
C1	5	6	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 2.2 miles to fork in road, left at fork for .1 miles, S.C. National Guard Armory on left side of road.
C1	5	7	Hwy. 274-S for 5 miles to Carter Lumber Company.
C2	10	1	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 2.2 miles to fork in road, left at fork on Celanese Rd. (50) for 8.2 miles to the intersection of Springdale Rd.
C2	7	2	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 8.5 miles to the intersection of Cherry Rd. Go to Rock Hill Municipal Water Supply across intersection on left (Water CNS #214).
C2	7	3	Hwy. 274-S for 9.2 miles, right on Herlong Ave. for .3 miles to Piedmont Medical Center emergency entrance to back of hospital. TLD on fence at back right corner of Liquid Oxygen storage area (TLD CNS #248).
C2	10	4	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 5.7 miles, right on Mt. Gallant Rd. (195) for 1.5 miles, right on Hwy. 21-121 Bypass for 2 miles to the Fast Fare on left at the intersection of Springsteen Rd.
C2	10	5	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 1.3 miles, right on Rawlinson Rd. (56) for 1.8 miles, left on Hwy. 5 for 1.6 miles, right on Heckle Blvd. (901) for 3.3 miles to end of road, left on Hwy. 72 for 1.2 miles, right on dirt road across from Wayne's Auto Service. Go .1 miles to Duke Power Company substation on left (TLD & Air CNS #217, need key).
C2	8	6	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for 1.3 miles, right on Rawlinson Rd. (56) for 1.8 miles, left on Hwy. 5 for .5 miles to Rock Hill Career Development Center on right. TLD on transmission tower in front of building (TLD CNS #249).

DUKE POWER COMPANY
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
C2	10	7	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for .1 miles, right on Adnah Church Rd. (81) for 2.9 miles, right on Hwy. 5 for .2 miles, left on Eastview Rd. (102) for 3.2 miles, right on Hwy. 322 for .1 miles, left on Falls Rd. for .9 miles to the intersection of Oak Park Rd. (103).
C2	7	8	Hwy. 274-S for 3.8 miles, left on Mt. Gallant Rd. (195) for 7.6 miles, left on Hwy. 161 for 1.1 miles, left on Hwy. 21 for .4 miles, left on Grier McGuire Rd. for .5 miles to end of road.
D1	5	1	Hwy. 274-S for 5 miles to Carter Lumber Company. TLD on fence near gate (TLD CNS #239).
D1	4	2	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 2.3 miles, left on Paraham Rd. (54) for 1.5 miles to transmission tower on right. TLD on power pole (TLD CNS #240).
D1	5	3	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 2.3 miles, left on Paraham Rd. (54) for .6 miles, right on Harper Rd. (815) for 1.4 miles to Allison Creek Bridge.
D1	5	4	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3 miles. TLD on left at beginning of fence (TLD CNS #241).
D2	10	1	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for .1 miles, right on Adnah Church Rd. (81) for 2.9 miles, right on Hwy. 5 for .2 miles, left on Eastview Rd. (102) for 1 mile, right on Holland Rd. (157) for .7 miles, right on Turkey Farm Rd. (1172) for 1.2 miles, left on Russell Rd. (536) for .2 miles.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
D2	10	2	Hwy. 274-S for 5.1 miles, left on Hwy. 161 for .1 miles, right on Adnah Church Rd. (81) for 2.9 miles, right on Hwy. 5 for .3 miles, left on Billy Wilson Rd. (1451) for 2.2 miles, right on Turkey Farm Rd. (1172) for .8 miles, left on Benfield Rd. for .3 miles to Fishing Creek Bridge.
D2	10	3	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3.4 miles, left on Hwy. 49-S for 5 miles. Stop at Pantry on left.
D2	10	4	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3.4 miles, left on Hwy. 49-S for 5.2 miles, left on North Congress St. (64) for .7 miles, left on Hwy. 5 for .2 miles to Duke Power Company Appliance Center on left. TLD on fence in back (TLD CNS #250).
D2	10	5	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3.4 miles, left on Hwy. 49-S for 1.7 miles, right on Old Limestone Rd. (172) for 4.3 miles to end of road.
E1	5	1	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 3.4 miles to the intersection of Hwy. 49.
E1	5	2	Hwy. 49-S for 3 miles, right on Paraham Rd. (54) for .7 miles to transmission tower on left after bridge (TLD CNS #242).
E1	5	3	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 2.3 miles, left on Kingsburry Rd. (114) for .4 miles to transmission tower on left (TLD CNS #243).
E1	5	4	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 2.3 miles to the intersection of Kingsburry Rd. (114).
E2	5	1	Hwy. 274-S for 1.2 miles, right on Campbell Rd. (80) for 2.3 miles, right on Paraham Rd. (54) for .9 miles to the intersection of Dr. Nichols Rd. (819).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
E2	10	2	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 7.4 miles to Duke Power Company Appliance Center on left. TLD on fence in back of building (TLD CNS #251).
E2	10	3	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 7.3 miles to the Pantry on left at the intersection of Hwy. 321 (behind Pantry).
F1	4	1	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 1.5 miles to Bethel School. TLD on side of small building in back (TLD CNS #244).
F1	5	2	Hwy. 274-N for 2.1 miles, left on Hwy. 55 for 1.5 miles, right on Bethel School Rd. (152) for 1 mile to the intersection of Holland Dr.
F1	4	3	Hwy. 274-N for 3.4 miles, left on Glenvista Rd. to Crowders Creek boat landing. TLD to east of parking lot (TLD CNS #245).
F1	4	4	Hwy. 274-N for 3.1 miles to River Hills Plantation rear entrance at Hamilton's Ferry Rd. TLD behind green building on right corner (TLD CNS #230).
F1	5	5	Hwy. 49-N for 2.9 miles to Sherer Memorial Presbyterian Church parking lot on left.
F1	4	6	Hwy. 49-N for 4.1 miles to River Hills Plantation entrance guardhouse (TLD CNS #231).
F1	5	7	Hwy. 49-N for 3.6 miles, left on Montgomery Rd. for 1 mile. Stop in horseshoe curve near lake.
F2	10	1	Hwy. 274-N for 4.2 miles, left on Hwy. 557 for 2.2 miles, right on Ridge Rd. (27) for 5 miles to Bowling Green Presbyterian Church.
F2	5	2	Hwy. 274-N for 4.2 miles, left on Hwy. 557 for .6 miles to Pine Grove Baptist Church.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
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ENCLOSURE 5.3
PREDETERMINED SAMPLING LOCATIONS

ZONE	& RADIUS (Mi)	No.	DESCRIPTION
F3	10	1	Hwy. 274-N for 4.2 miles, left on Hwy. 557 for .9 miles, right on Oakridge Rd. (435) at Bethel Fire Dept. for 5.4 miles to the intersection of Hwy. 274 (in N.C.)
F3	10	2	Hwy. 274-N for 5 miles, right on Pole Branch Rd. (279) for 5.8 miles to Friendship Baptist Church on left.
F3	10	3	Hwy. 274-N for 5 miles, right on Pole Branch Rd. (279) for 2.8 miles, right on Hwy. 273 for 3 miles to Allen Steam Plant Bridge.
F3	14	4	Hwy. 274-N for 5 miles, right on Pole Branch Rd. (279) for 2.8 miles, right on Hwy. 273 for 7.2 miles into Belmont, right on Catawba St. for .6 miles, left at next light for .2 miles to Belmont Municipal Water Supply (Water CNS #218).

DUKE POWER COMPANY

CATAWBA NUCLEAR STATION

ENCLOSURE 5.4

RADIO OPERATORS' LOG

FIELD MONITORING SURVEY DATA

Page _____ of _____

Station _____

Date _____

RMC _____

Radio Operator _____

FM Team	Status		Location of Survey/Sample				Time	Dose Rate (mR/hr.)	Air Samples I-131 (uCi/ml)	Miscellaneous Samples		
	Enroute	Arrival	Zone	Mile	Sample #	Description				Smear (c/m)	Veg.	Other/Comments

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.5
FIELD MONITORING DATA SHEET

Date ________ Team Members/Call Sign ____/____ Inst. Type/No. ____/____

Sample Location	Time Survey Taken	Dose Rate (mR/hr)	Smear Activity (CCPM)

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.6
SAMPLE TIME REQUIRED FOR MINIMUM SAMPLE VOLUME

FLOW RATE			MINIMUM REQUIRED SAMPLING TIME IN MINUTES
CFM		LPM	
.5	=	14	71
1.0	=	28	36
1.5	=	42	24
2.0	=	56	18
2.5	=	70	15
3.0	=	84	12
3.5	=	99	11
4.0	=	113	9
4.5	=	127	8

NOTE: When estimating time required to get a minimum volume of 1 x 10^6 ml if flow rate for the air sampler in use is not on table, go to next Lower flow rate. The LPM are rounded off to the conservative side.

Example: Air Sampler flow rate = 106 LPM. Minimum time 11 minutes

DUKE POWER COMPANY
CATAWBA NCULEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.7
FIELD MONITORING TEAM WORK SHEET FOR DETERMINING IODINE ACTIVITY

Team Members _____ Date _____ Air Sampler No. _____

Team Call Sign _____ Canberra No. _____

AIR SAMPLE INFORMATION			ANALYSIS RESULTS		
A Sample ID. No./Time/Location	B Air Sampler Run Time (Min)	C Flow Rate (LPM)	D Iodine Activity Microcuries/ml	E Dose Rate mrem/hr	F Results Reported By:
___/___/_____					
___/___/_____					
___/___/_____					
___/___/_____					
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Column A) Number of Sample/Time it was Taken/Sampling Location (ex. AO-2-10).
Column B) Length of time the air sampler ran.
Column C) Air sampler meter flow rate.
Column D) Activity from Canberra.
Column E) Dose rate from Canberra.
Column F) Signature of person that calls in results to FMC.

5.6.1 MCA and Detector Set-Up

5.6.1.1 Disconnect DC power cord from unit.

5.6.1.2 Turn the contrast switch on the front of the unit clockwise to the ON mode.

5.6.1.3 Place sample holder with Na-22 check source onto the detector.

5.6.1.4 Press TEST SYSTEM.

5.6.1.5 Press ENTER to begin test.

5.6.1.6 If test failed, press CLEAR ENTRY and remove the instrument from service.

5.6.1.7 If test passed, press ENTER.

5.6.2 Collecting and Measuring Filter Cartridges

NOTE: Record data on Field Monitoring Team Work Sheet for Determining Iodine Activity (Sample Enclosure 5.6).

5.6.2.1 Press ANALYZE FILTER SAMPLE.

5.6.2.2 Press ENTER.

5.6.2.3 For each sample:

5.6.2.3.1 Place cartridge with the recognizable side toward the detector (in small poly bag) in sample holder.

5.6.2.3.2 Put detector and sample holder in shield.

5.6.2.3.3 Press ENTER to accept ID number.

5.6.2.3.4 Press ENTER to accept current Flow Rate (LPM). Otherwise, change number and press ENTER.

5.6.2.3.5 Press ENTER to accept current Flow Time (min). Otherwise, change number and press ENTER.

5.6.2.3.6 If the volume is determined to be too small, resample, press ENTER and return to Step 5.6.2.3.

5.6.2.3.7 Press ENTER to start Collect/Analyze.

5.6.2.3.8 Report/Record Iodine activity (μCi/ml) and dose rate (mrem/hr).

5.6.2.3.9 Press NEXT SAMPLE.

5.6.2.3.10 Label the cartridge and retain for later analysis.

5.6.3 After sampling completion, turn the contract switch counter-clockwise to the STAND-BY mode.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.8
TSC FIELD MONITORING ORGANIZATION

POSITION	NAME	BUSINESS PHONE	HOME PHONE
Field Monitoring Coordinators:			
Primary:	[redacted]	[redacted]	
Alternates:			
TSC Radio Operators:			
Primary:	[redacted]		
Alternate:			

Field Monitoring Teams:

All Health Physics personnel with Field Monitoring Training.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/04
ENCLOSURE 5.9
EMERGENCY VEHICLES

5.9.1 The two designated emergency vehicles are the I&E and Health Physics vans. The two vehicles are to be obtained (as directed by the FMC) by doing the following.

5.9.1.1 I&E Van

5.9.1.1.1 Obtain keys from the emergency kit.

5.9.1.1.2 If the vehicle is off-site request the FMC to contact the vehicle by TSC radio, have the vehicle to return to site immediately and obtain use when it returns.

5.9.1.2 Health Physics Van

5.9.1.2.1 Obtain keys from the emergency kit.

5.9.1.2.2 If the vehicle is off-site request the FMC to contact the vehicle by TSC radio, have the vehicle return to site immediately and obtain use when it returns.

5.9.2 Obtain any other Station vehicle (if available) as directed by the FMC.

5.9.3 Voluntary use of personnel vehicles is another alternative that may be considered but should be a last option.

Form 34731 (R9-86)

(1) ID No. HP/0/B/1009/17

Change(s) 0 to 2 Incorporated

DUKE POWER COMPANY
PROCEDURE PROCESS RECORD

PREPARATION

(2) STATION Catawba Nuclear Station

(3) PROCEDURE TITLE Post-Accident Containment Air Sampling System

(4) PREPARED BY Maurice B. McClellan DATE 12/1/86

(5) REVIEWED BY Greg L. Gantt DATE 12/1/86

Cross-Disciplinary Review By _____ N/R MH Gantt

(6) TEMPORARY APPROVAL (If Necessary)

By _____ (SRO) DATE

By _____ DATE

(7) APPROVED BY H B Barron DATE 12/1/86

(8) MISCELLANEOUS

Reviewed/Approved By _____ DATE _____

Reviewed/Approved By _____ DATE _____

(9) COMMENTS (For procedure reissue indicate whether additional changes, other than previously approved changes, are included. Attach additional pages, if necessary.) ADDITIONAL CHANGES INCLUDED. ☐ Yes ☐ No

(10) COMPARED WITH CONTROL COPY _____ DATE _____

COMPLETION

(11) DATE(S) PERFORMED _____

(12) PROCEDURE COMPLETION VERIFICATION

☐ Yes ☐ N/A Check lists and/or blanks properly initialed, signed, dated or filled in N/A or N/R, as appropriate?

☐ Yes ☐ N/A Listed enclosures attached?

☐ Yes ☐ N/A Data sheets attached, completed, dated and signed?

☐ Yes ☐ N/A Charts, graphs, etc. attached and properly dated, identified and marked?

☐ Yes ☐ N/A Acceptance criteria met?

VERIFIED BY _____ DATE _____

(13) PROCEDURE COMPLETION APPROVED _____ DATE _____

(14) REMARKS (Attach additional pages, if necessary.)

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
POST-ACCIDENT CONTAINMENT AIR SAMPLING SYSTEM

1.0 PURPOSE

To describe a method for obtaining a containment air sample after a nuclear reactor accident using the Nuclear Post-Accident Containment Air Sampling System (PACS).

2.0 REFERENCES

2.1 HP/0/B/1000/06, Emergency Equipment Functional Check and Inventory

2.2 HP/0/B/1009/06, Alternative Methods for Determining Dose Rate Within the Reactor Building

2.3 CP/0/B/8800/13, Chemistry Procedure for the Preparation of Thiosulfate Solution for Post Accident Gas Sampling

2.4 OP/1/A/6450/10, Containment Hydrogen Control Systems

2.5 OP/2/A/6450/10, Containment Hydrogen Control Systems

2.6 RP/0/B/5000/12, Control of Assessment and Repair Teams

2.7 Duke Power Company Nuclear Station Post-Accident Containment Air Sampling System II Manual, File No.: CNM-1210.09-0218001

2.8 NuReg-0737 II.B.3 Post-Accident Sampling Capability

2.9 Post-Accident Containment Air Sampling System - Qualifications, File No.: CN-134.10

3.0 LIMITS AND PRECAUTIONS

3.1 Exposure from the samples have the potential to be very high; therefore, appropriate surveillance and control of personnel shall be provided by Health Physics when taking samples. Entry and exit route to sample panel and control panel area are to be determined by Health Physics surveys.

3.2 The Recirc Pump shall never be used at any pressure other than 0" of Hg.

3.3 Moving the Selector switch (#9) from one mode to another stops all current system operations. Depressing the Activate pushbutton (#10) starts operation of the newly selected mode.

3.3.1 Numbers within parentheses (ex. #9) are locations on Enclosure 5.6 and on the control panel.

3.3.2 (SP) to the left of the enclosure step number requires a person to go to the sample panel.

3.4 The Radiation Monitor (#3) on the control panel should provide background levels of radiation prior to, during, and after sampling, and an indication of contamination within the system or panel for progressive samples.

3.5 If the needle of the Radiation Monitor (#3) exceeds the upper end of the meter scale while the lower scale (mR/hr) is being used, immediately turn the selector knob to the higher scale (R/hr).

3.6 If the Radiation Monitor (#3) reading cannot be reduced below 10 R/hr do not return to the sample panel, but contact the Reserve Personnel/Personnel Monitoring Leader (RPPM) immediately for further instructions.

3.7 If problems with the Radiation Monitor (#3) are evident (e.g. no indication of radiation on the meter), notify the RPPM and rely on Health Physics surveys to determine access to the sample panel.

3.8 If thiosulfate comes in contact with the skin during preparation, transferal or dilution, wash the affected area as soon as possible with soap and lukewarm water. Consult station nurse for further instructions.

3.8.1 Do not use NAOH solution and/or sodium thiosulfate crystals ($Na_2S_2O_3$-$5H_2O$) if the expiration dates on their labels have been exceeded.

3.8.2 Chemistry should prepare NAOH solution and sodium thiosulfate crystals ($Na_2S_2O_3$-$5H_2$) per Reference 2.3.

3.9 Dispose of contaminated syringes, septums, rubber gloves, etc., in appropriate radioactive waste receptacles.

3.10 Individuals that have been trained on this procedure are the individuals qualified to use this procedure. Individuals shall be trained and tested every six (6) months and documented in Reference 2.9.

3.11 Due to the nature of this procedure, a Working Copy shall be used to ensure compliance.

4.0 PROCEDURE

4.1 Follow steps on the RPPM PACS Checklist (Enclosure 5.1).

4.2 Follow steps on Post-Accident Containment Air Sampling Set-Up (Enclosure 5.2).

4.3 Follow steps on Taking Post-Accident Containment Air Samples (Enclosure 5.3) and complete Post-Accident Containment Air Sample Data Sheet (Enclosure 5.4) for each containment air sample request.

4.3.1 If applicable, determine containment dose rate per Reference 2.2.

4.4 Ensure the isotopic analysis of each containment air sample and its associated Enclosure 5.4 are submitted to the Station Health Physicist.

4.5 Follow steps on Post-Accident Containment Air Sampling Shut-Down (Enclosure 5.5).

4.6 File enclosures and associated calculations in the Health Physics Satellite Master File.

4.7 Connect an appropriate transfer container and drain the sump by turning the Key Lock switch (#48) to Sump Pump. Accompanying power light should illuminate.

4.8 Reinventory OSC kit after use per Reference 2.1.

5.0 ENCLOSURES

5.1 RPPM PACS Checklist

5.2 Post-Accident Containment Air Sampling Set-Up

5.3 Taking Post-Accident Containment Air Samples

5.4 Sample of Post-Accident Containment Air Sample Data Sheet

5.5 Post-Accident Containment Air Sampling Shut-Down

5.6 Post-Accident Containment Air Sampling Control Panel (PACP) Diagram

5.7 Post-Accident Containment Air Sampling Sample Panel (PASP) Diagram

5.8 Location of PACP and PASP

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.1
RPPM PACS CHECKLIST

Date/Time _____/_____ Unit _____

Check		Action
_____	5.1.1	After completion of Team Personnel Lists of Reference 2.6, select at least one qualified individual based on PACS training and MSA training (refer to Reference 2.9, Health Physics file 134.10-4 or the OSC Health Physics Notebook). Select another individual to accompany the other. Consider: - Age - Accumulated exposure - Sex - Ability to carry 100 lbs. together - Respiratory printout
_____	5.1.2	Consider the following for the PACS: - MSA SCBA's - Operable breathing air hookups - Throat mikes - Portable instruments (PIC-6A, Teletector) - High range dosimetry - Extremity dosimetry - To and from route to PACS - 1-EMF-2 Control Room readout - 2-EMF-1 Control Room readout - Flashlight - Radios - Control Points
_____	5.1.3	Request assistance in acquiring needed equipment from the Technical Support Center (TSC).
_____	5.1.4	Prepare Counting Room to receive sample. Consider: - RCZ setup - Shielding - Disposal of sample - MCA setup - Personnel - Dosimetry (high, extremity)
_____	5.1.5	If necessary, complete dose extension forms.
_____	5.1.6	Obtain a High Radiation Area key.
_____	5.1.7	Have equipment prepared for conditions at PACS. Consider: - Taping wheels on porta-pig - Bagging loose items

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.1
RPPM PACS CHECKLIST

Check		Action
_____	5.1.8	Inform selected individuals of precautions, Safety and Health Physics concerns and then have them obtain the sample.
_____	5.1.9	Remain in contact with the technicians throughout the sampling. They should report problems and data as they get them.
_____	5.1.10	Complete Enclosure 5.4 and route to Counting Room before the analysis takes place.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.2
POST-ACCIDENT CONTAINMENT AIR SAMPLING SET-UP

Date/Time _____/_____ Unit _____

Check		Action
_____	5.2.1	Inform the Shift Supervisor that gas sampling will be performed and that one Hydrogen Analyzer will need to be inoperable during sampling. Request that Operations complete the Setup Section for Post-Accident Containment Air Sampling of procedure OP/1/A/6450/10 or OP/2/A/6450/10 (see Reference 2.4 or 2.5).
_____	5.2.2	After notification that Operations has completed the PACS Setup Section, obtain the Post-Accident Containment Air Sampling Equipment located in the OSC Emergency Kit. The equipment should be the following:

Quantity	Item
1	- Post-Accident Control Panel (PACP) Key
2	- 500 ml Nalgene bottle labeled "2.42 x 10^{-3}M NaOH"
2	- vials of .3 gm $Na_2S_2O_3 - 5H_2O$
2	- 500 ml Nalgene bottle labeled "Iodine Sample"
2	- 100 ml gas bomb
2	- 60 ml Nalgene bottle - labeled "Iodine Sample"
1	- Stop watch

_____	5.2.3	Prepare thiosulfate solution by adding one vial of $Na_2S_2O_3$-$5H_2O$ to one bottle of NaOH. Shake vigorously until all of the crystals are dissolved. Relabel as "Thiosulfate".
_____	5.2.4	Verify that the Selector switch (#9) is in the Off position.
_____	5.2.5	Move the System Purge toggle switch (#20) to the Normal position.
_____	5.2.6	Move the Gas Purge toggle switch (#16) to the center position.
_____	5.2.7	Move the Refill toggle switch (#24) to the Off (down) position.
_____	5.2.8	Turn Key Lock switch (#48) to Power On. Accompanying power light should illuminate.
_____	5.2.9	Turn the Radiation Monitor (#3) On by moving the toggle switch (located below the meter) to the Up position.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.2
POST-ACCIDENT CONTAINMENT AIR SAMPLING SET-UP

Check		Action
_____	5.2.10	Turn the Radiation Monitor (#3) selector to BATT and verify that the needle is in the "red test region" on the right end of the scale. If reading is below the test region, rely on Health Physics surveys to determine access to the sample panel.
_____	5.2.11	Select the appropriate rate so that the needle is on the meter scale by first turning the selector knob to higher scale (R/hr) and, if necessary, to the lower scale (mR/hr).
_____(SP)	5.2.12	Open all four (4) service valves DI, VI, N_2 and TS by turning handles one-quarter turn counterclockwise. The DI, VI, and N_2 valves are located on the outside upper left side of the sample panel, and the TS valve is located on top of the sample panel.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.3
TAKING POST-ACCIDENT CONTAINMENT AIR SAMPLES

Date/Time _____/_____ Unit _____

Check		Action
_____	(SP) 5.3.1	Pour thiosulfate solution into the thiosulfate tank, located on top of the sample panel. Leave the cap off of the thiosulfate tank after transferring the thiosulfate solution (Refer to Section 5.2.3 for preparing more solution).
_____	(SP) 5.3.2	Attach an "Iodine Sample" bottle to the sample panel by inserting the plastic hose into the bottle located on the lower left side of the panel. Disconnect the quick connect connector on the lower side of the sample panel and replace with a gas bomb.
_____	5.3.3	Turn Key Lock switch (#48) to On.
_____	5.3.4	Turn Selector switch (#9) to System Purge.
_____	5.3.5	Depress Activate pushbutton (#10).
_____	5.3.6	Depress Evac pushbutton (#17) (Evac light should illuminate) and watch the vacuum gauge (#6) drop to -25" of Hg.
_____	5.3.7	When the vacuum gauge (#6) reaches -25" of Hg, depress the Stop pushbutton (#19).
_____	5.3.8	Press down the Gas Purge toggle switch (#16) and watch the vacuum gauge (#6) swiftly rise to +5" of Hg.
_____	5.3.9	When the vacuum gauge (#6) reaches +5" of Hg, return toggle switch (#16) to center position and depress the Stop pushbutton (#19).
_____	5.3.10	Depress the Evac pushbutton (#17) and watch the vacuum gauge (#6) drop to 0" of Hg.
_____	5.3.11	When vacuum gauge (#6) reaches 0" of Hg, depress the Stop pushbutton (#19).
_____	5.3.12	Depress Pump pushbutton (#18) and wait for thirty (30) seconds.
_____	5.3.13	Depress Stop pushbutton (#19).
_____	5.3.14	Press up the Gas Purge toggle switch (#16) and wait three (3) minutes.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.3
TAKING POST-ACCIDENT CONTAINMENT AIR SAMPLES

Check		Action
_____	5.3.15	Return the toggle switch (#16) to the center position.
_____	5.3.16	Turn Selector switch (#9) to Solution Changeout.
_____	5.3.17	Record the Radiation Monitor (#3) reading as a background reference: _____R/hr
_____	5.3.18	Depress Activate pushbutton (#10).
_____	5.3.19	Depress Flush pushbutton (#22) and hold five (5) seconds.
_____	5.3.20	Depress Purge pushbutton (#23) and hold ten (10) seconds.
_____	5.3.21	Depress Empty pushbutton (#21) and hold for thirty (30) seconds.
_____	5.3.22	Move the Refill toggle switch (#24) to ON (up) position and wait two (2) minutes and then move the toggle switch back to the Off (down) position.
_____	5.3.23	Turn Selector switch (#9) to Dilution Volume Evacuation.
_____	5.3.24	Depress the Activate pushbutton (#10) and watch the vacuum gauge (#6) drop to -25" of Hg.
_____	5.3.25	When the vacuum gauge (#6) reaches -25" of Hg, turn Selector switch (#9) to Sample Recirc.
_____	5.3.26	Depress Activate pushbutton (#10) and wait for five (5) minutes.
_____	5.3.27	Record sample line temperature reading (#4): _____°C
_____	5.3.28	Record sample inlet line pressure (psig) reading (#5): _____ psig
_____	5.3.29	Depress Sample pushbutton (#11) and wait for ten (10) seconds.
_____	5.3.30	Depress Trap pushbutton (#12) and wait for thirty (30) seconds.
_____	5.3.31	Enter time of sample trap: _____ (ex. 1355)
_____	5.3.32	Turn Selector switch (#9) to Sample Dilution.
_____	5.3.33	Depress Activate pushbutton (#10).
_____	5.3.34	Depress Slow pushbutton (#13) and watch the vacuum gauge (#6) rise to 0" of Hg.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.3
TAKING POST-ACCIDENT CONTAINMENT AIR SAMPLES

Check		Action
_____	5.3.35	When the vacuum gauge (#6) reaches 0" of Hg, depress the Stop pushbutton (#14).
_____	5.3.36	Depress the Recirc pushbutton (#15) and wait for five (5) minutes.
_____(SP)	5.3.37	Disconnect the quick connect on the gas bomb outlet side, wait five (5) seconds and disconnect the gas bomb. Replace the quick connect connector.
_____	5.3.38	Depress the Stop pushbutton (#14).
_____	5.3.39	Turn Selector switch (#9) to Solution Changeout.
_____	5.3.40	Depress Activate pushbutton (#10).
_____	5.3.41	Depress the TS Sample pushbutton (#25).
_____	5.3.42	Depress and hold the Empty pushbutton (#21) for five (5) minutes. Thiosulfate should transfer into the TS sample bottle.
_____	5.3.43	Depress Purge pushbutton (#23) and hold thirty (30) seconds.
_____	5.3.44	Depress TS Sample Grab pushbutton (#26).
_____	5.3.45	Turn Selector switch (#9) to System Purge.
_____	5.3.46	Depress Activate pushbutton (#10).
_____	5.3.47	Repeat steps 5.3.6 through 5.3.15 as needed until no noticeable decrease is observed on the Radiation Monitor (#3) from one purge to the next. Check blank in steps 5.3.6 through 5.3.15 each time the step is performed.
_____	5.3.48	Record the Radiation Monitor (#3) reading: _____ R/Hr
_____	5.3.49	Turn Key Lock switch (#48) to Off.
_____(SP)	5.3.50	Disconnect and tightly cap the "Iodine Sample" bottle.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.3
TAKING POST-ACCIDENT CONTAINMENT AIR SAMPLES

Check		Action
_____	5.3.51	Determine the Thiosulfate Sample Volume (TSV) and record this value as TSV: _____ ml
_____	5.3.52	Using standard chemistry laboratory techniques and under a sample hood, transfer 50 ml of the "Iodine Sample" into the 60 ml Nalgene bottle. Contact Radwaste Chemistry for instructions on disposal of excess sample.
_____	5.3.53	Place the 60 ml "Iodine Sample" bottle and the gas bomb into a shielded container as needed.
_____	5.3.54	Using a monitoring instrument (such as the R02A or PIC-6A) take a contact dose rate reading on the top of the gas bomb and on the side of the "Iodine Sample" bottle: _____ R/hr gas bomb, _____ R/hr "Iodine Sample"
_____	5.3.55	Transfer the "Iodine Sample" and gas bomb to the Health Physics Counting Room for isotopic analysis.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.4
SAMPLE OF POST-ACCIDENT CONTAINMENT AIR SAMPLE DATA SHEET

Date/Time: _____/_____ Unit _____

Prepared By: _____ Emergency - Drill ____
(Circle One)

First Radiation Monitor Reading from 5.3.17 _____ R/hr
Sample Line Temperature from 5.3.27 _____ °C
Sample Inlet Line Pressure from 5.3.28 _____ psig
Sample Trap Time from 5.3.31 _____
Second Radiation Monitor Reading from 5.3.48 _____ R/hr
Contact reading on gas bomb from 5.3.55 _____ R/hr (Top)
Contact reading on "Iodine Sample" bottle from 5.3.55 _____ R/hr (Side)

Containment Sample Volume --

$$CSV = 1.4 \text{ ml} \quad \frac{293°K}{(273°C + \_\_\_\_\_°C)°K} \times \frac{(14.7 \text{ psig} + \_\_\_\_\_ \text{ psig})}{14.7 \text{ psig}}$$

= _____ ml at standard temperature and pressure

Section volume of CSV trapped in "Iodine Sample" bottle --

$$SV_I = \_\_\_\_\_ \text{ ml (CSV)} \times \frac{50 \text{ ml}}{\_\_\_\_ \text{ ml (TSV)}} \times 1.0101 = \_\_\_\_\_ \text{ ml}$$

where: 50 ml sample size ÷ Thiosulfate Sample Volume from 5.3.51
1.0101 = 1 ÷ .99, thiosulfate is 99% efficient for removing iodine

Section volume of CSV trapped in gas bomb --

$$SV_G = \_\_\_\_\_ \text{ ml (CSV)} \times .009 = \_\_\_\_\_ \text{ ml}$$

where: .009 = 100 ml gas bomb ÷ 11194 ml volume of dilution

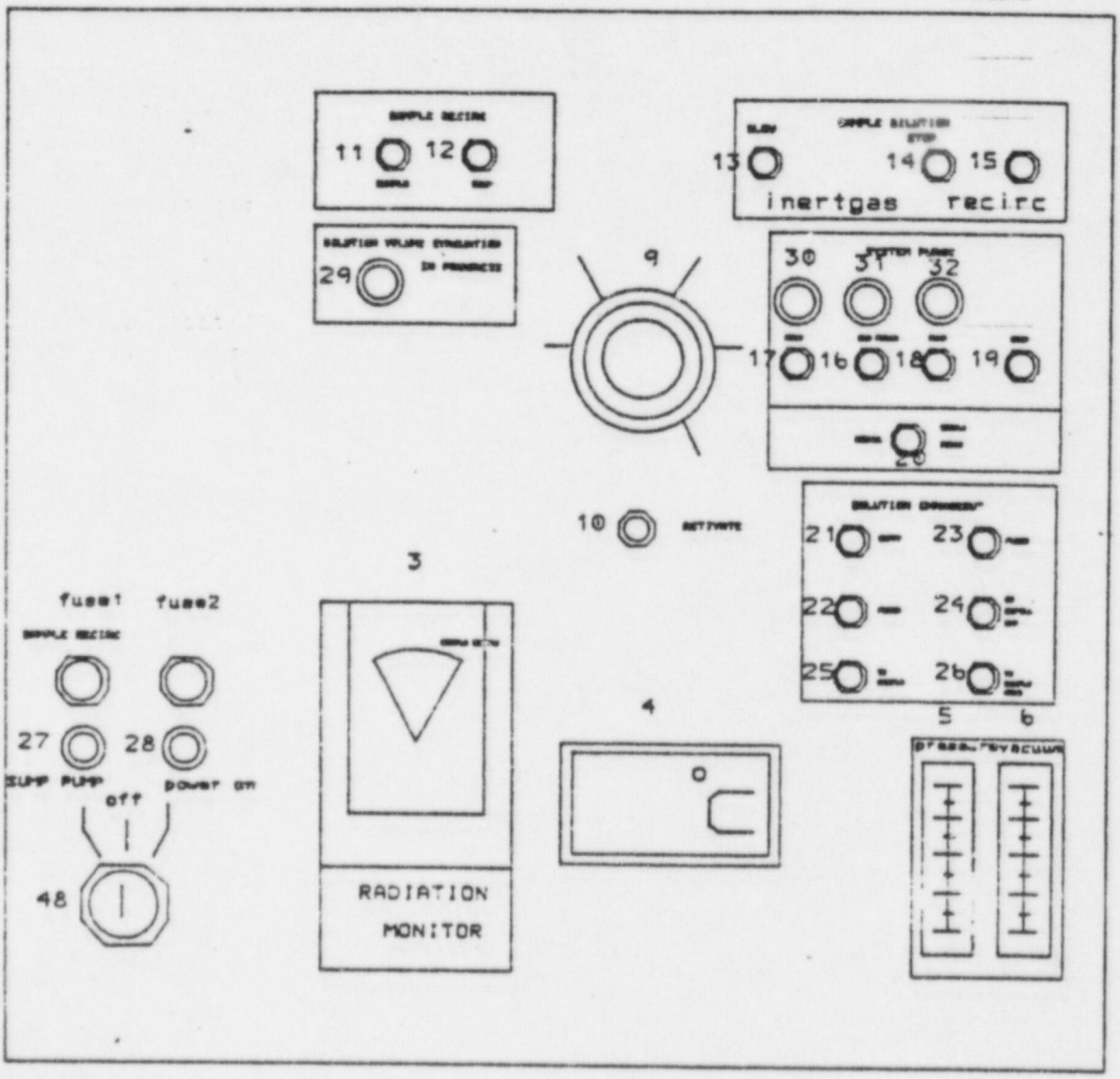
_____ _____
Station Health Physicist Date

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.5
POST-ACCIDENT CONTAINMENT AIR SAMPLING SHUTDOWN

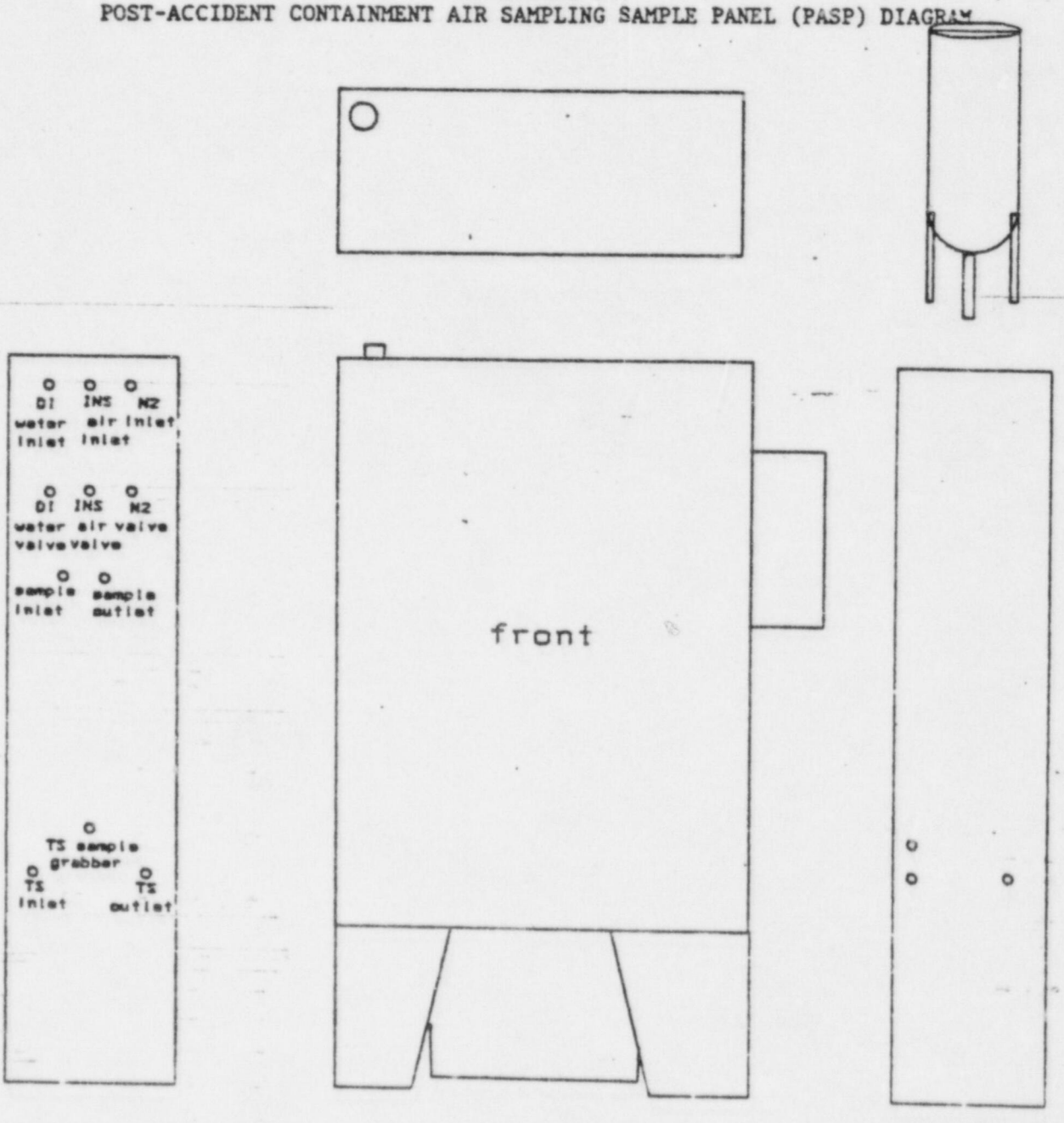
Date/Time _____/_____ Unit _____

Check		Action
_____	5.5.1	Turn Selector switch (#9) to Off.
_____	5.5.2	Turn Radiation Monitor (#3) Off.
_____	(SP) 5.5.3	Replace the top to the TS tank.
_____	(SP) 5.5.4	Close all four (4) service valves DI, VI, N_2 and TS by turning handles one-quarter turn clockwise.
_____	5.5.5	Request that Operations complete the Shutdown Section for Post-Accident Containment Air Sampling of procedure OP/1/A/6450/10 or OP/2/A/6450/10 (see Reference 2.4 or 2.5).
_____	5.5.6	Notify Shift Supervisor of sampling completion and that the H_2 Analyzer used during sampling is not required for sampling.

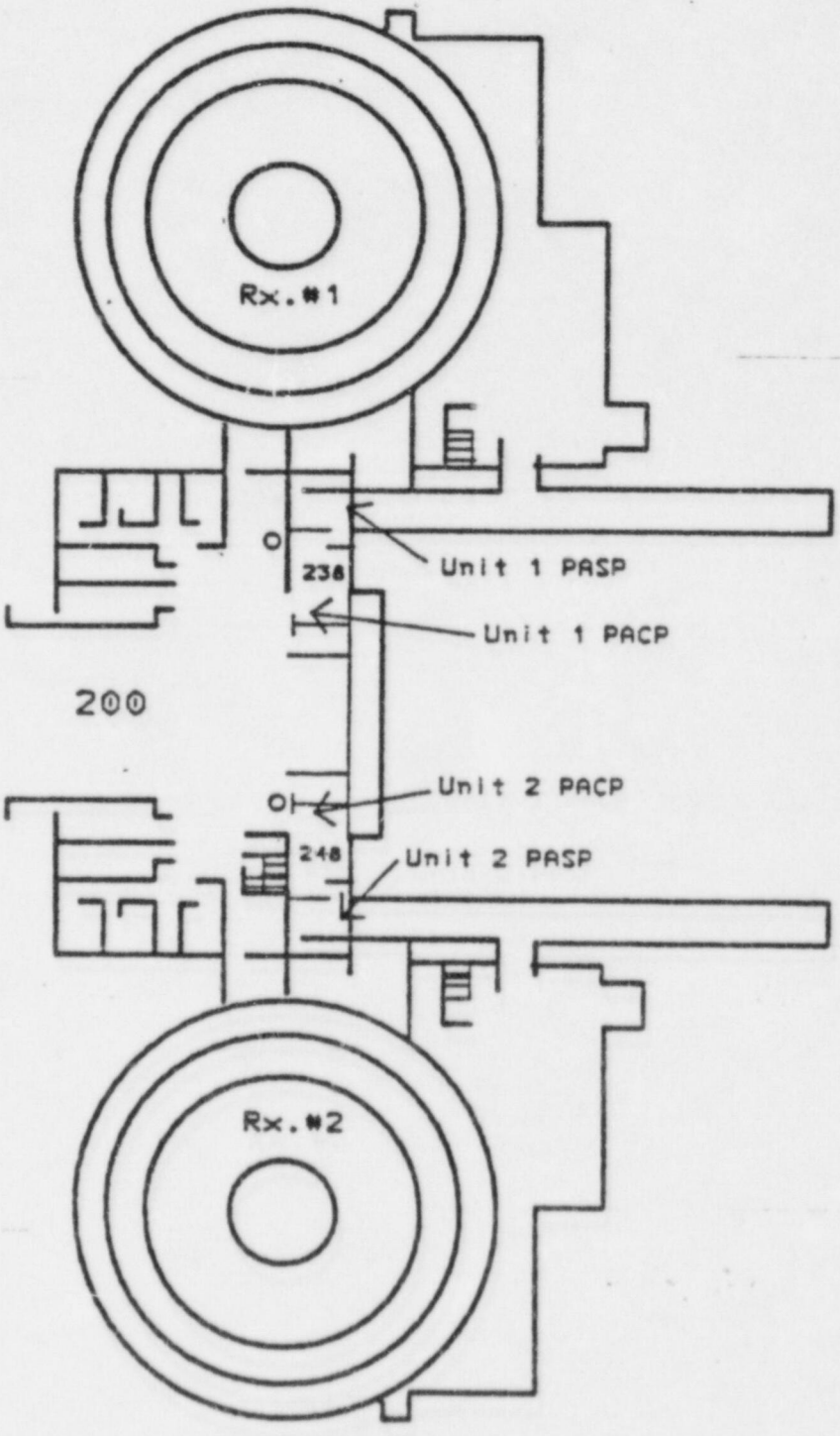
DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.6
POST-ACCIDENT CONTAINMENT AIR SAMPLING CONTROL PANEL (PACP) DIAGRAM



DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.7
POST-ACCIDENT CONTAINMENT AIR SAMPLING SAMPLE PANEL (PASP) DIAGRAM



DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
HP/0/B/1009/17
ENCLOSURE 5.8
LOCATION OF PACP AND PASP



Form 34731 (R9-86)

(1) ID No. HF/0/B/1000/06

Change(s) 0 to 8 Incorporated

DUKE POWER COMPANY
PROCEDURE PROCESS RECORD

PREPARATION

(2) STATION Catawba Nuclear

(3) PROCEDURE TITLE Emergency Equipment Functional Check And Inventory

(4) PREPARED BY Edwin M. Benfield DATE 11-22-86

(5) REVIEWED BY Fletcher Wilson DATE 11-26-86

Cross-Disciplinary Review By _____ N/R F. Wilson

(6) TEMPORARY APPROVAL (If Necessary)

By _____ (SRO) DATE

By _____ DATE

(7) APPROVED BY _____ DATE 11/26/86

(8) MISCELLANEOUS

Reviewed/Approved By _____ DATE _____

Reviewed/Approved By _____ DATE _____

(9) COMMENTS (For procedure reissue indicate whether additional changes, other than previously approved changes, are included. Attach additional pages, if necessary.) ADDITIONAL CHANGES INCLUDED. ☐ Yes ☐ No

(10) COMPARED WITH CONTROL COPY _____ DATE _____

COMPLETION

(11) DATE(S) PERFORMED _____

(12) PROCEDURE COMPLETION VERIFICATION

☐ Yes ☐ N/A Check lists and/or blanks properly initialed, signed, dated or filled in N/A or N/R, as appropriate?

☐ Yes ☐ N/A Listed enclosures attached?

☐ Yes ☐ N/A Data sheets attached, completed, dated and signed?

☐ Yes ☐ N/A Charts, graphs, etc. attached and properly dated, identified and marked?

☐ Yes ☐ N/A Acceptance criteria met?

VERIFIED BY _____ DATE _____

(13) PROCEDURE COMPLETION APPROVED _____ DATE _____

(14) REMARKS (Attach additional pages, if necessary.)

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
EMERGENCY EQUIPMENT FUNCTIONAL CHECK AND INVENTORY

1.0 PURPOSE

To provide for the availability and readiness of Emergency Equipment.

2.0 REFERENCES

2.1 HP/0/B/1005/08; Respirator Quality Assurance

2.2 HP/0/B/1009/19; Emergency Radio System Operations, Maintenance and Communications

2.3 Catawba Nuclear Station Directive 2.11.13

2.4 Catawba Nuclear Station Directive 3.2.2

2.5 Catawba Nuclear Station Directive 3.3.3

2.6 Catawba Nuclear Station Emergency Plan

2.7 Catawba Nuclear Station Technical Specifications 6.8.1

2.8 Duke Power Company Radio Operator's Manual

2.9 Maintenance of Silver Zeolite Air Sampling Cartridges Letter; File: CN-768.01

2.10 10CFR 50 Appendix E

2.11 Technical Manual for Groban Gasoline Generators

2.12 Shelf-life of Health Physics Clothing; File: CN-766.00.

3.0 LIMITS AND PRECAUTIONS

3.1 Operation of Portable Generators

3.1.1 Avoid operating the unit while hands are wet or while standing in water.

3.1.2 Generators shall not be started while equipment is plugged into generator.

3.1.3 Low voltage rubber gloves should be worn while operating the generators. These gloves are stored with the generators.

3.2 Silver zeolite cartridges shall be discarded if the seal has been broken.

3.3 Any radiation monitoring equipment (located in an emergency kit) that must be removed from service for any reason shall be replaced as soon as possible.

3.4 Any emergency kit used during training or for drill purposes shall be reinventoried as soon as possible. The individual responsible for the training or drill shall be responsible for inventory and restocking of all on-site kits.

3.4.1 Off-site kits shall be reinventoried as above and a list of deviations shall be given to the Respiratory/Instrument Calibration (R/IC) Supervisor. R/IC shall be responsible for restocking off-site kits as soon as possible.

4.0 PROCEDURE

4.1 Monthly Emergency Equipment Check/Inventory

4.1.1 Portable Generator Check

4.1.1.1 Portable generators shall be considered acceptable for use if:

4.1.1.1 The oil level is at an acceptable level per Reference 2.11.

4.1.1.2 The generator starts and runs for at least 5 minutes.

4.1.1.3 The generator stabilizes after a portable air sampler is plugged into each of the generator outlets.

4.1.1.2 If generator is acceptable, shut off generator and remove any excess gasoline from the gas tank.

4.1.1.3 Document the operability of the generators in the appropriate column on the Monthly/Quarterly Emergency Equipment Check Sheet (Enclosure 5.1).

4.1.2 Two-Way Low Band FM Radios

4.1.2.1 The radios shall be considered acceptable for use if:

4.1.2.1.1 Each radio transmits a message to another radio.

4.1.2.1.2 Each radio receives a message from another radio.

4.1.2.2 Document the operability of the radios in the appropriate area on Enclosure 5.1.

4.1.2.3 Inoperable radios shall be removed from service. Contact Toddville Communication Shop Planner for instructions on disposition for repair. ||

4.1.3 Batteries

4.1.3.1 All batteries shall be considered acceptable for use if:

4.1.3.1.1 The battery tester needle indicates "good" when the battery is tested.

4.1.3.1.2 The battery appears to be in good physical condition (no dents, corrosion, etc.).

4.1.3.2 Document battery check on Enclosure 5.1.

4.1.4 Portable Survey Instruments

4.1.4.1 Portable Survey Instruments shall be considered acceptable for use if:

4.1.4.1.1 The instrument battery checks.

4.1.4.1.2 The instrument source checks in accordance with the instrument's operation procedure.

4.1.4.1.3 The instrument has no apparent physical damage.

4.1.4.1.4 The instrument has been calibrated within 3 months +/- 7 days.

4.1.4.2 Document the instrument's operability on Enclosure 5.1.

4.1.5 Portable Air Samplers

4.1.5.1 Air Samplers shall be considered acceptable for use if:

4.1.5.1.1 The sampler operates when plugged into an electrical outlet.

4.1.5.1.2 The calibration date on the sampler is current.

4.1.5.1.3 The sampler has no apparent physical damage.

4.1.5.2 Document the sampler's operability on Enclosure 5.1.

4.1.6 Respiratory Equipment

4.1.6.1 Respiratory equipment shall be considered acceptable for use if:

4.1.6.1.1 The equipment is in accordance with criteria stated in Reference 2.1.

4.1.6.1.2 The Emergency Self-Contained Breathing Apparatus (SCBA) are available at the following locations:

Locations	Minimum Units
Control Room	2
Upper Personnel Hatch	2
Lower Personnel Hatch	2
Health Physics Respiratory Storage Area	8

4.1.6.1.3 Six large cylinders of breathing air (minimum of six hours used for 5 people) are located in the Control Room along with 5 airline respirators and associated airline hoses.

4.1.6.2 Document operability of respiratory equipment in accordance with Reference 2.1.

4.2 Quarterly Emergency Equipment Inventory/Inspection

4.2.1 Emergency equipment kits shall be inventoried quarterly and after each use using the appropriate Emergency Equipment Kit List of Contents (Enclosures 5.4 - 5.13)

4.2.1.1 Consult the Emergency Equipment Kit Location Sheet (Enclosure 5.2) for the locations of each kit.

4.2.1.2 Perform monthly checks as in Steps 4.1.1, 4.1.3, 4.1.4, 4.1.5, 4.1.6.

4.2.1.3 The quarterly operability check on two-way low band radios shall be performed as follows:

4.2.1.3.1 Radios shall be checked from a point 10 miles from the plant in accordance with Reference 2.8.

4.2.1.3.2 Contact shall be made from the base station in the TSC to each of the radios.

4.2.1.3.3 Each of the radios shall make contact with the base station.

NOTE: Base Call Sign - KNHB-778

Radio Call Signs - KB36274 (Alpha, Bravo, Charlie, Delta, Echo, Foxtrot)

4.2.1.3.4 Document operability of radios on Enclosure 5.1.

4.2.1.4 Perform a functional check of the dosimeter charger/reader. The charger is acceptable for use if the charger light illuminates.

4.2.1.5 Ensure that the leak and source check dates on the dosimeters are current.

4.2.1.6 Ensure that the TLD's are current. TLD's are changed in January and July ± 1 month.

4.2.1.7 Ensure the Potassium Iodide tablets have not exceeded their expiration date. (Reorder 2-87)

4.2.1.8 Ensure the seal on the silver zeolite cartridge packet is not broken and the cartridges are not damaged.

4.2.1.9 Ensure that all procedures are current with the Control Copy.

4.2.1.10 Ensure the flashlight bulb illuminates properly.

4.2.1.11 Check all protective clothing to ensure it has not exceeded the recommended shelf-life per Enclosure 5.15.

4.2.1.12 Ensure that GMR-I canisters have not exceeded their expiration date.

4.2.1.13 Document any deviations on the Emergency Equipment Deviation Authorization Sheet (Enclosure 5.14).

4.2.1.14 The Technician shall sign off Enclosure 5.1 and forward to the Respiratory/Instrument Calibration (R/IC) Supervisor.

4.2.2 Weather Information Check

4.2.2.1 Quarterly a call shall be placed to the National Weather Service located in Columbia, SC at 803-794-2330 or 803-794-2593. If these numbers cannot be reached, an alternate number in Charlotte (704-399-6000) may be used. Obtain wind direction, wind speed, and cloud cover from one of these sources for the vicinity of Catawba Nuclear Station.

4.2.2.2 Obtain the same information from the Control Room.

4.2.2.3 Record this information on the Weather Information Form (Enclosure 5.3).

4.3 Deviation Authorization

4.3.1 The Station Health Physicist shall be made aware of any deviation recorded on Enclosure 5.14.

4.3.2 The Station Health Physicist shall have evaluated the consequences the deviation may have upon the capability to respond to an emergency situation.

4.3.3 Enclosure 5.14 shall be used to state the action taken to remedy the deviation, and to state the justification for taking that action.

4.4 Upon completion of this procedure all required documentation will be filed in the Emergency Equipment Functional Check and Inventory Log, until the end of the quarter.

4.4.1 At the end of the quarter all of the required documentation will be placed in the Health Physics Satellite Master File.

4.4.2 Sign off the PT printout and forward as per Reference 2.4.

5.0 ENCLOSURES

5.1 Sample of Monthly /Quarterly Emergency Equipment Check Sheet

5.2 Sample of Emergency Equipment Kit Location Sheet

5.3 Sample of Weather Information Form

5.4 Sample of Recovery Kit List of Contents

5.5 Sample of Environmental Survey Kit List of Contents

5.6 Sample of Environmental Survey Kit List of Contents (Helicopter)

5.7 Sample of Personnel Survey Kit List of Contents

5.8 Sample of Personnel Survey Kit List of Contents (Evacuation Facility)

5.9 Sample of Emergency Medical Kit List of Contents (First Aid Room)

5.10 Sample of Emergency Medical Kit List of Contents (Piedmont Medical Center)

5.11 Sample of Operations Support Center Kit List of Contents

5.12 Sample of Technical Support Center Kit List of Contents

5.13 Sample of Fuel Transfer Kit List of Contents

5.14 Sample of Emergency Equipment Deviation Authorization Sheet

5.15 Sample of Recommended Shelf-life for Protective Clothing

5.16 Sample of Protected Area Survey Kit List of Contents

CATAWBA NUCLEAR STATION
MONTHLY/QUARTERLY EMERGENCY EQUIPMENT CHECK SHEET
HP/0/B/1000/06
ENCLOSURE 5.1

MONTHLY	PIC-6A	E-140N	RM-14	E-520	RO-2A	AIR SAMPLER	BATTERIES	QUARTERLY	KIT CONTENTS	CHARGER	FLASHLIGHT	DEVIATIONS	SIGNATURE/DATE
Environmental Survey Kit - A													
Environmental Survey Kit - B													
Environmental Survey Kit - C													
Environmental Survey Kit - D													
Environmental Survey Kit - E													
Recovery Kit - Allen													
Recovery Kit - Transmission Line Maint.													
Recovery Kit - Security Pap Area													
Protected Area Survey Kit													
Personnel Survey Kit -Allen													
Personnel Survey Kit - Transmission Line Maint.													
Personnel Survey Kit - Security Pap Area													
Emergency Medical Kit - First Aid Room													
Emergency Medical Kit - Piedmont Medical Center													
Operations Support Center Kit													
Technical Support Center Kit													
Fuel Transfer Kit													

MONTHLY/QUARTERLY EMERGENCY EQUIPMENT
CHECK SHEET
HP/0/B/1000/06
ENCLOSURE 5.1

GASOLINE GENERATORS

Generator Number	Comments	Signature/Date
CHP-3163-SR		
CHP-3164-SR		
CHP-3165-SR		
CHP-3166-SR		
CHP-3167-SR		

PORTABLE RADIO TRANSMITTER - RECEIVERS

Radio Call Sign	Comments	Performed At		Signature/Date
		10-Mile	On Site	
EMERGENCY VAN (H.P.)				
EMERGENCY VAN (I&E)				
ALPHA CHP-3250				
BRAVO CHP-3249				
CHARLIE CHP-3248				
DELTA CHP-3242				
ECHO CHP-3247				
FOXTROT CHP-3243				
ALPHA-1 CHP-3252				
BRAVO-1 CHP-3244				
CHARLIE-1 CHP-3245				
DELTA-1 CHP-3251				
ECHO-1 CHP-3246				
FOXTROT-1 CHP-3253				

CATAWBA NUCLEAR STATION
EMERGENCY EQUIPMENT LOCATION SHEET
HP/0/B/1000/06
ENCLOSURE 5.2

KITS	LOCATION
Recovery Kits (4)	
Evacuation Facilities (2)	Allen Steam Station Transmission Line Maintenance Building
Security Pap Area	Temp. Admin. Building
Environmental Survey Kits (Vehicle) (4)	Temp. Admin. Building
Environmental Survey Kit (Helicopter) (1)	Temp. Admin. Building
Protected Area Survey Kit	Auxiliary Building, Elev. 594 Room 551
Personnel Survey Kits (4)	
Evacuation Facilities (2)	Allen Steam Station Transmission Line Maintenance Building
Security Pap Area	Temp. Admin. Building
Emergency Medical Kit (2)	Aux. Building First Aid Room Piedmont Medical Center
Operations Support Center Kit	Operations Support Center
Technical Support Center Kit	Technical Support Center
Fuel Transfer Kit	Temp. Admin. Building

CATAWBA NUCLEAR STATION
WEATHER INFORMATION
HP/0/B/1000/06
ENCLOSURE 5.3

	National Weather Service	Control Room
Wind Direction	_____	_____
Wind Speed	_____	_____
Cloud Cover	_____	_____
Time	_____	_____

_____
Signature/Date

CATAWBA NUCLEAR STATION
RECOVERY KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.4

ITEM		MINIMUM AMOUNT
List of Contents		1
Eberline E-520 w/HP-270 Probe		1
Exempt Source		1
Low/High Range Dosimeters (0-500 mR), (0-5R)		2 each
Dose Cards		25
TLD Badges		6
Dosimeter Charger		1
Boundary Ribbon or Rope (50 yd. roll)		1
Masking Tape (roll)		1
Rain Suits (set)		2
Coveralls: Cotton		2
Gloves: Cotton (pair)		2
Rubber (pair)		2
Shoe Covers: Disposable (pair)		2
Rubber (pair)		2
Hoods: Cotton		2
Poly Bags (Various)		12
Caution Signs w/inserts		2
Legal Pad		1
Instrument/Smear Survey (pad)		1
Pens		2
Grease Pencil and refills		1
Full Face Respirator With GMR-I Canister (or equivalent)		2
First Aid Kit		1
Potassium Iodide Tablets	Trans. Line Maint.	275 bottles
	Security PAP	150 bottles
	Construction Personnel Area	150 bottles
	Allen Steam Station	275 bottles
KI Distribution Data Sheet		100
Smears (box)		1
NuCon Smears		30
Flashlight		1
Batteries (Size D)		10
Scissors		1
Medication Envelopes	Trans. Line Maint.	100
	Security PAP	60
	Construction Personnel Area	60
	Allen Steam Station	100
Crisis Management Team Phone Directory**		1
SLED Badges (Personnel and Vehicle each)**		100
Emergency Planning Zone Maps**		3
HP/0/B/1009/16		1

*Any Deviations will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).
**These items are found only in the Recovery Kits located at Allen Steam Station and Transmission Line Maintenance Building.

CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEY KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.5

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline E-520 w/HP-270 Probe	1
Eberline E-140N w/HP-210 Probe (or equivalent)	1
Exempt Source	1
Portable MCA**	1
Eberline PIC 6A	1
Emergency Radio Transmitter/Receiver	1
Radeco H809V Air Sampler	1
Gasoline Generator (Gasoline in Safety Cabinet)	1
Low/High Range Pocket Dosimeter (0-500 mR), (0-5R)	2 each
Dose Cards	25
TLD Badge	6
Dosimeter Charger	1
Full Face Respirator With GMR-I Canister (or equivalent)	2
Potassium Iodide Tablets (bottle)	2
Tyvek Disposable Coveralls	6
Tyvek Disposable Hoods	6
Coveralls: Cotton	4
Gloves: Cotton (pair)	8
Rubber (pair) (Size 7), (Size 9)	2 each
Shoe Covers: Disposable (pair)	4
Rubber (pair)	4
Hoods: Cotton	4
Sandwich Bags (box)	1
Poly Bags (Various Sizes)	6
Masking Tape (roll)	1
Compass	1
Tweezers	1
Limnological Sampler	1
Cubitainers	6
1 Liter Wide Mouth Bottles	5
Stopwatch	1
Battery Operated Latern	1
Flashlight	1
Batteries (Size D)	14
Batteries (9 volt)	4
Batteries (6 volt)	1
Silver Zeolite Filter Cartridges	30
Particulate Filters	30
Filter Cartridges Labels & Bags	100
Smears (box)	1
NuCon Smears	30
Instrument/Smear Survey (pad)	1
Map of Ten Mile Zone Sectors	1
Legal Pad	1
Pen	2
Permanent Marker	1

CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEY KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.5

ITEM	MINIMUM AMOUNT
Hand Spade	1
Grease Pencil and refills	1
Dime Roll	1
Scissors	1
Rain Suits	3
Telephone location maps	1
Field Monitoring Data Sheet	20
Field Monitoring Work Sheet	20
KI Tablet Distribution Data Sheet	1
Radio Operator Manual	1
CPD1 Key	1
Emergency Response Van Keys (Doors, Ignition & Generator)	1 set
SLED Badges (Personal - Vehicle)	4
Reflective Safety Vests	2
HP/0/B/1009/04	1
HP/0/B/1009/16	1
HP/0/B/1003/17	1
HP/0/B/1009/19	1

*Any Deviations will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

**This instrument is stored and maintained in the Health Physics Counting Room Area.

CATAWBA NUCLEAR STATION
ENVIRONMENTAL SURVEY KITS LIST OF CONTENTS (Helicopter)
HP/0/B/1000/06
ENCLOSURE 5.6

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline PIC-6A	1
Eberline E-520 w/HP-270 Probe	1
Exempt Source	1
Low/High Range Pocket Dosimeter (0-500 mR), (0-5R)	2 each
Dose Cards	25
Field Monitoring Data Sheet	20
TLD Badge	6
Dosimeter Charger	1
Full Face Respirator with GMR-I Canister (or equivalent)	2
Potassium Iodide Tablets (bottle)	2
KI Distribution Data Sheet	1
Stopwatch	1
Flashlight	1
Batteries (Size D)	10
Batteries (9 volt)	4
Ear Plugs (pairs)	6
Map of Ten Mile Zone Sectors	1
Legal Pad	1
Pen	2
Rain Suits	2
Instrument/Smear Survey (pad)	1
Emergency Radio Transmitter/Receiver	1
HP/0/B/1009/19	1
HP/0/B/1009/04	1
HP/0/B/1009/16	1

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
PERSONNEL SURVEY KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.7

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline E-140N w/HP-210 Probe (or equivalent)***	2
Sample Slide Tray***	1
Exempt Source	1
Emergency Radio Transmitter/Receiver**	1
Radio Operator Manual	1
Low/High Range Dosimeters (0-500 mR/hr), (0-5 R/hr)	2 each
Dose Cards	25
TLD Badges	2
Dosimeter Charger	1
Full Face Respirator With GMR-I (or equivalent)	2
Potassium Iodine Tablets (bottle)	2
KI Distribution Data Sheet	1
Coveralls: Cotton	6
Gloves: Cotton (pair)	6
Rubber (pair)	6
Shoe Covers: Disposable (pair)	6
Rubber (pair)	6
Hoods: Cotton	6
Boundary Ribbon or Rope (50 yd. roll)	1
Caution Signs w/inserts	4
Masking Tape (roll)	1
Poly Bags (Various)	6
Smears (box)	1
NuCon Smears	25
Instrument/Smear Survey (pad)	1
Pens	2
Grease Pencil & Refills	1
Legal Pad	1
Scissors	1
Rain Suits	3
Decon Kit	1
1) Rad Con	
2) Rad Wash	
3) Paper Towels	
4) Scrub Brush	
5) Cotton Swabs	
6) Fingernail Clippers	
7) Phisohex (125 ml)	
8) Personnal Decontamination Forms	
Batteries (Size D)	10
Station Directive 3.8.3	1
HP/0/B/1004/06	1
HP/0/B/1009/05	1
HP/0/B/1009/16	1
HP/0/B/1009/19**	1

CATAWBA NUCLEAR STATION
PERSONNEL SURVEY KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.7

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

***The Security PAP Area shall have (3) E-140N w/HP-210 Probe or equivalent and Sample Slide Tray.

CATAWBA NUCLEAR STATION
PERSONNEL SURVEY KITS LIST OF CONTENTS
(EVACUATION FACILITY)
HP/0/B/1000/06
ENCLOSURE 5.8

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline E-140N w/HP-210 Probe (or equivalent)	3
Exempt Source	1
Low/High Range Dosimeters (0-500 mR), (0-5R)	4 each
Dose Cards	25
TLD Badges	4
Dosimeter Charger	1
Potassium Iodide Tablets (bottle)	2
KI Tablet Distribution Data Sheet	1
Medication Envelopes	3
Coveralls: Cotton	6
Gloves: Cotton (pair)	6
Rubber (pair)	6
Shoe Covers: Disposable (pair)	6
Rubber (pair)	6
Hoods: Cotton	6
Disposable Coveralls	40
Boundary Ribbon or Rope (50 yd. roll)	1
Caution Signs w/inserts	4
Masking Tape (roll)	1
Poly Bags (Various)	6
Smears (box)	1
Instrument/Smear Survey (pad)	1
Pens	2
Grease Pencil & Refills	1
Legal Pad	1
Decon Kit	1
1) Rad Con	
2) Rad Wash	
3) Paper Towels	
4) Scrub Brush	
5) Cotton Swabs	
6) Fingernail Clippers	
7) Phisohex (125 ml)	
8) Personnel Decontamination Forms	
Scissors	1
Station Directive 3.8.3	1
Evacuation Personnel Dose Record	50
Catawba Nuclear Station Telephone Directory	1
Batteries (Size D)	10
HP/0/B/1004/06	1
HP/0/B/1009/05	1
HP/0/B/1009/16	1

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
EMERGENCY MEDICAL KIT LIST OF CONTENTS
FIRST AID ROOM
HP/0/B/1000/06
ENCLOSURE 5.9

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline E-140N w/HP-210 Probe (or equivalent)	1
Exempt Source	1
Poly Bags (various sizes)	6
Smears (box)	1
NuCon Smears	25
Coveralls: Cotton	6
Gloves: Cotton (pair)	6
Rubber (pair)	6
Shoe Covers: Disposable (pair)	6
Rubber (pair)	6
Hoods: Cotton	6
Rain Suits	2
Tape, Radioactive Material	1
Tape, Masking 2"	1
Tape, Duct 2"	1
Instrument/Smear Survey (pad)	1
Pens	2
Legal Pad	1
Caution Signs w/inserts	3
Radioactive Material Tags	50
Scissors	1
Poly for Ambulances (bundles)	3
Batteries (Size D)	4
HP/0/B/1004/06	1
HP/0/B/1009/08	1
Low Range Dosimeters (0-500 mR)	2
TLD Badges	2

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
EMERGENCY MEDICAL KITS LIST OF CONTENTS
PIEDMONT MEDICAL CENTER
HP/0/B/1000/06
ENCLOSURE 5.10

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline E-520 w/HP-270 Probe	1
Eberline E-140N W/210 Probe (or equivalent)	1
Exempt Source	1
Poly Bags (various sizes)	14
Smears (box)	1
NuCon Smears	25
Tape, Radioactive Material	1
Tape, Masking 2"	2
Tape, Duct 2"	4
Instrument/Smear Survey (pad)	1
Caution Signs w/inserts	5
Rad Rope	1
TLD Badges	10
Pocket Dosimeters (0-500mR)	10
Dose Cards	25
Dosimeter Charger	1
Radioactive Material Tags	50
Floor and Vent Covering	1
Disposable Coveralls	25
Disposable Shoe Covers (pairs)	25
Disposable Hoods	10
Cubitainers	5
Decon Kit	1
1) Rad Con	
2) Rad Wash	
3) Paper Towels	
4) Scrub Brush	
5) Cotton Swabs	
6) Fingernail Clippers	
7) Phisohex (125 ml)	
8) Personnel Decontamination Forms	
Cotton Gloves (pairs)	50
Rubber Gloves (pairs)	20
Batteries (Size D)	8
Grease pencils (box)	1
Stanchions	4
Trash Receptacle	2
HP/0/B/1004/06	1
HP/0/B/1009/08	1

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
OPERATIONS SUPPORT CENTER KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.11

ITEM	MINIMUM AMOUNT
List of Contents	1
Coveralls: Cotton	40
Gloves: Cotton (pair)	40
Rubber (pair)	40
Shoe Covers: Disposable (pair)	40
Rubber (pair)	40
Hoods: Cotton	40
Full Face Respirators with GMR-I Canister (or equivalent)	10
Flashlights	11
Batteries (Size D)	34
Batteries (9 volt)	20
Eberline PIC 6A	5
RM-14 w/HP-210 Probe	1
E-140N w/HP-210 Probe (or equivalent)	1
Exempt Source	1
Camera (Polaroid)	1
Polaroid Film Pacs	2
Masking Tape (Roll)	2
Dosimeters (0-100R), (0-5R)	5
Dose Cards	25
Dosimeter Charger	1
Small Sample Bottles or Medication Envelopes	10
Rain Suits	5
Poly Bags (various sizes)	50
Radeco H809V Air Sampler	3
Silver Zeolite Filter Cartridges	30
Particulate Filters	30
Filter Cartridge Labels	30
Potassium Iodide Tablets (bottle)	20
KI Distribution Data Sheet	10
HP/0/B/1004/06	1
Decon Kit	1
1) Rad Con	
2) Rad Wash	
3) Paper Towels	
4) Scrub Brush	
5) Cotton Swabs	
6) Fingernail Clippers	
7) Phisohex (125 ml)	
8) Personnel Decontamination Forms	
Instrument/Smear Survey (pad)	1
Telephone	2
Post-Accident Containment Air Sampling Equipment Kit	1
Pen (box)	1
Grease Pencil (and refills) (box)	1
Extension Cord (50 ft.)	2
Extension Cords (25 ft.)	2
Stopwatch	2
Large Battery Lanterns (with 6 volt batteries)	4
Plant Drawings	1

CATAWBA NUCLEAR STATION
OPERATIONS SUPPORT CENTER KITS LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.11

ITEM	MINIMUM AMOUNT
OSC Response Personnel Dose Record Forms	125
Smears (box)	1

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
TECHNICAL SUPPORT CENTER KIT LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.12

ITEM	MINIMUM AMOUNT
List of Contents	1
Coveralls: Cotton	20
Gloves: Cotton (pair)	20
Rubber (pair)	20
Shoe Covers: Disposable (pair)	20
Rubber (pair)	20
Hoods: Cotton	20
Full Face Respirators with GRM-I Canister (or equivalent)	6
Eberline E-520 w/HP-270 Probe	1
Eberline PIC-6A	3
E-140N w/HP-210 Probe (or equivalent)	1
Exempt Source	1
Radeco H809V Air Sample	1
Dosimeter (0-100R), (0-5R)	6 each
Dose Cards	25
Silver Zeolite Filter Cartridges	30
Particulate Filters	30
Filter Cartridge Labels	25
Dosimeter Charger	1
Potassium Iodide Tablets (bottle)	25
Boundary Ribbon or Rope (50 yd. roll)	1
Caution Signs w/inserts	3
Rad Tape	2
Smears (box)	1
Poly Bags	6
Masking Tape (Roll)	1
Pen	2
Legal Pad	1
Grease Pencil (and refills)	1
Flashlights	8
Batteries (Size D)	30
Batteries (9V)	12
Small Sample Bottles or Medication Envelopes	10
Rain Suits	6
Decon Kit	1
1) Rad Con	
2) Rad Wash	
3) Paper Towels	
4) Scrub Brush	
5) Cotton Swabs	
6) Fingernail Clippers	
7) Phisohex (125 ml)	
8) Personnel Decontamination Forms	
Instrument/Smear Survey (pad)	1
Request for Exposure Extension Forms	15
Plant Drawings	1
HP/0/B/1009/16	1
HP/0/B/1004/06	1

CATAWBA NUCLEAR STATION
TECHNICAL SUPPORT CENTER KIT LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.12

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEAR STATION
FUEL TRANSFER KIT LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.13

ITEM	MINIMUM AMOUNT
List of Contents	1
Shoe Covers: Disposable (pair)	20
Rubber (pair)	6
Gloves: Cotton (pair)	20
Surgeons (box)	1
Rubber (pair)	6
Coveralls: Disposable	4
Cotton	6
Hoods	4
Wet Suit	2
Hard Hat	3
Full Face Respirators with GMR-I Canister (or equivalent)	2
Radeco H809V Air Sampler	1
Eberline E-140N w/HP-210 Probe (or equivalent)	1
Eberline PIC-6A	1
Eberline E-520 w/HP-270 Probe	1
Exempt Source	1
Silver Zeolite Cartridges and Particulate Filters	10
Labels for Filters and Cartridges	10
Potassium Iodide Tablets (Bottle)	30
TLD Badge	5
Low/High Range Dosimeter (0-500 mR), (0-5R)	5 each
Dose Card	25
Dosimeter Charger	1
Weather-Proof Caution Signs with Inserts	4
Radioactive Waste Signs (4" x 6")	12
Caution: Radiation/Radioactive Material Tags	12
50 yd. Roll of Barricade Tape (Magenta & Yellow)	4
Step Off Pads	3
Poly Bags	12
Hand Gardening Spade	1
Wide Mouth Sample Bottles	4
Plastic Sample Bottles or Medication Envelopes	12
Kimwipes (box)	2
NuCon Smears	100
Copy of NAC-1 Drawings (Prints)	1
Copy of Loading and Unloading Instructions	1
Duct Tape (Roll)	2
Masking Tape (1" and 2" Rolls)	1 each
Contact Pyrometer with Probe	2
Safety Glasses	5
Binoculars	1
Tool Kit	1
Batteries (9 Volt)	4
Flashlights	2
Batteries (Size D)	18
Steno Pad with 2 Mechanical Lead Pencils	1
Pencil Refills	1

CATAWBA NUCLEAR STATION
FUEL TRANSFER KIT LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.13

ITEM	MINIMUM AMOUNT
Grease Pencils	2
All Purpose Marker	2
Scotch Tape Roll and Dispenser	1
Roll of Dimes	1
Gasoline Generator (Gasoline Stored in Safety Cabinet)	1
Instrument/Smear Survey (pad)	1
HP/0/B/1009/16	1

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

CATAWBA NUCLEA :ATION

EMERGENCY EQUIPMENT DEVIATION AUTHORIZATION SHEET

HP/O/B/1000/06
Enclosure 5.14

DEVIATION DESCRIPTION	KIT	ACTION TAKEN TO REMEDY DEVIATION	ACTION JUSTIFICATION	SIGNATURE	DATE

/IC Supervisor_____ Date_____

:ation Health Physicist_____ Date_____

CATAWBA NUCLEAR STATION
RECOMMENDED SHELF-LIFE FOR PROTECTIVE CLOTHING

Cotton Goods:	4 years
Tyvek Goods:	4 years
Duraguard Goods:	4 years
Rubber overshoes	4 years
Vinyl Gloves:	6 months
Latex Gloves:	6 months
PVC goods:	1 year

NOTE: If the date marked on the protective clothing exceeds the allowable shelf-life, remove the protective clothing from the emergency kit.

CATAWBA NUCLEAR STATION
PROTECTED AREA SURVEY KIT LIST OF CONTENTS
HP/0/B/1000/06
ENCLOSURE 5.16

ITEM	MINIMUM AMOUNT
List of Contents	1
Eberline RO-2A (or equivalent)	2
Map of Protected Area	2
Emergency Radio Transmitter/Receiver	2

*Any Deviation will be documented on the Emergency Equipment Deviation Authorization Sheet (Sample Enclosure 5.14).

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

January 7, 1986

50 413/414 Catawba Nuclear Station

MEMORANDUM FOR: Chief, Document Management Branch, TIDC

FROM: Director, Division of Rules and Records, ADM

SUBJECT: REVIEW OF UTILITY EMERGENCY PLAN DOCUMENTATION

The Division of Rules and Records has reviewed the attached document and has determined that it may now be made publicly available.

Donnie H. Grimsley

Donnie H. Grimsley, Director
Division of Rules and Records
Office of Administration

Attachment: As stated