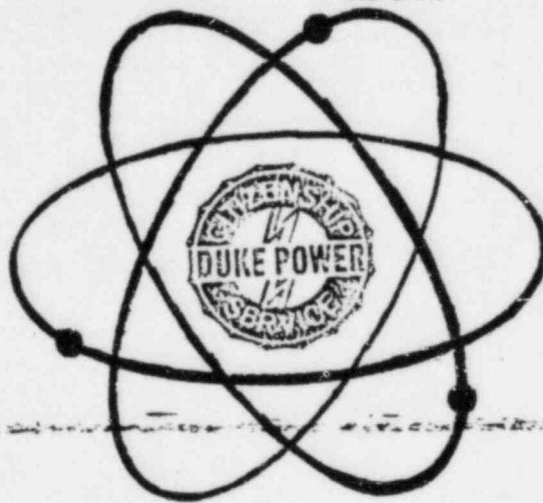


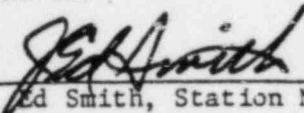
DUKE POWER COMPANY

OCONEE NUCLEAR STATION

EMERGENCY PLAN IMPLEMENTING PROCEDURES



APPROVED:


J. Ed Smith, Station Manager

September 8, 1983
Date Approved

September 7, 1983
Effective Date

Revision 83-7

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ONS STATION DIRECTIVE 2.9.1 (MGR)

APPROVAL

DATE 8/20/81

REVISED DATE

[Signature]

9/1/83

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

STATION ASSEMBLY AND EVACUATION PROCEDURE

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I. PURPOSE

This directive provides procedures to be used when responding to station assembly and preparatory to evacuation from the station if a radiological emergency is declared.

II. REFERENCES

- A. Oconee Nuclear Station Emergency Plan
- B. NUREG-0654, FEMA. - Rep-1, Rev. 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

III. DESCRIPTION

It is the intent of this directive to identify preplanned responses necessary to quickly and professionally respond to a station assembly and for evacuation from the station if a radiological emergency is declared. By being prepared, the effects of an evacuation from the station can be minimized and can facilitate faster action by station management and personnel.

IV. PROCEDURE

- A. Procedure for Conducting a Station Assembly (hereinafter referred to as a Site Assembly)
 - 1.1 A Site Assembly encompasses the assembly of all onsite personnel at designated assembly points for the purpose of accounting for personnel within station boundaries. Reasons for initiating a Site Assembly would include:
 - A) A test of response time and procedures employed in completing an accounting of onsite personnel.
 - B) A station incident occurs and:
 - 1) The Emergency Response Organization is required to be established (Technical Support Center and Operational Support Center) according to emergency classification procedures.
 - 2) Portions of the Protected Area may require evacuation or a station evacuation may be required.
 - 1.2 A Site assembly is initiated by activating the Personnel Assembly Signal (warble sound) in the Units 1 & 2 Control Room. This signal is heard over the Public Address (PA) System. The Shift Supervisor is responsible for initiating a Site Assembly and will assure that the following announcement is made throughout the station twice each time it is made:

ANNOUNCEMENT

"THIS IS A SITE ASSEMBLY. THIS IS A SITE ASSEMBLY.
All visitors outside security are to report to the Receptionist Lobby. All visitors inside security are to report to the Receptionist Lobby. All other badged personnel shall report to your supervisor in the area designated on the back of your security badge."

NOTE: If any particular area of the plant is found to be radiologically unsafe during an emergency, and a site assembly is held, warnings should be sounded through the public address system the "SAFE" corridors to use.

The alarm and announcements shall be continued for a duration long enough to ensure all onsite personnel are aware of the Station Assembly and are responding.

1.3 Action Plan for Emergency Coordinator (Shift Supervisor or Station Manager)

- 1.3.1 Alert Superintendent of Administration (Weekdays 0800 - 1630) that a Site Assembly will be initiated.
- 1.3.2 Alert Security Shift Lieutenant that a Site Assembly will be initiated.
- 1.3.3 Direct necessary actions to account for any missing personnel.
- 1.3.4 Examine the radiation/contamination levels established in Procedure B to determine the classes of personnel that may need to be evacuated.
- 1.3.5 If the requirements for an assembly no longer exist, return the station to normal duties.

1.4 Action Plan for Superintendent of Administration

- 1.4.1 Receive Accountability reports from all Groups weekdays (0800 - 1630) use Enclosure A-2 as an aid.
- 1.4.2 Report total accountability to Emergency Coordinator (Station Manager). Report the name(s) of any missing persons(s).
- 1.4.3 Coordinate a Search & Rescue Team if instructed by Emergency Coordinator (Station Manager).
- 1.4.4 Direct evacuation if so instructed by Emergency Coordinator (Station Manager).

1.5 Action Plan for Security Shift Lieutenant

- 1.5.1 Receive Accountability reports from all onsite supervisors after hours, weekends, and holidays. Use Table A-2 as an aid.
- 1.5.2 Report total accountability to Emergency Coordinator (Shift Supervisor). Report the name(s) of any missing person(s).
- 1.5.3 Coordinate a Search & Rescue Team if directed by Emergency Coordinator (Shift Supervisor).
- 1.5.4 Initiate a patrol of the general station areas within station boundaries, both inside and outside of the restricted area, to assure that personnel in remote and noise restrictive areas are aware of the Site Assembly requirement.
- 1.5.5 Restrict traffic in and out of the station gates during Site Assembly.

NOTE: Should Site Assembly be initiated during high traffic ingress and egress, normal traffic flow will not be restricted.

1.6 Action Plan for Search and Rescue Team

- 1.6.1 The Search and Rescue Team will be composed of personnel from Security, Safety and/or Operations, and Health Physics.
- 1.6.2 Health Physics will be responsible for monitoring and will be "in charge" of the team response.
- 1.6.3 Security will provide radio support and will be in a position to open controlled access doors.
- 1.6.4 Safety and/or Operations will provide medical support.

1.7 Action Plan for onsite personnel in responding to a Site Assembly alarm.

- 1.7.1 Each person (except those noted in 1.7.4) shall assemble with their supervisor. Assembly points for personnel onsite at Oconee Nuclear Station are identified in Enclosure A-1. Additionally, these locations are on the back of the security badge for those personnel inside security.

- 1.7.2 During normal working hours on Monday through Friday (except holidays) each supervisor shall be responsible for accounting for all personnel reporting to him. Station Superintendents and the Senior Supervisors of various organizations working at Oconee (e.g., SSD, QA) shall make an accountability report to the SUPERINTENDENT OF ADMINISTRATION for their areas of responsibility. Security will make an accountability report for in-plant visitors. When reports from all areas are received, the Superintendent of Administration will notify the Emergency Coordinator (Station manager) that all persons have been accounted for by their supervisor.

NOTE: Enclosure A-2 is available to aid in accounting for onsite personnel. Each reporting supervisor is to report location, name, telephone number, number of people assembled, and the name(s) of any missing person(s).

- 1.7.3 During hours not covered by 1.7.2, and accountability report should be made by the designated responsible person in each functional work group present at the Station to the SECURITY SHIFT LIEUTENANT. Security will report visitors.

- 1.7.4 Persons working in Radiation Control Areas in protective clothing should leave their work areas and go to the appropriate change room. In the change room, they should contact the appropriate persons as designated by 1.7.2 or 1.7.3 for personnel accountability reporting. Judgment should be used concerning the advisability of changing clothes and reporting to normal assembly areas.

NOTE: In case of a Reactor Building evacuation alarm, the reporting requirements in 1.7.4 above apply.

- 1.8 When personnel accountability has been completed following a Station Assembly, one of the following will occur.

- 1.8.1 If the requirement for an assembly no longer exists, permission to return to normal duties will be given by the Emergency Coordinator.
- 1.8.2 Plant conditions may require evacuation of the station. Instructions will be given by the Emergency Coordinator.

9. PROCEDURE FOR CONDUCTING A STATION EVACUATION

1.0 Station Evacuation is activated only after personnel have been assembled through a Site Assembly.

1.1 An evacuation of the below listed classes of personnel shall be conducted when an unplanned radiological condition may result in whole body doses or internal exposures in excess of 10 CFR 20 limitation for areas outside the Radiation Control Area. Evacuation levels are as listed below:

A. All members of the general public, and other persons who are not subject to occupational radiation exposure at Oconee Nuclear Station will be evacuated if they are likely to be exposed to doses in excess of:

- 1) External Radiation Level > 2 mrems in any one hour
- 2) Airborne Radioactivity > 1 x mpc for an unrestricted area (10CFR20, Appendix B, Table II)

This category includes:

| | |
|-------------|--------------|
| Visitors | Wometco |
| "A" Workers | Keowee Hydro |

B. Various groups of personnel who are subject to occupational radiation exposure at the station are considered nonessential to the operation of the station during a classified emergency situation and would be evacuated when directed by the Emergency Coordinator. Criteria to be considered for their evacuation:

- 1) External Radiation Level > 2.5 mrem/hr, 100 mrems/week, or 1250 mrems in a quarter
- 2) Airborne Radioactivity > equivalent amount inhaled for 40 hours/week for 13 weeks at 1 mpc (10CFR20 Section 20.103 and Appendix B, Table 1)

This category includes:

| | |
|------------------------|------------------------------------|
| Substation Maintenance | Chem-Nuclear |
| SMS | Vendors (other than HP) |
| SSD | General Office personnel |
| QA | Duke personnel (other than ONS) |
| B&W | All others (not listed in C below) |
| Design Engineering | |
| Oconee Training Center | |
| Projects | |

- C. Personnel identified as the Emergency Response Organization will be provided instructions from their supervisors. Personnel in this category include:

| | |
|------------------------|-------------------------------|
| Operations | Globe Security |
| Health Physics | Resident B & W representative |
| Health Physics Vendors | Administration |
| Environmental | Maintenance |
| Compliance | Chemistry |
| NRC | Performance |
| K-MAC | Visitor's Center |

Should it become necessary to evacuate additional personnel from the station, station management will identify which of the above personnel will be evacuated.

- 2.0 When it is determined that a station evacuation is necessary, the station evacuation alarm will be sounded. This alarm is a continuous, single-tone siren that can be heard throughout the station. Evacuation will be by designated preplanned routes which avoid contaminated locations or other locations that may be affected by the emergency situation. Evacuation routes, assembly locations, and other pertinent information shall be passed over the PA system or by telephone.

- 3.0 When directed, evacuees will evacuate using personal cars to the greatest extent possible. Remote assembly locations, and entrance/exit routes will be provided with evacuation instructions. (Enclosure B-1)

Should personal cars be unavailable due to contamination, bus transportation will be made available through the Anderson Retail Office (Duke Power Company). The Superintendent of Administration is responsible for arranging bus transportation if required.

Health Physics will survey evacuees and vehicles for contamination at designated locations as directed by the Emergency Coordinator. Decontaminants and extra clothing will be provided by Health Physics at designated survey locations.

- 4.0 After any phase of evacuation has been completed, adjustments to station staffing will be made as the situation warrants by the Emergency Coordinator. Control of station activities will be through the Technical Support Center.

V. ENCLOSURES

A-1 Site Assembly Locations

A-2 Station Personnel Accountability

B-1 Emergency Evacuation Routes

Major Revision

ENCLOSURE A-1
SITE ASSEMBLY LOCATIONS

DUKE OCONEE NUCLEAR STATION PERSONNEL

| <u>Section</u> | <u>Assembly Point</u> |
|--|--|
| Manager's Group: | |
| Station Manager/Superintendents: and Assigned Clerks | Respective Offices |
| Compliance Outage Management | Compliance Office Outage Office, Turbine Building |
| Administrative Services: | |
| Administrative Services Training Contract Services | Administration Clerical Office Training Office Contract Service's Offices |
| Maintenance: | |
| I&E Engineers I & E Shifts A,B,C,D,E | I&E Engineers' Offices Operational Support Center (Unit #3 I&E Lab) |
| I&E Supervisors & Technicians Mech. Maintenance Shifts A,B,C,D,E | I&E Shops Turbine Building Operational Support Center (Unit #3 I&E Lab) |
| Mechanical Maintenance Supervisors & Technicians Mechanical Maintenance Engineers | Maintenance Shop Mechanical Maintenance Engineers' Offices |
| Planners Materials Maintenance Mgt. Support | Planning Offices Materials Offices Planning Offices |
| Operations: All | Control Rooms/Operating Engineers' Offices (Unit #3) |
| Technical Services: | |
| Projects Performance (All) Health Physics | Projects Offices Performance Engineer's Office |
| ALARA Planning Projects and Training Support Functions Surveillance and Control HP Shift Personnel (A,B,C,D,E) | Station Health Physicist's Office Station Health Physicist's Office Station Health Physicist's Office Station Health Physicist's Office Operational Support Center |

ENCLOSURE A-1
SITE ASSEMBLY LOCATIONS

DUKE OCONEE NUCLEAR STATION PERSONNEL

Technical Services (continued)

Chemistry

Staff Chemists
Radwaste
Power Chemistry
Back-shift personnel

Station Chemist's Office
Station Chemist's Office
Station Chemist's Office
Operational Support Center

Environmental
Radwaste Startup Team

Environmental Offices
Radwaste Startup Office

Quality Assurance: All

Quality Assurance Offices

Training Services: All Personnel
at Training Center

Oconee Training Center

DUKE NON-OCONEE NUCLEAR STATION PERSONNEL

Section

Assembly Point

Administration Visitors: All

Administration Clerical Office

Operations Visitors: All

Operating Engineers' Offices

Chemistry:

Station Chemist's Office

Health Physics:

Station Health Physicist's Office

SMS: Those Inside Security
Those Outside Security

Sheet Metal Shop
SMS Office

Station Support Division:

SSD Offices

Keowee: All

Keowee Hydro Station

Visitors' Center: All

Visitors' Center Office

Substation Maintenance:

Substation Maintenance Office

Quality Assurance: All

QA Office

Chemistry: All

Station Chemist's Office

Health Physics: All

Health Physicist's Office

Design Engineering: All

Projects Office

ENCLOSURE A-1
SITE ASSEMBLY LOCATIONS

NON-DUKE OCONEE NUCLEAR STATION PERSONNEL

| <u>Section</u> | <u>Assembly Point</u> |
|--|--|
| Maintenance Visitors: | Service Building Mezzanine (I&E, Mechanical Maintenance, or Planning Office) |
| Globe Security: | Security Lobby |
| K-Mac: Those Inside Security Those Outside Security | Canteen South End, Turbine Building Administration Bldg. Canteen |
| Chem-Nuclear: | Station Chemist's Office |
| B&W Resident Engineer: | Control Room |
| NRC: All | Compliance Office |
| Wometco: All | Administration Building Canteen |

NON-DUKE, NON-OCONEE NUCLEAR STATION PERSONNEL

Health Physics Vendors:

| | |
|---|--|
| Rad-Services NUMANCO | Station Health Physicist's Office Station Health Physicist's Office |
| Babcock & Wilcox Personnel: | B&W Offices, Trailer |
| Visitors: | |
| Inside Security with Escort Outside Security | Receptionist Lobby Receptionist Lobby |

OTHER PERSONNEL OUTSIDE PROTECTED AREA

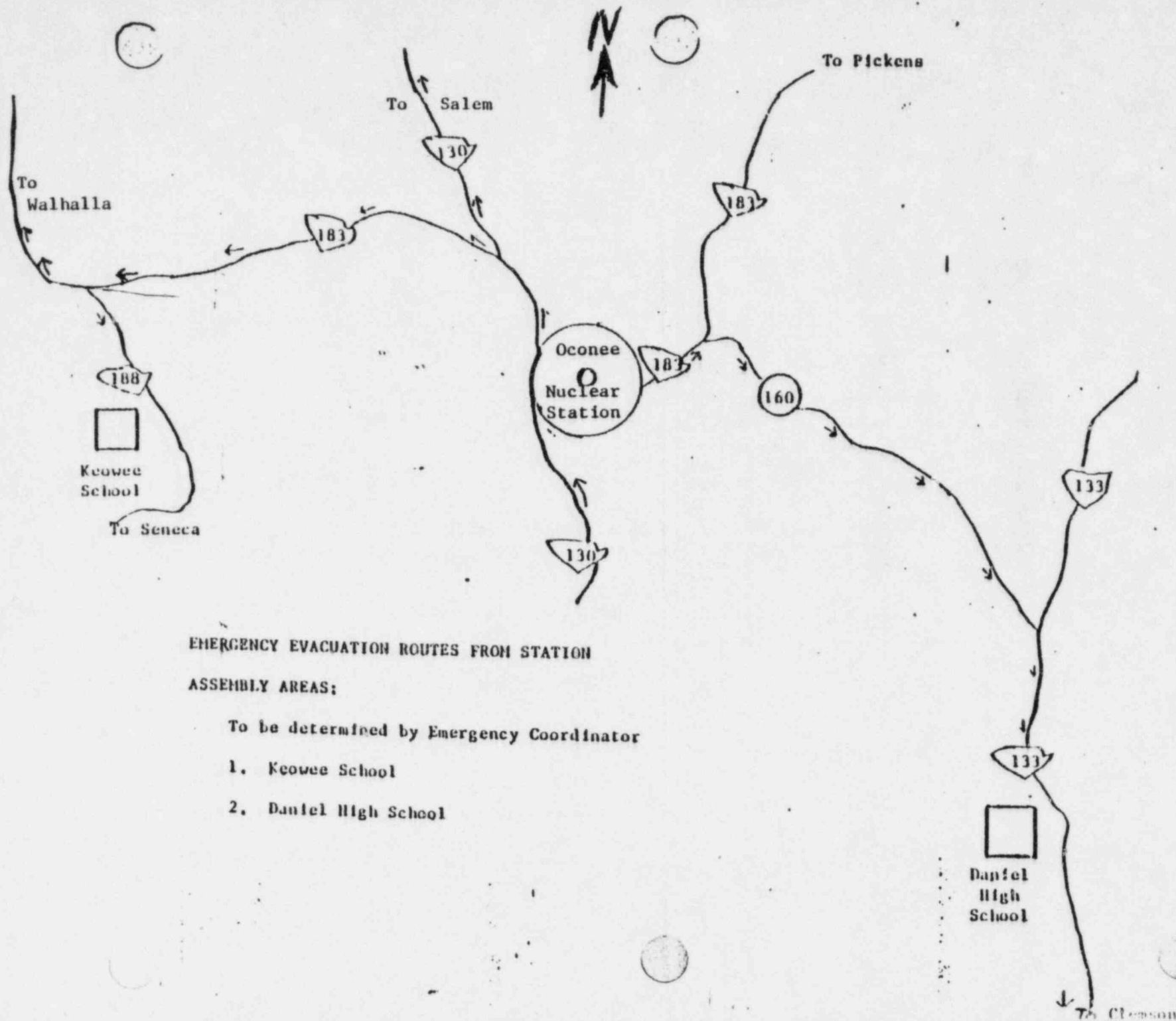
All personnel not identified above will report to the Receptionist Lobby between 0800 - 1630, Monday through Friday. On weekends, holidays, and after hours, report to Security Lobby.

STATION PERSONNEL ACCOUNTABILITY

S.D. 2.9.1
Enclosure A-2

Page 11

| TIME | DATE | Group | Name Reporting | Phone | Number People | Group | Name Reporting | Phone | Number People |
|---|------|-------|----------------|-------|---------------|-------|----------------|-------|---------------|
| ADMINISTRATION Contract Services: K-Hac Clobe Security Training & Safety: Administrative Services: Monetco Visitor's Center: Recycle Hydro: Station Visitors: Manager's Group: Outage Management Compliance NRC | | | | | | | | | |
| PERATIONS: Operators On-Shift: Engineers/Staff: Training Center: Fuel-Handling: Others: TOTAL OPERATIONS GROUP | | | | | | | | | |
| MAINTENANCE Planning & Materials: I & E: Mechanical Maintenance: System Maintenance Support: Substation Maintenance: B & W Personnel: TOTAL MAINTENANCE GROUP | | | | | | | | | |
| TECHNICAL SERVICES Performance: Environmental: Projects: Design Engineering Radwaste Start-up Team: Health Physics: Chemistry: Others: TIME: TOTAL TECHNICAL SERVICES GROUP | | | | | | | | | |
| QUALITY ASSURANCE: TIME: TOTAL QUALITY ASSURANCE | | | | | | | | | |
| STATION SUPPORT DIVISION: TIME: TOTAL STATION SUPPORT DIVISION | | | | | | | | | |
| STATION PERSONNEL ACCOUNTABILITY RECAP: ADMINISTRATION OPERATIONS MAINTENANCE TECHNICAL SERVICES QUALITY ASSURANCE STATION SUPPORT DIV. BEGINNING TIME: ENDING TIME: TOTAL ONSITE UNACCOUNTED PERSONNEL GROUP ACTION TAKEN PERSON REPORTING TELEPHONE: | | | | | | | | | |
| REMARKS: | | | | | | | | | |



EMERGENCY EVACUATION ROUTES FROM STATION

ASSEMBLY AREAS:

To be determined by Emergency Coordinator

1. Keowee School
2. Daniel High School

STATION DIRECTIVE 2.9.1
ENCLOSURE 3-1

CONTROL COPY

INFORMATION ONLY

Form SPD-1002-1

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: CP/O/B/4003/01
Change(s) n/a to
_____ Incorporated

- (2) STATION: OCONEE
- (3) PROCEDURE TITLE: Procedure for Environmental Surveillance Following
a Large Unplanned Release of Gaseous Radioactivity
- (4) PREPARED BY: Milo Kellough DATE: 08/17/83
- (5) REVIEWED BY: Leif Bebe DATE: 8/17/83
Cross-Disciplinary Review By: Ernie L. Martin N/R: _____
- (6) TEMPORARY APPROVAL (IF NECESSARY):
By: _____ (SRO) Date: _____
By: _____ Date: _____
- (7) APPROVED BY: J. B. Bann Date: 8/26/83
- (8) MISCELLANEOUS:
Reviewed/Approved By: _____ Date: _____
Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
OCONEE NUCLEAR STATION

EMERGENCY PLAN/CRISIS MANAGEMENT PLAN

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

1.0 Purpose

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

2.0 Limits and Precautions

- 2.1 The Field Monitoring Coordinator (FMC) or Environmental Surveillance Coordinator shall report to the Station Health Physicist (Technical Support Center) once the Emergency Plan has been implemented.
- 2.2 The FMC shall report to the Off-Site Radiological Coordinator (System Health Physicist or designee) once the Crisis Management Center has been established.
- 2.3 The FMC or designee shall call the Field Monitoring Supervisor(s) and team members to report to the Environmental Lab once the Emergency Plan has been implemented. The names and telephone numbers of these individuals are listed in Enclosure 5.1.
- 2.4 The field monitoring teams shall use particulate masks and protective clothing whenever activity (measured with the Eberline E-120 or PIC 6A) significantly exceeds normal background or when directed by the FMC.
- 2.5 If the team members expect to be exposed to ^{131}I in excess of 10 MPC ($9 \times 10^{-8} \mu\text{C/ml}$), or if directed by the FMC each team member shall ingest a 130 milligram tablet of potassium iodide.
- 2.6 Environmental sampling during emergency conditions shall not replace, but rather supplement normal environmental monitoring.
- 2.7 The Nuclear Data ND-6 multichannel analyzers shall be calibrated and source checked monthly (CP/O/B/4003/05). The ND-6 shall also be source checked prior to field use.
- 2.8 The Eberline Geiger Counters (E-120 with HP-270 detector), PIC 6As, and Portable Air Samplers (RADCO H-809 F) shall be calibrated quarterly (CP/O/B/4003/06).
- 2.9 An inventory of the emergency kits shall be conducted quarterly to ensure that all items needed are readily available (CP/O/B/4003/06).

- 2.10 Personnel shall adhere to all company safety rules regarding driving of vehicles or boats.
- 2.11 Annual training in the use of this procedure and the associated equipment and instrumentation shall be conducted. Upon completion of the training, documentation of training will be accomplished by completing a Training Content Summary Form, which will be forwarded to the Training and Safety Section.

3.0 Procedure

- 3.1 Upon request for off-site environmental monitoring by the Station Health Physicist and/or the Off-Site Radiological Coordinator, the FMC shall report to the Technical Support Center (TSC). The Field Monitoring Supervisor(s) and members of the six (6) field teams, including one (1) Mobile ND-6 team, shall report to the Environmental Lab to obtain the emergency kits and to initiate surveillance requirements.
- 3.2 One mobile ND-6 team (Alpha), three land field teams, (Bravo, Charlie, Delta) and one boat team (Echo) consisting of 2 technicians each and one helicopter team (Foxtrot) consisting of 1 technician shall be formed as follows:

| <u>Team Call Sign</u> | <u>Transportation *</u> |
|-----------------------|--|
| "Alpha" | Environmental Vehicle #8191 (1980 Ford Bronco) |
| "Bravo" | Admin. Services Vehicle #6888 (1978 Ford Bronco) |
| "Charlie" | Admin. Services Vehicle #4205 (1974 Chevy Blazer) |
| "Delta" | Maintenance Vehicle #7770 (1979 Ford Pickup-Blue) |
| "Echo" | Maintenance Vehicle #8134 (1980 Ford Pickup-White) |
| "Foxtrot" | Administrative Vehicle #7103 (1978 Ford Station Wagon-White) |
| | Administrative Vehicle #7104 (1978 Ford Station Wagon-Blue) |

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

- 3.3 The field teams upon obtaining their emergency kits and emergency vehicles shall before leaving the site:
- 3.3.1 Verify radio communications with the Technical Support Center or Crisis Management Center Base Station using proper radio procedures (Procedure CP/O/B/4003/03).
- 3.3.2 Ensure the Portable Power Generators are operational and fully fueled.
- 3.3.3 Battery and source (Cs-137) check Eberline E-120 survey instrument, PIC 6A, and ND-6 for proper operation.
- 3.3.4 Ensure vehicle and spare gas can (for portable generator) are fueled to maximum capacity.

3.4 Action Plan

- 3.4.1 The Field Monitoring Coordinator's group (Enclosure 5.1) shall consist of the FMC, two alternates, three supervisors, six radio operators and twenty field monitoring team members (including two of the four radio operators).
 - 3.4.1.1 The radio operator(s) shall set up the communications equipment in the TSC and maintain communications with the Field Teams using proper radio procedures (Procedure CP/O/B/4003/03).
- 3.4.2 Coordinator Action
 - 3.4.2.1 The FMC shall be located in the Technical Support Center (TSC) and report to the Station Health Physicist once the TSC is established. Once the Crisis Management Center is established the FMC will report to the Off-Site Radiological Coordinator.
 - 3.4.2.2 Plume direction and sector(s) to be monitored shall be determined by the FMC using CP/O/B/4003/02.
 - 3.4.2.3 The FMC shall direct the efforts of the Field Teams in obtaining pertinent field measurements and implement monitoring strategies and sample collection requirements.
 - 3.4.2.4 The FMC shall advise the Dose Assessment Coordinator of results of field measurements.
 - 3.4.2.5 The FMC shall assure adequate staffing and resources for the Field Teams.
 - 3.4.2.6 The FMC shall assimilate all the data accumulated during the emergency event to facilitate report preparations.
- 3.4.3 Supervisor Action
 - 3.4.3.1 The Field Monitoring Supervisor shall assist the FMC and be prepared to serve as the FMC in his absence.
 - 3.4.3.2 The Field Monitoring Supervisor shall obtain meteorological information from the Station Health Physicist in the Technical Support Center or the Unit 1 Control Room. When the Crisis Management Center is established meteorological information shall be obtained from the Off-Site

Radiological Coordinator. Meteorological conditions shall be reviewed approximately every 15 minutes for possible changes that would affect the plume direction and the sector(s) to be monitored (CP/O/B/4003/02).

- 3.4.3.3 The Supervisor shall dispatch Field Teams to predetermined survey points within the designated (downwind) sector(s). Predetermined sampling locations are located by using Enclosure 5.2 and the map in each kit.

NOTE: The predetermined sampling locations are reference points only. Teams should cruise back and forth across sectors to pin-point the centerline of the radioactive plume using the Eberline E-120 (primary) or PIC 6A. Once the centerline is located then ^{131}I activity should be determined.

- 3.4.3.4 The supervisor shall direct the teams as required to expedite analysis of air samples for ^{131}I .

- 3.4.3.5 Field Teams E and F may or may not be dispatched immediately. Team E, the boat team, will be used to monitor plume activity over Lake Keowee. Team F is the helicopter team and will monitor the plume from the air if determined feasible by the Offsite Radiological Coordinator. Enclosure 5.3 outlines the procedure for obtaining the use of the helicopter.

- 3.4.3.6 The Supervisor or Radio Operator shall record all team data as received on Enclosure 5.4 such as:

3.4.3.6.1 Location and time of sample.

3.4.3.6.2 Dose Rates in mR/hr [Eberline E-120 (primary) or PIC 6A].

3.4.3.6.3 Air Sampling Results in $\mu\text{Ci/ml}$ of ^{131}I (ND-6)

- 3.4.3.7 Illustrate and maintain up-to-date locations of teams on the 10 mile radius maps.

- 3.4.3.8 Instruct teams to collect and replace TLD's and the CP-100 Charcoal Cartridges and particulate filters from air samplers located in the environment as part of the normal environmental monitoring

program (Procedures CP/O/B/4005/13 and CP/O/B/4005/05, respectively). Collect only those air samples and TLD's which are necessary for plume detection. Locations of TLD's and Air Samplers are listed in Enclosure 5.5.

3.4.4 Team Action

- 3.4.4.1 One Field Team shall be designated as the Mobile ND-6 Team. This team will have a ND-6 and be responsible for analyzing air samples from all teams for ^{131}I . A second ND-6 shall be designated for the boat team or another land team based on conditions and need.
- 3.4.4.2 Upon verification that all equipment is operating satisfactorily, the Field Teams shall proceed as directed their predetermined survey points (Enclosure 5.2) to within the sector(s) designated by the Field Monitoring Coordinator or Supervisor.
- 3.4.4.3 The Field Teams shall maintain open communications with the Field Monitoring Coordinator or Supervisor providing sample results as required at each of the sampling locations.
- 3.4.4.4 As directed by the FMC or Supervisor the teams shall travel back and forth between predesignated sample locations:
 - 3.4.4.4.1 Using the Eberline E-120 with HP-270 detector or PIC 6A, perform a general area Beta-Gamma survey to determine noble gas concentrations in mR/hr. Record date, time, location and dose rate (mR/hr) on Field Monitoring Data Sheet (Enclosure 5.6) and report this information to the FMC.
 - 3.4.4.4.2 Teams may be directed to take an air sample ($>10^6$ ml) using the RADeCO Portable Air Sampler equipped with a Silver Zeolite Cartridge and particulate filter. Use Enclosure 5.7 to ascertain sample time [based on the calibrated flow rate (CFM) of the Air Sampler] for obtaining a minimum sample volume ($> 10^6$ ml). Use the stopwatch to ensure correct number of minutes for an adequate sample. Record Date/Time/

Location of sample, sample run time (min.) and calibration sticker air flow (cfm) on Enclosure 5.8, Column "A", "B", and "C", respectively. Calculate the sample volume in milli-liters (must be $\geq 10^6$ ml) as follows:

$$\text{Sample Volume (ml)} = \text{Calibrated Flow Rate (CFM)} \times \text{Sample Run Time (min)} \times 2.83 \times 10^4 \text{ ml/ft}^3$$

Record Sample Volume (ml) on Enclosure 5.8, Column "H".

- 3.4.4.4.3 Place the silver zeolite cartridge in a poly sample bag and label the bag.
- 3.4.4.4.4 At the direction of the Field Monitoring Supervisor meet the Mobile ND-6 Team and have the sample counted as per procedure No. CP/O/B/4003/04. Record CPM on Enclosure 5.8, Column "E".
- 3.4.4.4.5 Calculate ^{131}I Activity ($\mu\text{Ci/ml}$) as directed in Enclosure 5.8 and record under Column "I".
- 3.4.4.4.6 Report results of ^{131}I measurement (Column "I", Enclosure 5.8) to the FMC in $\mu\text{Ci/ml}$.
- 3.4.4.4.7 Place the particulate filter from the air sampler in a separate poly bag, label and retain for later analysis.
- 3.4.4.4.8 (Optional) Take smears at locations as directed by the FMC, place them in separate poly bags, label and retain for later analysis.
- 3.4.4.4.9 (Optional) Collect water samples in cubitainers at locations and times designated by the FMC. Label the cubitainers and retain for later analysis.
- 3.4.4.4.10 (Optional) Place TLDs at locations and times designated by the FMC.
- 3.4.4.4.11 (Optional) Collect air samples and TLDs that are located in the environment as part of the normal environmental

monitoring program as directed by the FMC. Record locations and collection times. Locations are listed in Enclosure 5.5.

- 3.4.4.4.12 Return all samples to the Environmental Lab or Crisis Management Center as directed by the FMC. Samples shall be counted onsite by Health Physics or transported to the Environmental Lab, Huntersville, N.C. for counting. The Crisis Management Center Administration and Logistics Group shall be responsible for transporting the samples expeditiously to the Environmental Lab if required.
- 3.4.4.4.13 Turn in all data sheets (Enclosures 5.6 and 5.8) to FMC or designee.
- 3.4.4.4.14 The teams shall be supplemented, relieved, or secured as directed by the FMC.

4.0 References

- 4.1 Procedure CP/O/B/4003/02, The Determination of Plume Direction and Sector(s) to be Monitored Following a Large Unplanned Release of Gaseous Radioactivity.
- 4.2 Procedure CP/O/B/4003/03, Emergency Radio System Operations, Maintenance and Communications.
- 4.3 Procedure CP/O/B/4003/04, Operation of The ND-6, Portable Multichannel Analyzer
- 4.4 Procedure CP/O/B/4003/05, Energy Calibration and Efficiency Determination For the ND-6
- 4.5 Procedure CP/O/B/4003/06, Inventory, Calibrations and Operational Verification of Emergency Equipment.

5.0 Enclosures

- 5.1 Field Monitoring Organization.
- 5.2 Predetermined Sampling Locations by Sector and Distance from ONS
- 5.3 Procurement of Helicopter(s) for Emergency Environmental Surveillance.
- 5.4 Sample Results Received by the Radio Operator From Field Monitoring Teams.

- 5.5 Air Sampler and TLD Locations for Normal Environmental Monitoring Program.
- 5.6 Field Monitoring Data Sheet for Dose Rate Measurements.
- 5.7 Sample Time Required For Minimum Sample Volume.
- 5.8 Field Monitoring Team Work Sheet for Determining ^{131}I Activity.

ENCLOSURE 5.1
FIELD MONITORING ORGANIZATION

FIELD MONITORING COORDINATOR (FMC) AND RADIO OPERATORS (RO)

Primary FMC: J. J. Sevic - Office: 803/882-5363(1675); Home: 803/882-1588
Alternate(s): J. R. Leonard - Office: 704/875-1357(4444); Home: 704/392-8271
G. Mode - Office: 803/831-2282; Home: 704/399-2966
TSC Primary RO: R. M. Lee - Office: 803/882-5363(1618); Home: 803/638-6806
TSC Alternate: R. P. Childress - Office: 803/882-5363(1618); Home: 803/654-1507
CMC Primary RO: R. L. Rivard - Office: 803/831-2282(2561); Home: 803/222-4354
CMC Primary RO: S. E. Foreman - Office: 704/875-1357(4578); Home: 704/735-1528
CMC Alternate: D. E. Sexton - Office: 803/831-2282(2364); Home: 803/684-7364
CMC Alternate: G.M. Harrison - Office: 704/875-1357(4028); Home: 704/637-0218 & 704/633-04
CMC Alternate: F. D. Theriault - Office: 803/831-2282(2280); Home: 803/366-8466
CMC Alternate: P. W. Sturgis - Office: 803/831-2282(2406); Home: 803/327-4741
CMC Alternate: S. E. LeRoy - Office: 704/875-1357(4028); Home: 704/732-0218

FIELD MONITORING SUPERVISOR(S)

M. R. Killough - Office: 803/882-5363(1573); Home: 803/882-1310
J. W. Crain - Office: 803/882-5363(1572); Home: 803/868-9138
L. J. Benge - Office: 803/882-5363(1417); Home: 803/654-7664

FIELD MONITORING TEAM MEMBERS

A. Chemistry & Environmental (ONS)

1. *Bobby Lee - Ext. #1618; Home: 638-6806
2. Gina Roach - Ext. #1618; Home: 859-4784
3. Darrell Lewis - Ext. #1648; Home: 296-3928
4. *Gary Sain - Ext. #1618; Home: 654-5288
5. *Bobby Childress - Ext. #1618; Home: 868-9619
6. *Lynette Fant - Ext. #1618; Home: 882-0424
7. *Judy Head - Ext. #1618; Home: 944-1143
8. Rick Morris - Ext. #1102; Home: 944-2342
9. *Sandra Luedeman - Ext. #1323; Home: 882-6735
10. Gay Walter - Ext. #1323; Home: 646-7769

B. Health Physics (ONS)

1. Steve Alexander - Ext. #1325; Home: 868-9161
2. Roger Slocum - Ext. #1104; Home: 404/886-5013
3. Randy Smith - Ext. #1325; Home: 868-9771
4. *Tom Smith - Ext. #1325; Home: 882-4025
5. Janet Hutchins - Ext. #1325; Home: 882-0082
6. *Don Davis - Ext. #1325; Home: 882-0924
7. *Paul Tichenor - Ext. #1103; Home: 638-6354
8. Barry Stewart - Ext. #1313; Home: 647-6467
9. *Steve Kirkland - Ext. #1106; Home: (404)886-6382
10. Robert Taylor - Ext. #1106; Home: 646-9598

*Can be on site within 30 minutes

ENCLOSURE 5.2
 PREDETERMINED SAMPLING LOCATIONS BY SECTOR AND DISTANCE FROM ONS

| <u>Sampling Sector</u> | <u>Sampling Location</u> | <u>Responsible Team</u> | <u>Radius from ONS (Mi)</u> | <u>Description of Sampling Locations</u> |
|------------------------|--------------------------|-------------------------|-----------------------------|--|
| N | A-1 | E | 1 | Lake Keowee - Midlake due west of Warpath Access Area |
| N | A-2 | B or E | 3 | Gap Hill Landing |
| N | A-3 | E | 3 | West Shoreline of Lake Keowee from Gap Hill Landing |
| N | A-4 | E | 5 | East Shoreline of Lake Keowee - Due East from Crow Creek Island |
| N | A-5 | E | 5 | Midlake at Crow Creek Island |
| N | A-6 | C or E | 5 | Old Town Landing |
| N | A-7 | D | 10 | Keowee Toxaway State Park |
| N | A-8 | D or E | 9 | Hwy 11 Bridge over Lake Keowee |
| NNE | B-1 | A or E | 1 | Warpath Access Area |
| NNE | B-2 | B | 3 | Junction of Hwy 157 (Gap Hill Rd) and 500 KV Transmission Line |
| NNE | B-3 | B | 3 | Lake Hill Acres Campground - Hwy 157 (Gap Hill Rd) |
| NNE | B-4 | C | 5 | Junction of Hwy 133 & 327 |
| NNE | B-5 | C | 5 | Hwy 327, Keowee Church |
| NNE | B-6 | D | 9 | Junction of Hwy 133 & 49 (Shady Grove Church) |
| NE | C-1 | A | 1 | Hwy 183, 1 mile N of Lake Hartwell at Steel Gate (West Side of Road) |
| NE | C-2 | B | 3 | Junction of Hwy 183 & 157 (Gap Hill Rd) |
| NE | C-3 | C | 4 | Love & Care Nursing Home (Love & Care Rd) |
| NE | C-4 | C | 5 | Junction of Hwy 133 and Hunting Hollow Rd |
| NE | C-5 | D | 10 | Martin Grove Church, Junction of Hwy 172 & 32 |
| NE | C-6 | D | 10 | Junction of Hwy 32 & 33 |
| ENE | D-1 | A | 1 | Hwy 183 N of Keowee Hydro Station Tailrace Bridge @ Keowee Cabins |
| ENE | D-2 | B | 3 | Junction of Hwy 157 (Gin Shoals Rd.) and Shadydale Circle |
| ENE | D-3 | C | 5 | Junction of Hwy 137 and Belle Shoals Rd |

ENCLOSURE 5.2 (Cont.)
PREDETERMINED SAMPLING LOCATIONS BY SECTOR AND DISTANCE FROM ONS

| <u>Sampling Sector</u> | <u>Sampling Location</u> | <u>Responsible Team</u> | <u>Radius from ONS (Mi)</u> | <u>Description of Sampling Locations</u> |
|------------------------|--------------------------|-------------------------|-----------------------------|--|
| ENE | D-4 | C | 5 | Hwy 137, 1.5 miles east of Hwy 183 at first road junction |
| ENE | D-5 | D | 10 | Junction of Hwy 267 & 12 Mile Creek |
| ENE | D-6 | D | 10 | Junction of Hwy 273 & 12 Mile Creek |
| ENE | D-7 | D | 10 | Junction of Hwy 183 & 287 |
| E | E-1 | A | 1 | Old Pickens Grocery, Junction of Hwy 182 & 160 |
| E | E-2 | B | 3 | Bridge @ Junction of Hwy 291 (Old Seneca Hwy) & Six Mile Creek |
| E | E-3 | B | 3 | Entrance to Foxfire Estates off Hwy 291 1 mile N of Hwy 160 |
| E | E-4 | C | 5 | Junction of S.C. 133 & County 137 @ Six Mile Post Office |
| E | E-5 | C | 5 | Junction of Hwy 133 & 337 (Maw Bridge Rd) |
| E | E-6 | C | 5 | Junction of Hwy 337 & Camp Creek Rd |
| E | E-7 | D | 10 | Holly Springs Church on Hwy 222 |
| E | E-8 | D | 10 | Junction of Hwy 158 & 137 |
| E | E-9 | D | 10 | Junction of Hwy 93 & 171 |
| ESE | F-1 | A | 1 | Hwy 183 Bridge across Lake Hartwell |
| ESE | F-2 | B | 3 | Junction of Hwy 160 & Furman L. Smith Rd |
| ESE | F-3 | B | 3 | Junction of Furman L. Smith Rd & Hwy 101 (Knoll View Road) |
| ESE | F-4 | C | 5 | Junction of Hwy 277 & 337 (Maw Bridge Rd) |
| ESE | F-5 | D | 10 | Junction of Hwy 165 & 44 (Central, S.C.) |
| ESE | F-6 | D | 10 | Midway Church, Junction of Hwy 395 & 91 |
| ESE | F-7 | D | 10 | Junction of Hwy 93 & 51 (Norris, S.C.) |
| SE | G-1 | A | 1 | Hwy 183 @ Old Pickens Church |
| SE | G-2 | B | 3 | Hwy 291 @ entrance to Toby Hills Subdivision |
| SE | G-3 | C | 5 | Pleasant Hill Church @ Junction of Hwy 160 & 133 |
| SE | G-4 | C | 5 | Daniel High School @ Junction of Hwy 133 & 15 |

ENCLOSURE 5.2 (Cont.)
 PREDETERMINED SAMPLING LOCATIONS BY SECTOR AND DISTANCE FROM ONS

| <u>Sampling Sector</u> | <u>Sampling Location</u> | <u>Responsible Team</u> | <u>Radius from ONS (Mi)</u> | <u>Description of Sampling Locations</u> |
|------------------------|--------------------------|-------------------------|-----------------------------|---|
| SE | G-5 | D | 7 | Junction of Hwy 15 & 102 (Central, S.C.) |
| SE | G-6 | D | 10 | Junction of Hwy 123 & 18 |
| SE | G-7 | D | 10 | Junction of Hwy 123 & 30 |
| SSE | H-1 | A | 1 | Junction of Hwy 183 & 6 |
| SSE | H-2 | B | 3 | Hwy 291 two miles S of Hwy 160 |
| SSE | H-3 | B | 5 | Hwy 291 & 27 @ Isaquena Park Entrance |
| SSE | H-4 | B | 5 | Hwy 27, Lawrence-Ramsey Bridge Access Area |
| SSE | H-5 | C | 9 | Junction of Hwy 123 & 133 (Clemson, S.C.) |
| SSE | H-6 | C | 9 | Junction of Hwy 123 & 93 (Clemson, S.C.) |
| SSE | H-7 | C | 9 | Junction of Hwy 93 & 320 @ Littlejohn Colliseum |
| SSE | H-8 | C | 10 | Bridge across Lake Hartwell 1 mile E of Hwy 149 & 115 Junction |
| S | I-1 | A | 1 | 0.5 Miles SW of Junction 130 & 6 @ Beaver Pond Marker |
| S | I-2 | A | 3 | Hwy 130 @ Holder's Landing |
| S | I-3 | B | 5 | Junction of Hwy 27 & N Bayshore Dr. |
| S | I-4 | B | 5 | Junction of Hwy 27 & 359 (Hanover Hills) |
| S | I-5 | B | 5 | Corinth Baptist Church, Hwy 1 (Old Clemson Hwy) |
| S | I-6 | C | 10 | Junction of Hwy 37 & 210 |
| S | I-7 | C | 10 | Clemson, Oconee Airport, Hwy 37 |
| SSW | J-1 | A | 1 | Junction of Hwy 183 & 130 |
| SSW | J-2 | A | 3 | Junction of Hwy 130 & 38 |
| SSW | J-3 | E | 3 | Lake Keowee, East Shoreline |
| SSW | J-4 | B | 5 | Hwy 130 @ South end of Newry Dam |
| SSW | J-5 | E | 5 | Lake Keowee, Midlake west of Newry Dam |
| SSW | J-6 | B | 8 | Junction of Hwy 130 & 123 |
| SSW | J-7 | C | 9 | Utica Elementary School, Seneca, S.C. |
| SSW | J-8 | C | 8 | Seneca Water Plant |

ENCLOSURE 5.2 (Cont.)
 PREDETERMINED SAMPLING LOCATIONS BY SECTOR AND DISTANCE FROM ONS

| <u>Sampling Sector</u> | <u>Sampling Location</u> | <u>Responsible Team</u> | <u>Radius from ONS (Mi)</u> | <u>Description of Sampling Locations</u> |
|------------------------|--------------------------|-------------------------|-----------------------------|---|
| SW | K-1 | A | 1 | Old Hwy 183, 1/4 mile W of Hwy 130 |
| SW | K-2 | E | 3 | Lake Keowee, Midlake beneath Norcross Ga. 500 KV Transmission Line |
| SW | K-3 | B | 5 | Fairview Church, Hwy 340 |
| SW | K-4 | B | 5 | Crooked Creek Bridge across Lake Keowee on Hwy 188 |
| SW | K-5 | C | 9 | Oconee Memorial Hospital @ Hwy 123 & 28 |
| SW | K-6 | C | 9 | Head-Lee Nursery, Hwy 28 |
| WSW | L-1 | E | 1 | Lake Keowee, Cove immediately north of skimmer wall |
| WSW | L-2 | E or A | 3 | End of Hwy 605 @ Lake Keowee |
| WSW | L-3 | B | 5 | Junction of Hwy 46 & 175 |
| WSW | L-4 | B | 5 | 2 Mi S of Hwy 46 & 175 Junction |
| WSW | L-5 | C | 10 | Junction of Hwy 35 & 28 (West Union) |
| WSW | L-6 | C | 10 | Junction of Hwy 11 & 28 (West Union) |
| W | M-1 | E | 1 | Due West of ONS on Lake Keowee |
| W | M-2 | A | 3 | Junction of Hwy 12 & 576 |
| W | M-3 | B | 5 | Junction of Hwy 223 & Crooked Creek |
| W | M-4 | B | 6 | Junction of Hwy 183 & 40 (Patterson's Grocery) |
| W | M-5 | C | 8 | Junction of Hwy 11 & 131 |
| W | M-6 | C | 8 | Junction of Hwy 11 & 183 |
| WNW | N-1 | E | 1 | Midlake, due west of Connecting Canal Bridge in Lake Keowee |
| WNW | N-2 | A | 3 | Junction of Hwy 183 & 201 |
| WNW | N-3 | A | 3 | Junction of Hwy 201 & 92 |
| WNW | N-4 | B | 5 | Junction of Hwy 40 & 46 |
| WNW | N-5 | B | 5 | Little River Bridge on Hwy 132 |
| WNW | N-6 | C | 9 | Pickett Post @ Hwy 11 |
| WNW | N-7 | C | 9 | Junction of Hwy 11 and 94 |

ENCLOSURE 5.2 (Cont.)
PREDETERMINED SAMPLING LOCATIONS BY SECTOR AND DISTANCE FROM ONS

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

ENCLOSURE 5.3

PROCUREMENT OF HELICOPTERS FOR EMERGENCY ENVIRONMENTAL SURVEILLANCE

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

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

To obtain helicopter(s) for emergency service contact:

| | <u>Office</u> | <u>Home</u> |
|---------------------|---------------|--------------|
| 1. L. W. Johnson* | 704-331-4172 | 704-523-3524 |
| 2. L. M. Whisonant* | 704-331-4173 | 803-324-0260 |
| 3. B. A. Turpin* | 704-331-4319 | 704-394-9247 |
| 4. D. M. Staggs | 704-331-4157 | 704-525-9871 |

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

ENCLOSURE 5.4

SAMPLE RESULTS RECEIVED BY THE RADIO OPERATOR FROM FIELD MONITORING TEAMS

DATE _____

RADIO OPERATOR _____

[illegible]

ENCLOSURE 5.5
AIR SAMPLER AND TLD LOCATIONS FOR NORMAL ENVIRONMENTAL MONITORING PROGRAM

AIR SAMPLE LOCATIONS

1. Site 000 Visitors Center, parking lot
2. Site 006 Clemson University Meteorological Station
3. Site 009 Microwave tower, Six Mile
4. Site 014 Duke Power Company Environmental Health Office

TLD LOCATIONS

1. Site 000 Visitors Center, parking lot
2. Site 000.1 Onehalf mile east of junction (Hwy. 183 and 130) on Hwy 183 beneath transmission line
3. Site 000.2 Skimmer wall road (south)
4. Site 000.6 ONS CCW discharge
5. Site 000.9 Hwy 183 - one mile northwest of ONS on Hwy 183
6. Site 000.10 Skimmer wall road (north)
7. Site 000.11 Hwy 183 beneath transmission line immediately east of Hwy 183 bridge
8. Site 000.12 Old construction living quarters near Perimeter Gate #2
9. Site 000.13 Emergency boathouse
10. Site 000.14 Keowee Dam fence near Hydro Station intake
11. Site 000.15 ONS boundary fence - North
12. Site 000.16 ONS boundary fence - North
13. Site 000.17 ONS boundary fence - West
14. Site 000.18 ONS boundary fence - West
15. Site 000.19 ONS boundary fence - South
16. Site 001 Salem Voluntary Fire Department
17. Site 002 Walhalla Branch Road SubStation
18. Site 003 Keowee School Area - Mike Thorne's boat shed
19. Site 004 Oconee Memorial Hospital (parking lot)
20. Site 005 Old Newry School
21. Site 006 Clemson Meteorological Station
22. Site 007 Transmission tower base, Hwy 93, Central
23. Site 008 Duke Power Co. Branch Office, Liberty (Control Station)
24. Site 009 Microwave tower, Six Mile
25. Site 010 Duke Power Co. Branch Office, Pickens
26. Site 011 Warpath Access Area

FIELD MONITORING DATA SHEET FOR DOSE RATE MEASUREMENTS

Date _____ Team Members/Call Sign _____ / _____ Eberline E-120 No. _____

PIC 6A No. _____

[illegible]

ENCLOSURE 5.7

SAMPLE TIME REQUIRED FOR MINIMUM SAMPLE VOLUME

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

NOTE: When estimating time required to get a minimum volume of 1×10^6 ml if flow rate for the air sampler in use is not on table, go to next Lower flow rate,

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

[illegible]

Column B) Length of time the air sampler ran in minutes, see Enclosure 5.7 for sample time for minimum sample volume.

Column C.) Calibrated flow rate for GY-170 filter cartridge written on the calibration sticker (DO NOT USE THE METER FLOW RATE).

Column (b) 2.81×10^4 ml/g 3 = Conversion factor, 11.3 to ml.

Column E.) NB 6 (gm = [net counts under ^{131}I curve] \div 5 (number of minutes samples are counted with NB-6)).

column #) MP-6. Efficiency = the efficiency value from the curve at 364 KeV plotted on the inside lid of the MP-6 abundance of the ^{131}I gamma).

(column 4); $k_p/P \times 10^{-2}$ = Accounts for both the 13 l filtering efficiency of the silver zeolite cartridge (.95) and the conversion factor for converting μm to μC ($6,505 \times 10^{-7} \mu\text{C}/\mu\text{m}$).

Column (1) the product of $(B \times C \times D)$, must be $> 1 \times 10^6$ ml to be an adequate sample as per Enclosure 5.1.

^a Data reported to the NRC by radio. (Column A and Column H).

INFORMATION ONLY

Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: IP/O/B/1601/3
Change(s) 6 to
6 Incorporated

(2) STATION: Uconee
(3) PROCEDURE TITLE: Environmental Equipment Checks

(4) PREPARED BY: Anthony D. King DATE: 7/21/83

(5) REVIEWED BY: Bill McElroy DATE: 7/22/83

Cross-Disciplinary Review By: _____ N/R: CEM

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: Joe M. Davis Date: 7/27/83

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

DUKE POWER COMPANY
OCONEE NUCLEAR STATION
ENVIRONMENTAL EQUIPMENT CHECKS

1.0 Purpose

- 1.1 To furnish a procedure for documentation of weekly data collection and equipment functional checks.

2.0 References

- 2.1 Duke Dwg. 0-714-D, 0-829, 0-829-A

3.0 Test Equipment Required

- 3.1 Portable psychrometer

4.0 Prerequisites (Sign-offs on Enclosure 11.1)

- 4.1 This procedure should not be performed during a gaseous waste release period.
- 4.2 Supervisor has reviewed and initialed all portions of this procedure which are not applicable to the activity being performed. The Supervisor's review is not required if the procedure specifies sections to be omitted.
- 4.3 Verify that all changes in the Control Copy are incorporated in the Working Copy.
- 4.4 This procedure must be retyped within 30 days of any approved change.
- 4.5 A copy of the control copy must be sent to emergency preparedness coordinator any time a change is made.

5.0 Limits and Precautions

- 5.1 Use proper precautions while working with components that have high voltage or high pressure present.

6.0 Unit Status

N/A

7.0 General Description

The environmental equipment monitors the following parameters and records the information on individual chart recorders; wind speed, wind direction, air temperature, humidity, and amount of rainfall.

There are two meteorological monitoring stations for the wind speed and direction. Site #1 is located at the micro-wave tower and Site #2 is located adjacent to the river below Keowee discharge.

8.0 Major Components

| <u>Description</u> | <u>Man. Ref.</u> |
|--|------------------|
| 8.1 Four Esterline Angus Series "A" Analog Recorders | |
| 8.2 One Leeds and Northrup Speedomax H&W Multipoint Recorder | OM-267-514 |
| 8.3 Two Teledyne Geotech Series 40 Wind Speed Modules | OM-333-274 |
| 8.4 Two Teledyne Geotech Series 40 Wind Direction Modules | OM-333-275 |
| 8.5 Two Teledyne Geotech Series 40 AC Power Supplies | OM-333-276 |
| 8.6 One Leeds and Northrup 3-Lead Resistance Temperature Detector (RTD) Air Temperature System | |
| 8.7 One Belfort Instrument Company Hygro- thermograph Recorder | |
| 8.8 One Belfort Instrument Company weighing Rain Gauge Recorder | |

9.0 Equipment Specifications

| | |
|--------------------------|--|
| Wind Speed | 0-30 mph (60 and 90 mph selectable ranges) |
| Wind Direction | 0-540 degrees |
| Ambient Air Temperature | -15 to 105°F |
| Temperature Differential | -30 to 30°F |
| Rainfall Gauge | 0-12 in. |

10.0 Procedure Instructions (Sign-offs on Enclosure 11.1)

NOTE: Use Control Room computer clock for all time recordings. Mark on charts all as found calibration points (R_z Found, T_z Found and F.S. Found) before adjustments are made. If adjustments are made, mark all as left calibration points (R_z Left, T_z Left and F.S. Left) on charts.

Perform as found string checks using the following procedure and complete Enclosure 11.3.a and b.

10.1 ONS Site 1

1. Check recorder zero on wind speed and direction recorders by turning translator power off. Rotate charts slowly and individually for good trace. Verify positions on recorders and note time and date. Mark " R_z Found" on each chart beside the trace.
2. Return power on translator and check wind speed and direction Lo Cal. by placing modules in the Lo Cal. position. Rotate charts slowly and individually for good trace. Verify positions on recorders. Mark " T_z Found" on each chart beside the trace.
3. Place the wind direction and wind speed module in the Hi Cal. position. Rotate chart slowly and verify position on recorder. Mark "F.S. Found" on each chart beside the trace.
4. Place wind speed and direction modules in operate position. Verify normal response on recorders. Insure ink wells are full.
5. Change the charts on recorders. Document start time and date on the charts.

10.2 ONS Site 2

1. Place Control Room switch in the Lo position. Verify Lo Cal. positions on the wind speed and direction recorders. Rotate charts slowly and individually for good trace. Label chart " T_z Found".
2. Place Control Room switch in the Hi position. Verify Hi Cal. positions on the wind speed and direction recorders. Rotate charts slowly and individually for good trace. Label "F.S. Found".
3. Check recorder zero on wind speed and direction recorders by disconnecting field inputs in back of recorders and installing a jumper wire across the terminals. Label chart " R_z Found". Document time and date on charts. Rotate charts individually and slowly for good trace. Verify position on recorders.
4. Remove jumpers and reconnect field inputs to recorders.

5. Place Control Room switch to the operate position. Verify normal response on recorders. Insure ink wells are full.
6. Change charts on recorders. Document starting time and date on charts.

If all string checks are within tolerance, remove and staple together the front approval sheet, list of enclosures, and sign off sheet. Insure all equipment mentioned above is returned to service and continue.

If all string checks are not within tolerance, continue with Section 10.6.

10.3 Air Temperature Recorder

1. Turn off chart recorder. Document time and date on chart.
2. Remove weeks run of chart paper. Replace chart paper as necessary.
3. Restart chart and recorder. Verify proper response. Document time and date on chart.

NOTE: If there are any problems or you think there may be something wrong with the air temperature system, please note this on the chart from Step 2.

10.4 Hygro-Thermograph Recorder

1. Check the temperature with a thermometer and humidity with a portable psychrometer.
2. Remove old chart from recorder noting time and date on chart.
3. Change the chart on the hygro-thermograph recorder. Document start time and date on chart.
4. Prepare recorder for another week of operation by rewinding clock mechanism, inking the pens, and aligning chart for correct time. Document the temperature and humidity readings from Step 1 on chart.

If the temperature or humidity is found, upon comparison with a thermometer and psychrometer, to be incorrect proceed to Section 10.6 for adjustment procedures.

10.5 Rain Gauge Recorder

1. Open the sliding door and lift the pen from the chart by pulling the pen arm shifter away from the mechanism support column.
2. Next remove the collector and empty the bucket slowly from the platform so that the gauge mechanism will not be subject to any sudden shock as the pen returns to the zero reading.

3. Replace the collector.
4. Lift the chart cylinder and remove old chart noting time and date on chart.
5. Change the chart on the rain gauge recorder. Document start time and date on chart.
6. Prepare recorder for another week of operation by rewinding clock mechanism, inking the pen, and aligning chart for correct time.
7. Verify pen on zero point. If not, adjust the zero knob until zero is obtained.
8. Ink the pen, set the chart to correct time. Press the pen arm shifter all the way in and verify pen is making contact with chart.
9. Close sliding door.

10.6 Calibration Procedures

A. Wind System

1. To adjust recorder zero, ensure power supply on translator is off. The zero adjustment arm is located on the inside bottom of recorder under the chart take-up reel. Make adjustments until recorder reads zero. Mark "R_Z Left" on chart beside the trace after the final adjustment.
2. To adjust the translator full scale, turn the power supply on and the translator mode switch to the Hi Cal position. Adjust the Hi Cal adjusting screw on front of module to achieve a full scale reading. Mark "F.S. Left" on chart beside the trace after the final adjustments.
3. To adjust the translator zero, turn the mode switch to the Lo Cal position. On the wind direction module adjust the Lo Cal adjusting screw on the front of the module to obtain a zero reading. Mark "T_Z Left" on chart beside the trace after the final adjustment.

NOTE: The translator zero for the wind speed module should be performed in a lab since the adjustments necessary must be made internal of the translator and requires a considerable amount of time and accuracy.

If translator zero for wind speed exceeds tolerances contact the E.S.S. (Environmental Services Section).

B. Hygro-Thermograph Recorder

1. If the temperature indication is found to be incorrect an adjustment may be made by turning the thumb screw nearest the front of the case until the thermometer and instrument pen are in agreement.
2. If the humidity is found to be incorrect, wet the hairs by stroking them gently with a camel hair brush wetted with distilled water. Continue this wetting for several minutes until no further rise of the pen can be observed. When a stable position is reached, set the humidity pen to read 92% by adjusting the thumbscrew in the base of the instrument located beside the temperature setting screw. Do not set the pen to read 100% humidity. No amount of artificial wetting seems to wet the hair to the same extent as actual exposure to saturated air. If after several checks an error is found in humidity indication, the rear adjustment thumbscrew can be used to correct error per psychrometer reading.

10.7 As Left String Checks (Enclosure 11.5a and b)

Perform as left string checks as required due to maintenance action or calibration in Section 10.2 for all strings affected following procedure steps in Section 10.1.

11.0 Enclosures

11.1 Sign-Off Sheet

11.2 Reference Data (None)

11.3 As Found String Checks

11.3.a ONS Site 1

11.3.b ONS Site 2

11.4 Calibration Data Sheets (None)

11.5 As Left String Checks

11.5.a ONS Site 1

11.5.b ONS Site 2

ENCLOSURE 11.1

IP/O/B/1601/03

SIGN-OFF SHEET

Prerequisites

____ 4.1

____ 4.2

____ 4.3

____ 4.4

____ 4.5

Date Begun _____

Date Completed _____

W.R.# _____

String Checks and Data Sections

____ 10.0

____ 10.3

____ 10.6

____ 11.3.a.

____ 11.5.a

____ 10.1

____ 10.4

____ 10.7

____ 11.3.b.

____ 11.5.b.

____ 10.2

____ 10.5

____/____ 10.2.3 Wires Removed and Jumpers Installed

____/____ 10.2.4 Jumpers Removed and Wires Replaced

Performed By _____

(Tech)
Init. and Date

Notified Instrument Supervisor that a tolerance of 2%
was exceeded on the following components:

Inst. Supvr.
Init. and Date

An evaluation was made on the above problem(s) and the
following corrective action taken:

Remarks: _____

ENCLOSURE 11.3.a

IP/0/B/1601/03

AS FOUND INTEGRATED STRING

VERIFICATION DATA SHEET

Item Wind, Speed & Direction

Test Equipment Used

Mfg Teledyne Geotech

Item SN

Type Series 40

Calibration Tolerance W/S ± 0.4 mph; W/D ± 5.0

System Environmental

Span W/S 0-30 mph; W/D 0-540°

Location Upper Meteorological Site (ONS Site 1)

| Input | Required Reading W/S mph | AS Left W/S mph | Required Reading W/D Deg | AS Left W/D Deg |
|--------|-----------------------------|--------------------|-----------------------------|--------------------|
| Rz | 0 | | 0 | |
| Lo Cal | 0.6 \pm .1 mph | | 0 | |
| Hi Cal | Full Scale | | Full Scale | |

Equipment Removed From Service _____, _____

Equipment Returned To Service _____, _____

MAXIMUM ERROR (W/S) _____ mph, (W/D) _____ Deg

PERFORMED BY: _____ DATE: _____

ENCLOSURE 11.3.b

IP/O/B/1601/03

AS FOUND INTEGRATED STRING

VERIFICATION DATA SHEET

Item Wind, Speed & Direction

Test Equipment Used

Mfg Teledyne Geotech

Item SN

Type Series 40

Calibration Tolerance W/S ± 0.4 mph; W/D ± 5.0

System Environmental

Span W/S 0-30 mph; W/D 0-540°

Location Lower Meteorological Site (ONS Site 2)

| Input | Required Reading W/S mph | AS Found W/S mph | Required Reading W/D Deg | AS Found W/D Deg |
|--------|-----------------------------|---------------------|-----------------------------|---------------------|
| Rz | 0 | | 0 | |
| Lo Cal | 0.6 \pm .1 mph | | 0 | |
| Hi Cal | Full Scale | | Full Scale | |

Equipment Removed From Service _____

Equipment Returned To Service _____

MAXIMUM ERROR (W/S) _____ mph, (W/D) _____ Deg

PERFORMED BY: _____

DATE: _____

ENCLOSURE 11.5.a

IP/0/B/1601/03

AS LEFT INTEGRATED STRING

VERIFICATION DATA SHEET

Item Wind, Speed & Direction

Test Equipment Used

Mfg Teledyne GeotechItem SNType Series 40Calibration Tolerance W/S ± 0.4 mph; W/D ± 5.0 System EnvironmentalSpan W/S 0-30 mph; W/D 0-540°Location Upper Meteorological Site (ONS Site 1)

| Input | Required Reading W/S mph | AS Left W/S mph | Required Reading W/D Deg | AS Left W/D Deg |
|--------|-----------------------------|--------------------|-----------------------------|--------------------|
| Rz | 0 | | 0 | |
| Lo Cal | 0.6 \pm .1 mph | | 0 | |
| Hi Cal | Full Scale | | Full Scale | |

Equipment Removed From Service _____, _____

Equipment Returned To Service _____, _____

MAXIMUM ERROR (W/S) _____ mph, (W/D) _____ Deg

PERFORMED BY: _____ DATE: _____

| Section | Test Equipment Used |
|----------------------|---------------------|
| | Item SN |
| | |
| | |
| ± 0.4 mph; W/D ± 5.0 | |
| | |
| 0-540° | |
| al Site (ONS Site 2) | |

| Input | Required Reading W/S mph | AS Left W/S mph | Required Reading W/D Deg | AS Left W/D Deg |
|--------|-----------------------------|--------------------|-----------------------------|--------------------|
| Rz | 0 | | 0 | |
| Lo Cal | 0.6 ± .1 mph | | 0 | |
| Hi Cal | Full Scale | | Full Scale | |

Equipment Removed From Service _____, _____
Equipment Returned To Service _____, _____
MAXIMUM ERROR (W/S) _____ mph, (W/D) _____ Deg
PERFORMED BY: _____ DATE: _____