December 2, 1983

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Dear Gary:

CATAWBA NUCLEAR STATION EMERGENCY PREPAREDNESS APPRAISAL

Attached is a copy of the portions of the Catawba Nuclear Station Emergency Preparedness Appraisal report completed by the Pacific Northwest Laboratory (PNL) participants, C. D. Corbit, M H. Malmros, and W. H. Knox. Only minor editorial changes have been made to the draft given to you prior to leaving the site.

The PNL team members conducted the following portions of the appraisal:

Section No.	Title
4.1.1.1	Control Room
4.1.1.2	Technical Support Center
4.1.1.3	Operations Support Center
4.1.2.2	Medical Treatment
4.2.1.2	Area and Process Monitors
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5.5.1	Inventory, Operational Check and Calibration of Emergency Equipment Facilities and Supplies
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5.5.4	Audit
6.2	General Public
6.3	News Media
7.2	Walkthroughs

If you have any questions regarding this report, please contact C. D. Corbit on FTS (509)375-6866.

Sincerely,

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4.0 EMERGENCY FACILITIES AND EQUIPMENT

4.1 EMERGENCY FACILITIES

4.1.1 Assessment Facilities

4.1.1.1 Control Room

The Control Room was inspected with respect to the requirements of 10 CFR 50.47(b)(8); 10 CFR 40, Appendix E, IV, E and the criteria of NUREG-0654, Section II.H.

The auditors examined the Control Room facilities and interviewed the Control Room Emergency Response personnel in five watch organizations. The Control Room is located in the Auxiliary Building. Both units are served from the mirror image common control area. The Shift Supervisor's office is an enclosed area immediately adjacent to the main control area. The Control Room has been provided with an emergency ventilation system that provides for isolation upon detection of radiation or chlorine gas and closed cycle filtration through redundant trains of HEPA filters and charcoal beds. The installation of the emergency ventilation system has been completed and is in the final phase of startup testing with completion scheduled for February 1984.

Copies of the Catawba Emergency Plan and approved implementing procedures were available in the Control Room. However, numerous implementing procedures remain in the draft state and were not available in the Control room for use by the operators during the walkthrough interviews conducted with the Control Room personnel as described in Section 7.0. Implementing procedures that remain to be completed include the following: all emergency operating procedures (EOP's), five abnormal procedures (AP's Nos. 11, 17, 18, 19 and 20)

and the emergency plan implementing procedure for performing dose assessment calculations in the Control Room (RP No. 11).

The communications equipment for the Control Room has not been completely installed. Installed at the present time are the facility PBX phones, direct commercial telephone lines and the emergency radio. The communications equipment that remains to be installed includes the following: the selective signaling phones (to replace the ringdown phones described in the present emergency plan), the ENS ringdown telephone with the NRC and, the intercom system for direct communication with the TSC and the OSC.

Based on the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. These areas will be reviewed during a future inspection.

- Provide the Control Room with approved copies of all emergency plan implementing procedures including EOP's, AP's and the RP (413/83-42-__ and 414/83-35-__).
- Complete installation of communications equipment (413/83-42-__ and 414/83-35-__).
- Upon installation of all Control Room communication equipment and the issuance of all approved emergency plan implementing procedures, complete the training of the Control Room personnel in the use of the communication equipment and the procedures (413/83-42-__ and 414/83-35-__).

4.1.1.2 Technical Support Center

The Technical Support Center (TSC) was inspected with respect to the requirements of 10 CFR 50.47(b)(8); 10 CFR 50, Appendix E, IV, E and the criteria of NUREG-0654, Section II.H.

The inspectors reviewed the Emergency Plan, Section H.1.b, and Station Directive 3.8.4, Onsite Emergency Organization. The inspectors interviewed the Station Manager/Emergency Coordinator (TSC Manager) and other key TSC Staff personnel as to their duties, responsibilities, and functional relationships in the emergency organization.

The TSC is located on elevation 594 of the Service Building within a 2 minute walking distance of the Control Room that requires leaving the controlled habitability environment. The TSC has an emergency ventilation capability comparable to the system provided for the Control Room. The ventilation system contains a single train of HEPA filters and charcoal beds with a process radiation monitor for the automatic actuation of closed cycle operation in the event radiation limits are exceeded. The installation of the radiation process monitors for the ventilation system has not been completed and the overall system is scheduled for final pre-operational and startup testing in January 1984. In addition, the TSC has an installed area radiation monitor with direct readouts available to TSC personnel.

The inspectors examined the communications capability of the TSC as described in the EP and EPIPs. It was found that the following communications equipment had not been installed: the selective signaling telephone system (replaces the ringdown telephone system described in the current revision of the emergency plan); intercom system for dedicated communications with the

Control Room, Shift Supervisor, and the OSC; the NRC telephones which include the NES ringdown telephone, the FTS telephone lines, and the commercial and PBX telephone lines to the various TSC staff functional locations within the TSC. The radio communication system had been installed as well as a limited number of facility PBX extensions. The licensee indicated that the communications systems would be completed by February 1984. It was noted by the inspector that telephones required for TSC operation would be stored until needed for TSC activation. The inventory control of emergency equipment for the TSC did not contain a requirement for the periodic verification that sufficient telephones would be available.

The TSC has ample space to accommodate the TSC staff assigned to the area during emergency conditions. Included within the TSC is a dedicated space of ample size for use by the NRC. This area includes provisions for the NES, FTS (2 lines) and commercial telephone lines (2).

The TSC location does not provide for face to face communications with Control Room personnel. However, plant parameter information is readily available directly from computer terminals and CRT displays in the TSC. Similarly, meteorological data and radiological information is available from the TSC computer terminals. As a backup this data could be obtained directly from the Control Room over the dedicated intercom or telephone communication links. Status boards have been provided to display the plant, meteorological and radiological data.

Upon activation, TSC staff personnel bring to the TSC the necessary up-to-date plant information from controlled distribution locations; examples include the FSAR, operating procedures, facility drawings and technical reference documents. Immediately available to TSC personnel are the facility

records from the master document control library which is also located in the Service Building on elevation 594.

Based on the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. These areas will be reviewed during a future inspection.

- Complete the installation and testing of the TSC emergency ventilation process radiation monitor (413/83-42-__ and 414/83-35-__).
- Complete the installation and testing of the TSC communications system (413/83-42-__ and 414/83-35-__).

In addition, the following item should be considered for program improvement:

- The periodic inventory of TSC emergency equipment should include the telephone instruments stored for emergency use.

4.1.3 Operations Support Center

The Operations Support Center (OSC) was inspected with respect to the requirements of 10 CFR 50.47(b)(8); 10 CFR 50, Appendix E, IV, E; and the criteria in NUREG-0654, Section II.H.

The inspectors reviewed the Emergency Plan, Section H.1.C and examined the location of the OSC within the facility. The OSC was found to be the onsite emergency response staging area separate from the Control Room and the TSC where certain emergency response support personnel based their operations during an emergency. The OSC is located outside the Control Room near the Unit 2 side Auxiliary Building on elevation 594 and encompasses an area of approximately 400 ft^2. The OSC has not been provided with any emergency

habitability protection comparable to the Control Room or the TSC. However, should the OSC become uninhabitable, the licensee has ample room in the Control Room to relocate the OSC function and personnel.

Primary and backup communications utilizing the facility PBX system, dedicated intercom system (partially installed) and portable FM radios were available for communication with the Control Room, TSC and rescue/repair personnel.

Based on the above findings, this portion of the licensee's program appears to be adequate. However, the following item should be considered for program improvement:

- Evaluating the relative small size of the OSC during future exercises and drills as to its effect on the ability of the OSC to carry out the assigned emergency response functions.

4.1.2.2 Medical Treatment Facilities

This area was reviewed with respect to the requirements of 10 CFR 50(b)(12); 10 CFR 50, Appendix E, IV, E, and the criteria in NUREG-0654, Section II.L.

The medical facilities are still under construction and could not be evaluated.

Based on the above finding, this portion of the licensee's program was found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. This area will be reviewed during a future inspection (413/83-42-18 and 414/83-35-18).

4.1.2.3 Decontamination Facilities

This area was reviewed with respect to the requirements of 10 CFR 50.47(b)(8)(10)(11); 10 CFR 50, Appendix E, IV, E; and Criteria in NUREG-0654, Sections II.J and II.K.

The inspector evaluated this area through a review of the EP and EPIPs, discussion with licensee representatives, and an inspection of selected facilities.

Except for the women's change room near the Health Physics offices, construction of the onsite decontamination facilities has not been completed. The licensee anticipates completion of these facilities by January 1, 1984.

Provisions for decontamination at the evacuation-relocation sites ("alpha" and "bravo") are not yet in place. The licensee plans to stock a spray-foam agent for personnel decontamination at those sites, since shower facilities are not available.

Based on the above findings, this portion of the licensee's program was found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. The area will be reviewed during a future inspection (413/83-42-19 and 414/83-35-19).

4.2.1.2 Area and Process Radiation Monitors

The area and process radiation monitors were reviewed with respect to the requirements of 10 CFR 50.47(b)(9), 10 CFR 50, Appendix E, IV, B and E, 2, and the requirements in NUREG-0654, Section II.H.

Currently there are 24 area radiation monitors (ARMs) installed in Unit 1. Of these monitors, 23 read out in the Control Room and one in the Technical Support Center. Of the 23 monitors in the Control Room, two are not wired to

detectors and 4 are marked as spares. One of the ARMs has to be relocated according to the licensee IEMF-14. None of the ARMs have been calibrated, and the calibration procedures are not yet written and approved. Once the calibration is completed, a preoperational test will be run prior to turn over for station use. This work should all be completed by March of 1984.

Two high range containment monitors (10^8 rads/hr) and the steam-line monitors have not been installed. It is likely that these monitors will also be operational by March of 1984. The EALs written in the EPIPs indicate that the reading for a General Emergency is 10^4 rads/hr, and for the Site Area Emergency, when the alarm annunciates.

However, no technical basis for determining the EAL setpoints for the 10^8 rads/hr monitors was available. No specific EALs have been established for the monitors on the steam line, nor have any technical basis been developed.

The inspector toured the locations of the Unit I ARMs that were installed, looked at the detectors, area readouts (where available) and Control Room readouts. No EALs were posted in the Control Room nor the TSC near or on the instruments to indicate site area and general emergency levels.

Twenty-three Unit 1 process monitors were also reviewed; these monitors were not all installed, and one in the TSC had been removed. The calibrations and the preoperational tests, like the ARMs should be completed by March of 1984. Also like the ARMs, no EALs have been posted on or near the process monitors (PMs).

All of the ARMs and PMs are powered by redundant power supplies. The high range containment monitors are to be placed on vital power, and the TSC

process monitors are powered by the lighting circuit which is a redundant "blackout proof" circuit.

The high range containment monitors have specifications to insure operability in the harsh operating environment of containment. The specifications are as follows:

1. radiation lifetime = 2×10^8 rads
2. accuracy within a factor of two over the 10 - 10^8 rad/hr range,
3. two alarm links,
4. temperatures to 350°F,
5. humidity 0 to 100% (saturated steam), 95% at 86°F electronics, and
6. seismic parameters according to IEEE 344-1975 and LOCA and environmental according to IEEE 323-1974.

All other ARMs have environmental operating specifications adequate for their operating environments.

The detector efficiencies for the installed process monitors have been developed along with conversion factors for the Control Room curve book.

Based upon the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. These areas will be reviewed during a future inspection:

1. The installation, calibration and preoperational tests of the area radiation and process monitors including the appropriate identification of same in the Control Room (413/83-42-22 and 414/83-355-22).
2. The high range containment and steam-line monitor and installations, calibrations and preoperational tests (413/83-42-23 and 414/83-42-23).

3. A technical basis for the alarm settings of ARMs, high range containment and steam line monitors for site area and general emergencies (413/83-42-24 and 414/83-35-24).
4. The posting of the EALs for site area and general emergency classes on or near the readouts for containment, steam line and other area radiation monitors that are used as a backup for the containment monitors (413/83-42-25 and 414/83-35-25).

4.2.1.3 Nonradiation Process Monitors

The nonradiation process monitors were revised with respect to the requirements of 10 CFR 50.47(b)(5)(8)(9); 10 CFR 50, Appendix E, IV, B, E; and criteria in NUREG-0654, Section II.E, H and I.

The inspector discussed the nonradiation process monitor status with the licensee. These monitors included 28 steam generator level indicators, 4 feedwater storage tank level indicators, 9 pressurizer and reactor control loop temperature and pressure monitors, 4 containment pressure monitors, 2 boric acid tank level indicators, 4 Control Room ventilation intake chlorine monitors and the seismic monitoring system.

The readouts for the above 52 monitors will be in the Reactor Control Room. To date these monitors/indicators have not all been installed, calibrated and provided with preoperational tests. These tasks should be completed by March of 1984. Some of the steam generator tasks have been completed for the hot functional tests that are currently underway.

Based upon the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding

5% reactor power to achieve an adequate program. This area will be reviewed during a future inspection (413/83-42-26 and 414/83-35-26).

4.2.2.1 Respiratory Protection

This area was reviewed with respect to the requirements of 10 CFR 50.47(b)(10)(11); 10 CFR 50, Appendix E, IV, E; and the criteria of NUREG-0654, Sections G and H.

The licensee has a compressor located near the health physics office for refilling air bottles. Arrangements have been made for acquiring additional air supplies from the McGuire Station to support emergency operations.

During the walk-through there appeared to be no equipment reserved for use by the inplant teams near the OSC. The licensee representative indicated that the control room units would be used on an interim basis. These should be retained for the exclusive use of the Control Room personnel.

Currently the SCBA devices have not been placed at all designated locations.

Based on the above findings, this portion of the licensee's program was found to be incomplete and will be reviewed during a future inspection (413/83-42-31 and 414/83-35-31).

5.1 GENERAL CONTENT AND FORMAT

The general content and format of all implementing procedures was reviewed with respect to the requirements of 10 CFR 50.47(b)(5); 10 CFR 50, Appendix E, Section IV.B; and the criteria in NUREG-0654, Section II.E.

For normal reactor operations, the Control Room staff uses Operating Procedures (OPs). These procedures can direct the staff to Abnormal

Procedures (APs) or Emergency Operating Procedures (EOPs) in the event that complications arise to make operations abnormal. In some emergency cases (e.g., some fires, unauthorized personnel entry or sever weather warnings), the Control Room staff would be notified by other Duke Power employees or an outside agency (NAWAS). However, most of the first emergency symptoms would arise via the Control Room annunciator system.

When an annunciator alarms, the nuclear operator identifies the annunciator by letter and number (e.g., Row B, Column 8) and the annunciator panel by number (e.g., IV-B). Using the identification numbers, the operator then goes to the Annunciator Response Guides (ARs) for followup action guidance. Depending upon the nature of the annunciation, the guidance may refer the operator to the APs or the APs and the Emergency Plan Implementing Procedures (EPIPs) simultaneously. The APs may refer the operator to the Emergency Operating Procedures (EOPs), and in some cases (e.g., operation of the seismic monitor), other instructions.

Review of the OPs, ARs, EPIPs, PAs showed that: (1) the formats are generally adequate, (2) the appropriate references to and between ARs, APs, and EPIPs are made, (3) the action steps are documented in sequential fashion, (4) the prerequisites precautions and conditions are specified where appropriate, and (5) in general, the procedures allow the application of judgment to implement actions and to apply Emergency Action Levels (EALs). However, the EOPs are only in draft form and some of the APs and EPIPs have not been generated.

There is clear guidance in the EPIPs concerning the authority and responsibility for performing the necessary tasks. Most procedures are specifically designed for the certified nuclear operators, as these procedures refer

emergency classification to the Emergency Coordinator. Once the Emergency Coordinator begins to classify an emergency, the EPIPs are both available and used. All the required initiating conditions are specified in EPIP RP/O/A/5000/01, for each class of emergency. The Protective Action Guides (PAGs) are specified in RP/O/A/5000/04 and 05.

The EPIPs and other appropriate procedures have check-off sheets that require either the user to record his initials or indicate that the procedural step is not applicable (NA).

The Duke Power Company uses a Procedure Major Change Process Record (Form 34811 to record all changes to procedures. In addition, a Nuclear Safety Evaluation Check List (Form 34634) and an ALARA Check List (Form 34634) are used to assist in the evaluation of procedures.

Based on the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. These areas will be reviewed during a future inspection:

- Completion of the APs, EOPs, and EPIPs (413/83-42-33 and 414/83-35-33).

5.2 EMERGENCY, ALARM, AND ABNORMAL OCCURRENCES PROCEDURES

The emergency, alarm and abnormal occurrence procedures were reviewed with respect to the requirements of 10 CFR 50.47(b)(9); 10 CFR 50, Appendix E, IV, B and criteria in NUREG-0654, Section II.D, H, and I.

The inspectors reviewed the plan emergency operating procedures (EOPs), abnormal procedures (APs), and annunciator response procedures (ARs) to determine if those procedures required the evaluation of the initiating conditions relative to emergency action levels contained in the EP and EPIPs.

The EOPs (draft versions), APs (approved and draft versions), and the ARs (approved versions) were found to contain appropriate references to EPIP, RP/O/A/5000/01, "Classification of Emergency," as "subsequent action" to be taken by the operator in response to emergency conditions.

Based on the above findings, the following portion of the licensee's program was found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. This area will be reviewed during a future inspection.

- Issue approved versions of EOPs (01 and 03) and APs (11, 17, 18, 19, and 20) (413/83-42-34 and 414/83-35-34).

5.3 IMPLEMENTING INSTRUCTIONS

The area of implementing instructions was reviewed with respect to the requirements of 10 CFR 50.47(b)(9); 10 CFR 50, Appendix E, IV, C and the criteria in NUREG-0654, Section II.C, D, H and I.

The inspectors examined the emergency plan implementing procedures (EPIPs) to verify that the requirements of the Emergency Plan were implemented through appropriate instructions to emergency response personnel. The licensee's EPIPs are comprised of a series of response procedures (RPs), health physics procedures (HPs), Catawba Nuclear Station Directives (CNSDs), a chemistry procedure (CP), and a performance test procedure (PT). Several EPIPs had not been completed by the licensee and remain in the draft procedure state. These draft procedures included the following: RP #11; HP #3, 12, 17, 18, 19, and CP #11. Specific findings were as follows:

1. Implementing instructions have been provided for use by the Emergency Coordinator in the EPIPs.
2. The RPs in conjunction with CNSD 3.8.4, clearly specify the functional duties and responsibilities of the Emergency Coordinator. The nondelegatable responsibilities of initial notification and the recommendation of protective action recommendations to offsite agencies are specified.
3. Specific RPs have been written for each accident classification and provide for the appropriate notifications, staffing and activation of the ERFs, and assessment necessary for making protective action recommendations.
4. The EALs specified in RP #1 are based on observable information readily available to the control personnel. It was noted by the inspector that a specific parameter value had not been provided for certain process radiation monitor EALs (EMF #33, 34, 48, and 53A/B) when used to specify an alert or site area emergency accident classification. Only the words "in alarm" were provided.
5. The implementing instructions provide references to more detailed procedures, as appropriate, in order to support the overall implementation of the EP.

Based on the above findings, the following portion of the licensee's program was found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. This area will be reviewed during a future inspection.

- Issue all EPIPs in a final approved version and train facility personnel in the use of these procedures (413/83-42-35 and 414/83-35-35).

In addition, the following item should be considered for program improvement:

- Specifying a parametric value for the process radiation monitor values that currently state "in alarm" when used as an emergency action level for accident classification (413/83-42-36 and 414/83-35-36).

5.4 IMPLEMENTING PROCEDURES

5.4.1 Notifications

The implementing procedures for notifications were reviewed with respect to 10 CFR 50.47(b)(5)(6); 10 CFR 50, Appendix E, IV, D and the criteria in NUREG-0654, Section II.E, F, H and J.

The inspectors examined RP #02, 03, 04 and 05 and CNSD 3.8.4 which prescribe the methods for the notification of the onsite emergency organization and offsite agencies. The inspectors found that for each class of emergency, a sequence of steps to notify, mobilize, and augment the onsite emergency organization and supporting organizations was specified. Preplanned messages were provided in the procedures as attachments containing a listing of persons and agencies who are included in the response scheme. The specific methods of notification either telephone, selective signaling or beeper were prescribed with appropriate numbers listed. The tabulation of persons and agencies to be notified was found to be a complete listing of those necessary and commensurate with the emergency classification. A method for authentification of the message was provided in the preplanned message format with offsite agencies.

During the walkthroughs (Section 7.2), it was found that the proper telephone number for contacting the State of Sourth Carolina on holidays was

not in the procedure nor was the commercial number for contacting the NRC should the ENS telephone be found inoperable.

Based on the above findings, this portion of the licensee's program appears to be adequate. However, the following item should be considered for program improvement:

- Include the State of South Carolina's night, weekend and holiday telephone number and the commercial telephone number for the NRC in the appropriate procedures (413/83-42-37 and 414/83-35-37).

5.4.2 Assessment Actions

This area was reviewed with respect to the requirements of 10 CFR 50.47(b)(9); 10 CFR 50, Appendix E, IV, B; and the criteria of NUREG-0654, Section II.I.

The overall area of assessment actions could not be properly evaluated due to the incompleteness of the procedures, training and installation of instrumentation. This area will be reviewed during a future inspection (413/83-42-38 and 414/83-35-38).

5.4.2.1 Offsite Radiological Surveys

The area offsite radiological surveys was reviewed with respect to the requirements of 10 CFR 50.47(b)(8),(9)(11); 10 CFR 50, Appendix E, IV, V, and E; and criteria of NUREG-0654, Section II.H, I and K.

The inspector reviewed procedure HP/O/B/1009/04, "Environmental Monitoring for Emergency Conditions Within the Ten Mile Radius of Catawba Nuclear Station," examined the emergency kits and support equipment, and conducted interviews with members of the Field Monitoring Team (FMT).

The emergency kits did not contain respirators, keys for sampling stations, and silver zeolite cartridges. This equipment, in addition to radios and multichannel analyzers are on order. The kits contain PIC-6s with a limited dose rate range of up to 1 R/hr.

The procedure did not include provisions for the following:

1. Determining the presence in the plume before attempting to collect an air sample by making beta measurements.
2. Locating keys to the various sample stations and gates.
3. Reading the "in-flow" face of the cartridge.
4. Purging the cartridge to remove some of the noble gases.
5. Verifying operability of analytical equipment with a mock iodine source.

The Canberra-10 multichannel analyzer with germanium detector is used for the analysis of radioiodine. The instrument reads out directly in terms of concentration and thyroid dose rate. Presently, the Field Monitoring Teams (Plant and Offsite Support) have not been trained on the use of this equipment. Members of the offsite teams have not been provided site specific training to familiarize them with road maps and sampling points. enclosure 5.6 to HP/O/B/1009/09 indicates that the "Turnover of TSC FMT's to CMC FMT (offsite support) shall occur at the intersection of SC 274 and SC 49." This may be an inconvenient place for the turnover due to the location of the plume and ongoing monitoring activities.

The procedure does not address the coordination of licensee monitoring activities with outside agencies.

Based on the above, this portion of the licensee's program appears to be adequate. However, the following program improvement must be completed prior to the licensee commitment date of February 15, 1984:

- Providing training for the Field Monitoring Teams, including offsite support personnel, in the use of the Canberra-10 for field analyses of radioiodine cartridges and insite specific features (413/83-42-39 and 414/83-35-39).
- Providing sufficient equipment for all teams (413/83-42-40 and 414/83-35-40).
- Coordinating turnover location based on existing conditions (413/83-42-41 and 414/83-35-41).

In addition, the following item should be considered for program improvement. Modifying HP/O/B/1009/05 to include the following provisions:

1. Determining the presence in the plume before attempting to collect an air sample by making beta measurements (413/83-42-42 and 414/83-35-42).
2. Locating keys to the various sample stations and gates (413/83-42-43 and 414/83-35-43).
3. Reading the "in-flow" face of the cartridge (413/83-42-44 and 414/83-35-41).
4. Purging the cartridge to remove some of the noble gases (413/83-42-45 and 414/83-35-45).
5. Verifying operability of analytical equipment with a mock iodine source ^{133}Ba instead of ^{22}Na (413/83-42-46 and 414/83-35-46).

5.4.2.2 Onsite (Out-of-Plant) Surveys

The area of Onsite Survey was reviewed with respect to the requirements of 10 CFR 50.47(b)(8)(9)(11); 10 CFR 50, Appendix E, IV, E and the criteria of NUREG-0654, section II.K and I.

There is no procedure which addresses the use and activities of an Onsite Monitoring Team. Based on conversations which licensee personnel, the Onsite Team would be formed in part from the OSC under the direction of the TSC Surveillance and Control Coordinator and also by a Field Monitoring Team under the direction of the Field Monitoring Team Coordinator.

Based on the above findings, the following deficiency must be corrected prior to exceeding 5% reactor power:

- Pursuant to 10 CFR 50.47(b)(8)(9) the licensee shall identify the means of providing onsite (Out-of-Plant) survey coverage during emergencies (413/83-42-47 and 414/83-35-47).

5.4.2.3 In-Plant Radiological Surveys

The area of In-Plant Radiological Surveys was reviewed with respect to the requirements of 10 CFR 50.47(b)(8)(9); and 10 CFR 50, Appendix E, IV, B and E; and criteria of NUREG-0654, Section II.I and K.

HP/O/B/1009/09, "Guidelines for Accident and Emergency Response" provides the overall guidance for the direction and control of health physics activities during emergencies. This procedure primarily provides guidelines for the initial response as indicated by Sections 1.3 and 3.3, and Enclosures 5.2, 5.3 and 5.4. It does not consider, in a comprehensive manner, all of the ongoing in-plan radiological surveillance activities in support of fire, search and rescue, contaminated injuries, repair, evacuation, sampling, and analyses.

HP/O/B/1009/05, "Personnel Monitoring for Emergency Conditions provides guidance only for monitoring in support of an evacuation. Section 3.1 directs the team to ingest a KI tablet if high radioiodine is encountered. The value

is not specified. As a basis, it does not direct the team to measure airborne concentrations at that point.

HP/O/B/1009/07 provides guidance on in-plant particulate and iodine monitoring under accident conditions. No protective equipment, gloves as a minimum, is specified for handling the samples.

In general, the procedures do not appear to contain comprehensive and detailed guidance on in-plant monitoring activities. Specifically, the procedures do not:

1. Identify the central collection point for all samples obtained by the team.
2. Provide exposure guidelines for retreating from areas or evacuating emergency workers from the emergency facilities, security posts (see Section 5.4.3.2).
3. Contain in-plant maps to document radiological conditions.
4. Contain in-plant FSAR maps showing predetermined expected radiological conditions to aid in determining the most dose-saving routes.
5. Contain provisions for a buddy system in a high dose rate areas or under highly uncertain conditions.
6. Contain minimum protective clothing requirements for certain monitoring activities.

There was no self-contained breathing apparatus (SCBA) in the OSC kit. It was indicated that the equipment would be borrowed from the Control Room (see Section 4.2.2.1, "Respiratory Protection").

Based on the above findings, the following deficiencies must be corrected prior to exceeding 5% reactor power:

Pursuant to 10 CFR 50.47(b)(8)(9), the licensee shall:

- Conduct an assessment of the overall responsibilities and priorities for health physics support of activities for the various alternatives that could occur during emergencies, an modify procedure HP/O/B/1k009/09 to include the assessment results (413/83-42-48 and 414/83-35-48).
- Modify in-plant emergency procedures to include requiring the "buddy system" under emergency dose rate and unstable plant conditions (413/83-42-49 and 414/83-35-49).

In addition, the following items should be considered for program improvement:

- Using plant maps to specify radiological conditions (413/83-42-50 and 414/83-35-50).
- Using in-plant maps showing predetermined or expected radiological conditions from the FSAR to aid in determining the most dose-saving routes (413/83-42-51 and 414/83-35-51).
- Specifying minimum protective equipment requirements for monitoring support activities (413/83-42-52 and 414/83-35-52).

5.4.2.12 Radiological and Environmental Monitoring Program

This area was reviewed with respect to the requirements of 10 CFR 50.47(b)(9); 10 CFR 50, Appendix E, IV, B; and specific criteria in NUREG-0654, Section II.I.

Provisions for the collection and evaluation of environmental TLDs and samples are contained in HP/O/B/1009/04, "Environmental Monitoring for Emergency Conditions Within the Ten Mile Radius of Catawba Nuclear Station." This procedure contains provisions for collecting samples in the 10 mile EPZ.

The state and corporate office will provide for collecting and analyzing samples in the 50 mile ingestion EPZ. HP/O/B/1009/20, "Procedure for Estimating Food Chain Doses Under Post-Accident Conditions," Section 3.6, indicates that environmental samples will be analyzed at the Radiological Environmental Laboratory at the McGuire Nuclear Station.

Based on the above findings, this portion of the licensee's program appears to be adequate.

5.4.2.13 Dose Projection

This area was reviewed with respect to the requirements of 10 CFR 50.47(b)(9); 10 CFR 50, Appendix E, IV, B; and the criteria of NUREG-0654, Section II.I.

The three basic procedures used for projecting the offsite dose are currently being revised. They are:

1. HP/01/B/1009/06 (HP-06), "Alternate Method for Determining Dose Rate Within the Reactor Building."
2. HP/O/B/1009/13 (HP-13), "Offsite Dose Projection - Uncontrolled Release of Radioactive Material Through the Unit Vent."
3. HP/O/B/1009/15 (HP-15), "Offsite Dose Projection - Uncontrolled Release of Gaseous Radioactive Material Other Than Through the Unit Vent."

The initial dose assessment procedure which is to be used by the Control Room is still in the draft form: RP/O/A/5000/11, Protective Action Recommendations Without the OAC."

The following are comments about three procedures:

1. HP-06 describes an alternate method for determining the dose rate within the Reactor Building in the event the Reactor Building monitor is

inoperable. This procedure requires a person to make a dose rate measurement at the personnel hatch. During an accident dose rate in the area are estimated to be as high as 2 E4 R/hr. This suggests that this data may not be obtainable throughout the range of the accident. It should be noted that this is a backup method. The assumptions used in developing the relationship between the dose inside the Reactor Building and the dose at the hatch was not available for review. Also the interference dose rate outside of the hatch due to sources external to the Reactor Building had apparently not been analyzed.

2. HP-13 describes the method for projecting the potential offsite dose following a release of radioactive material through the unit vent. The licensee indicated that the facility was designed such that all internal releases would pass through the unit vent, with the exception of design leakage. This procedure uses a computerized system called ODCAR2. The licensee plans to replace this system with the corporate based Class A computerized model.

   The manual method described in the procedure calculates a 4-hr dose. A true projected dose, based on the expected duration of release, is not determined. Guidelines for determining the expected duration of the release are not provided in the procedure. The procedure does not indicate the need for an advanced weather forecast. Also, it does not provide guidance for immediately re-assessing the projected dose after conditions change.

3. HP-15 describes the method for projecting dose based on the design leakage from the Reactor Building. The procedure is currently being revised. None of the equations have a time factor explicitly defined, yet they are

indicated to be 2-yr dose projections. The explanation of the assumptions and constants used in developing the equation was not available for review.

Based on the above findings, this portion of the licensee's program appears to be adequate. However, the following items for program improvement must be completed prior to February 15, 1984:

- Completing the Control Room initial dose assessment procedure (413/83-42-53 and 414/83-35-53).
- Analyzing the reliability and availability of the alternate method for determining dose rates in the Reactor Building (413/83-42-54 and 414/83-35-54).
- Modifying the procedures to include:
  a. A method for determining a true projected dose and comparing it to the EPA PAGs
  b. Guidelines for determining the expected duration of release
  c. Guidelines for immediately re-assessing the projected dose based on changed conditions (413/83-42-55 and 414/83-35-55).
- Explaining the assumptions and constants used in developing the equations in HP/O/P/1009/15 (413/83-42-56 and 414/83-35-56).

5.4.3.1 Radiation Protection During Emergencies

Radiation protection during emergencies was evaluated in accordance with the requirements of 10 CFR 50.47(b)(11); 10 CFR 50, Appendix E, IV, B and NUREG-0654, Section II.K.

HP/O/B/1009/09 (HP-09), "Guidelines for Accident and Emergency Response," contains the overall guidance for establishing the radiation protection program during emergencies.

The guidelines for emergency exposures and authorizations are not clear. The limitations on exposures to emergency workers do not appear to be consistent with EPA guidelines as required by CFR 50.47(b)(11). An October 24, 1983 internal correspondence states, "When the NRC regulations require a 75 rem whole body dose for life saving purposes, we will, of course, have to comply with the law. At present, it does not. In fact, no NRC regulation authorizes more than 3 rem/qtr for any purpose at the present time." Based on discussions with licensee personnel, the company position remains as stated in the letter and they point out the letter also states, "the 25 rem limit does not preclude the Recovery Manager (located in the CMC in Charlotte) from authorizing up to 75 rem as necessary to save a life in specific cases." Obtaining an authorization from the Recovery Manager may be time consuming. Currently Enclosure 5.1, "Guidelines for Planned Emergency Exposure," to HP-09 places the same limit of 25 rem for saving life and preventing extensive property damage. No thyroid limitations for emergency exposure have been stated.

Based on interviews with emergency workers, they appeared to be unfamiliar with the emergency exposure limits.

Section 4.4.1 of the procedure requires the establishment of "blanket dose extensions." It states, "Exposure Class 2 personnel shall not be extended beyond their weekly limit." Exposure Class 2 personnel are pregnant females. This suggests that the OSC could work pregnant females up to the weekly limit in support of emergency operations. This category of worker

should be considered as nonessential personnel and evacuated. Guidelines for protective actions have not been provided to security personnel remaining onsite following a site evacuation.

HP-09 also does not contain plans for expanding the respiratory protection program by acquiring bottled air for the SCBAs from an offsite supply source.

HP/O/B/1009/06, "Alternate Method for Determining Dose Rate Within the Reactor Building," requires a person to place a detector in contact with the center of the upper personnel hatch door to determine the internal radiation dose rate. Based on the dose rate conversion equation in Section 4.1.2 of the procedure, the dose incurred performing this measurement could be very high.

The use of KI for minimizing the thyroid dose commitment is addressed in several procedures and appears to be inconsistent with respect to authorization and distribution conditions. No medical or authorization higher than the Station Health Physicist is apparently required. For example:

a. HP/O/B/1009/09, "Guidelines for Accident and Emergency Response," suggests the Station Health Physicist will "Initiate," as necessary, HP/O/B/1009/16, "Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release." HP/O/1009/16, Section 4.1.1 states that persons exposed to a "significant amount of radioiodine...will be instructed by the Health Physics Supervision to immediately register in the KI distribution center." Section 4.2 indicates that once registered, "The Health Physics representative shall give one tablet to each person..." There appears to be no formal authorization but only instructions to register. This procedure (Section 4.1.1) considers a significant exposure to be 4.6E-6

exposure to be 4.6E-6 mCi/ml in 1 hr which corresponds to 520 MPC-hr. Note: this should be 4.6E-6 μCi/ml instead of 4.6E-6 mCi/ml.

b. HP/O/B/1009/04 appears to indicate that the Field Monitoring Coordinator (FMC) solely would authorize the distribution and at a much lower exposure. Section 3.4 states "If the team members are expected to be exposed to ^{131}I in excess of 10 MPC-hr (9E-8 μCi/ml), and directed by the FMC, each team member shall ingest a tablet of potassium iodide.

c. HP/O/B/1009/05 provides guidance to the team conducting personnel surveys at the Personnel Access Portal and Construction Personnel Exist Area. Section 3.1 states, "If survey teams encounter high radioiodine concentration, they should ingest one tablet of Potassium Iodide as per HP/O/B/1009/16."

Based on the above findings, the following deficiency must be corrected prior to exceeding 5% reactor power:

- Pursuant to 10 CFR 50.47(b)(11) the licensee shall include in their procedures, exposure guidelines consistent with the EPA Emergency Worker and Lifesaving Activity Protective Action Guides (413/83-42-57 and 414/83-35-57).

In addition, the following items should be considered for program improvements:

- Localizing the responsibilities for authorizing emergency exposures (413/83-42-58 and 414/83-35-58).
- Removing the inferrance that Class 2 personnel may be subjected to emergency exposures. They should be considered as nonessential personnel and evacuated (413/83-42-59 and 414/83-35-59).

- Making all emergency workers aware of emergency exposure limitations (413/83-42-60 and 414/83-35-60).
- Making provisions for expanding the respiratory protection supplies and equipment during emergencies to assure that an ample supply is maintained (413/83-42-61 and 414/83-35-61).
- Developing maximum dose and dose rate guidelines for performing the upper personnel hatch measurement or making alternate arrangements to acquire the data (413/83-42-62 and 414/83-35-62).
- Clarifying the authorization and distribution of KI (413/83-42-63 and 414/83-35-63).

5.4.3.2 Evacuation of Owner Controlled Areas

Evacuation of owner controlled areas was reviewed with respect to the requirements of 10 CFR 50.47(b)(10)(11); 10 CFR 50, Appendix E, IV, B; and criteria in NUREG-0654, Section II.J and II.K.

The Catawba Nuclear Station Directive (CNSD) 3.0.7 is a portion of the Emergency Plan Implementing Procedures (EPIPs) Manual. This procedure would be initiated following implementation of the immediate procedural actions specified in RP/O/A/5000/10 (RP-10), "Conducting a Site Assembly or Evacuation," which is also in the EPIPs.

RP-10 requires the Shift Supervisor/Emergency Coordinator to make contact with the Health Physics Duty Supervisor for assessment of the radiological hazards that may be involved during an evacuation. Such an evacuation would only be made following a site assembly where personnel accountability would be conducted at 23 or more specifically defined plant locations. The Shift Supervisor/Emergency Coordinator's contact with the Health Physicist would be

to obtain assistance in deciding which of the two evacuation-relocation sites would be chosen. The procedure specifies the locations and requires the selection of the site with the "most opposite" wind direction that may carry releases of radionuclides.

Following consultation with the health physicist, RP-10 requires that the Shift Supervisor, or his delegate, sound a 20 second blast of the Site Evacuation Alarm and announce the site evacuation of nonessential personnel using a written message. Subsequent actions, specified in RP-10, require the Shift Supervisor to notify either the South Carolina or the Highway Patrol staff to assist in traffic control, and notify the evacuation-relocation site of the expected arrival of nonessential personnel. RP-10 also provides for securing from a site evacuation.

CNSD 3.0.7 requires that the Shift Supervisor/Emergency Coordinator appoint an Evacuation Coordinator who must be "a Senior Supervisor" who is not essential to control of the emergency at hand. The Evacuation Coordinator assumes command of the evacuees and acts as the communications link between the Shift Supervisor and the evacuees, and the agency assisting in traffic control for the evacuation. Should the Shift Supervisor not specify the Coordinator, the senior member of those evacuating is required to take charge of the evacuation. However, it is not clear how the senior staff members, at the various locations, will know who is senior. Further, RP-10 does not reference CNSD 3.0.7; consequently, it is not clear how the Shift Supervisor could know that he should appoint the Coordinator.

CNSD 3.0.7 also has provision for evacuation during training and drills, and enclosures for accountability reporting and a map for finding the evacuation-relocation site.

The criteria for determining the need for a site evacuation are specified in EPIP RP-10. They include: (1) a site area emergency if plan conditions are rapidly degrading, (2) a general emergency, or (3) other plant conditions that may be judged by the Shift Supervisor/Emergency Coordinator to warrant such actions. However, no specific radiological emergency action levels have been defined to assist the health physicist and Shift Supervisor/Emergency Coordinator in making prompt evacuation decisions. Site assembly criteria include high dose rates or airborne radionuclide levels within the Auxiliary Building. However, what is meant by high is not specified. Further, "high" dose rates within containment are not included, nor are provisions made to establish radiological monitoring at 22 of the assembly locations or the new locations to be added in the near future. Unless the TSC is fully activated, provisions for radiation monitoring at the evacuation-relocation site is not provided for in the procedures.

EPIP HP/O/B/1009/05 (HP-05), "Personnel Monitoring for Emergency Situations," provides for personnel monitoring during evacuations once the TSC has been activated and sufficient Monitoring Teams are available. However, there are no provisions for monitoring nonessential personnel during evacuations prior to the availability of supplemental monitoring teams. Section 3.1 of the "limits and precautions" portion of HP-05, uses the term high concentrations of radio-iodines instead of specifying an action concentration value. Section 3.3 addresses the necessity of a complete checklist instead of the monitoring kit having an intact seal.

HP-05, under 2.0 References, does not reference CNSD 3.0.7 nor RP-10. The note under Section 4.1.3 led the inspector to believe that no personnel monitoring would be provided if sufficient manpower could not be arranged.

HP-05 did not address an alternate to onsite monitoring of nonessential personnel prior to evacuation if a release from the plant were occurring and monitoring could not be properly accomplished. Further, the monitoring of contaminated vehicles in Section 4.8 can lead the Monitoring Team(s) to the assumption that nonessential personnel must be prevented from using their contaminated private vehicles even if there were insufficient other vehicles to transport them to the selected evacuation-relocation centers.

The RPs portion of the EPIPs do not contain reference to other EPIPs or other facility procedures, consequently, confusion exists between RP-10, CNSD 3.0.7, HP-05 and HP-09. The licensee explained that the RPs pertain only to the Emergency Coordinator, the HPs to the health physics people, the CPs to the chemical staff and the CNSDs to all staff members. However, responsibilities in these procedures for personnel monitoring and naming the Evacuation Coordinator are neither specified in RP-10, nor reference HP-09 or CNSD 3.0.7. Verification that all personnel onsite have been notified of the emergency conditions and have followed instructions are discussed in Section 5.4.3.3 of this report.

Based on the above findings, the following deficiencies must be corrected prior to exceeding 5% reactor power:

- Pursuant to 10 CFR 50.47(b)(10) as addressed by specific criteria in NUREG-0654, Section II.J(2)(3)(4) and K(7), the Site Assembly/Evacuation procedures must include provisions for: (1) specific dose rate and breathing air levels of radionuclides within the reactor facilities, for initiating site assembly and evacuation, (2) a way to establish dose rate habitability at assembly locations, and (3) dose rate contamination

surveillance at the relocation sites if the Technical Support Center is not fully activated (413/83-42-64 and 414/83-35-64).

In addition, the following items should be considered for program improvement:

- Developing a workable means for assuring the designation of the Site Evacuation Coordinator (413/83-42-65 and 414/83-35-65).
- Modifying HP-05 as follows: (1) the 3.1 precaution for high radioiodine levels should be assigned a specific concentration valve, (2) clarification of what to do with the monitoring list in Section 3.3, (3) referencing CNSD 3.0.7 and RP-10, (4) specifying the required manpower for monitoring in Section 4.1.3, (5) including provisions for monitoring of personnel to be evacuated should station dose rates or radionuclides in the air be measurable making surveillance impractical, and (6) clarification on the use of privately-owned contaminated vehicles for transport to the relocation center based upon the need for transporting all personnel (413/83-42-66 and 414/83-35-66).

5.4.3.3 Personnel Accountability

The procedures for personnel accountability were reviewed with respect to the criteria in NUREG-0654, Section II.J.

The Catawba Nuclear Station Directive (CNSD) 3.0.7, "Site Assembly/ Evacuation" was reviewed. This directive is a portion of the Emergency Plan implementing Procedures (EPIPs) manual. The procedure would be used following implementation of the immediate procedure actions specified in RP/0/A/5000/10, "Conducting a Site Assembly or Evacuation," which is also in the EPIPs.

The procedures for personnel accountability are in CNSD 3.0.7, and cover station personnel, contractor personnel, other Duke Power Company employees and visitors that may be onsite during an emergency event. When the Catawba Nuclear Station (CNS) is ready for fuel loading, and the security gates are manned, personnel onsite will all have security badges. On the back of the security badges, onsite personnel will have the location of their assembly point specified. CNS 3.0.7 also makes provisions for determining who is responsible for personnel accountability, maintaining accountability following initial accountability, search and rescue for personnel not accounted for, and securing from a site assembly. (However, see Section 5.4.4.) Evaluation of the accountability provisions in the licensee's EPIPs was accomplished by an inspector, and the provisions are consistent with the NUREG criteria. In addition, the single drill involving accountability, showed that the licensee was able to complete accountability and identify missing personnel within the 30 minute limitation. Further, the licensee plans to conduct additional drills to verify their accountability capabilities.

Based upon the above findings, this portion of the licensee's program appears to be adequate.

5.4.3.4 Personnel Monitoring and Decontamination

The area of personnel monitoring and decontamination was reviewed with respect to the requirements of 10 CFR 50.47(b)(10)(11); 10 CFR 50, Appendix E, IV, B; and criteria in NUREG-0654, Section II.J, K and L.

The inspector reviewed EPIPs HP-05, "Personnel Monitoring for Emergency Conditions," and HP-06, "Personnel Decontamination," and CNSD 3.8.3, "Contamination Prevention, Control and Decontamination Responsibilities." There

procedures are intended to address radiological monitoring and decontamination of nonessential workers ordered by the Emergency Coordinator to evacuate the site, but weaknesses in this area were discovered by the inspector (refer to Paragraph 5.4.3.2 of this report for details). Procedure HP-06 provides a form called, "Contamination/Decontamination Survey Sheet" for recording data in the event personnel are found to be contaminated. Release limits for decontamination are specified. Any necessary followup assessment of contaminated individuals is to be under the jurisdiction of Health Physics. During an emergency situation, the Station Health Physicist will be advised of any personnel contamination problems by means of his communications link with the Surveillance and Control Coordinator at the OSC, under whose supervision the HP Technicians perform personnel monitoring/decontamination activities.

Based on the above findings, this portion of the licensee's program (except for the deficiency noted in Paragraph 5.4.3.2 above) is adequate.

5.4.3.5 Onsite First-Aid/Rescue

The area of onsite first-aid and rescue was reviewed with respect to the requirements of 10 CFR 50.47(b)(12); 10 CFR 50, Appendix E, IV, A; and criteria in NUREG-0654, Section II.K and L.

Onsite first-aid is provided by security personnel working in conjunction with safety personnel. Provisions for receiving, transporting and handling persons who may also be contaminated are contained in:

1. Procedure M-11, "Handling Contaminated Injuries" (in draft form).
2. HP-08, "Contamination Control During Transportation of Contaminated Injured Individuals."

3. CNSD 2.11.1, "Personal Injury Procedure."

The responsibilities for the first-aid treatment, handling, and transportation of contaminated injured personnel is not clear. (See Section 5.4.4, "Security During Emergencies.") Also, the responsibility for search and rescue is not clear. CNSD 3.0.7, "Site Assembly/Evacuation," states if necessary, the Security/Fire Brigade will institute search and rescue operations to locate and retrieve unaccounted for personnel. However, first-aid personnel (Security) were not aware of the emergency exposure limits for life-saving activities and the voluntary nature of this activity.

Based on the above findings, the following deficiencies must be corrected prior to exceeding 5% reactor power:

Pursuant to 10 CFR 50.47(b)(2); 10 CFR 50, Appendix E, IV, A, the responsibilities for search and rescue shall be unambiguously defined, so as to specify the duties of individuals within the security organization (413/83-42-67 and 414/83-35-67).

5.4.4 Security During Emergencies

This area was reviewed with respect to the requirements of 10 CFR 50.47(b)(2); 10 CFR 50, Appendix E, IV, A; and criteria in NUREG-0654, Section II.J.

This area was evaluated through discussion with licensee representatives, review of the Emergency Plan and Procedures, and review of Security Procedures. The inspector found that security personnel have broad responsibilities during emergencies which include fire, first-aid, armed responder, damage control, and search and rescue.

First, the security organizations functional EP responsibilities are not clearly defined in existing procedures. For example:

1. CNSD 2.12.1, Section 4.3 states that security will assume Fire Brigade responsibility during backshifts, holidays and weekends.
2. The Safeguards Contingency Plan, p. 2-10, states that security force members would be assigned to the Fire Brigade if necessary.
3. CNSD 3.8.4, Section 6.8.1, states that the Fire Brigade will have its normal function of fire fighting and damage control in an emergency situation as needed.
4. CNSD 3.0.7, Section 4.1.3.3, states that if necessary, the Security/Fire Brigade will institute Search and Rescue operations to locate and retrieve unaccounted for personnel.
5. Event 11, P.1A of the Contingency Plan suggests that security will provide fire support if requested by the Shift Supervisor.
6. Health physics procedure, HP-08, "Contamination Control During Transportation of Contaminated Injured Individuals," does not specifically address the need to contact security for first-aid treatment and transportation.
7. RP-09, "Collision/Explosion" does not consider a security response.
8. CNSD 2.11.1, "Personal Injury Procedure," Section 2.5, states that security has responsibility for treatment, transportation and obtaining medical assistance for injured personnel during backshifts, weekends and holidays.
9. M-11, "Handling Contaminated Injuries," assigns the Shift Security Lieutenant the responsibility of notifying the hospital. The securit-

Lieutenant assumed that the Control Room Shift Supervisor would have the major responsibility for initiating this notification.

Second, the complete set of procedures required to govern the security force activities has not been developed. For example:

1. The Contingency Plan does not currently contain the procedures required by 10 CFR 73, Appendix C. These are in draft form.
2. The procedure covering the admittance of offsite emergency vehicles and personnel to the site is in draft form.
3. There are no guidelines for the radiological protection of security personnel remaining onsite following a site evacuation.
4. CNSD 2.12.2, which covers the Fire Brigade organization and training, is in a draft form.

In general, the Station Security Procedures do not appear to be complete and comprehensive enough to cover all security activities in support of emergency operations, such as fire fighting, first aid, search and rescue, damage control, and armed responder.

Third, the structure and composition of the Fire Brigade, with respect to security personnel, is not clear. CNSD 2.12.2, Section 5.1, states that the Fire Brigade organization will consist of five primary units and one backup unit. Section 5.2 states that each primary unit will have a minimum of four Nuclear Equipment Operators and one Technical Services person. Further, "Each primary unit will be identified by the operations shift designations." (The meaning of this statement could not be adequately explained.) The inspector determined that the Fire Brigade Team is comprised of 5 members of security per shift with the safety organization providing the leadership support. In addition, Security personnel are considered to be the "first responders"

in any situation involving injury or illness. ALthough security has these key additional responsibilities, there appears to be no formal mechanisms for assuring that security personnel can maintain an adequate level of security and simultaneously discharge their emergency responsibilities as fire fighters, Damage Control Team, first-aid personnel, armed responders, and search and rescue. It should be noted that the critical security positions have been identified and one Fire Brigade Team is identified for each shift. However, based on interviews with personnel assigned to the fire brigade, it appears that their specific emergency duties are not being unambiguously assigned on each shift. For example, of the three members interviewed:

1. One was not aware of his assignment to the Fire Brigade Team. He apparently would not have responded to a fire unless requested.
2. Given a fire and injury event simultaneously, one member indicated that he would to to the scene to the injured person instead of the fire. He considered helping people more important.

Fourth, security personnel with the primary responsibility for responding to an injury or illness are not being designated on the shift roster. Also the "armed responder team," repair/recovery team, search and rescue members are not being designated.

Based on the above findings, the following deficiency must be corrected prior to exceeding 5% reactor power:

Pursuant to 10 CFR 50.47(b)(2); 10 CFR 50, Appendix E, IV, A the responsibilities of security personnel during emergencies shall be unambiguously defined, including the interfaces between security personnel, security and other onsite response personnel and offsite support groups so as to assure a timely response in an emergency (413/83-42-68 and 414/83-35-68).

5.4.5 Repair/Corrective Action

The area of repair/corrective action was reviewed with respect to 10 CFR 50.47(b)(11)(13); 10 CFR 50, Appendix E, IV, H and criteria in NUREG-0654, Section II.K and M.

The inspectors reviewed RP/0/A/5000/12 (RP-12), "Control of Assessment and Repair Teams," and found the procedure to provide a means for dispatching teams of station personnel during an emergency to assess damage or repair a component. The procedure also provides a means for maintaining the dispatched personnel's accountability and safety, including protection from radiological hazards. This procedure requires the coordination of the Shift Supervisor and the HP Supervisor in the OSC and the Emergency Coordinator in the TSC. The procedure requires a listing of and briefing regarding the hazards which may be encountered and the types of protective equipment and clothing which may be required. However, the procedure does not reference nor explicitly require that CNSD 3.8.8, "Radiological Work Practices," be addressed.

Based on the above findings, this portion of the licensee's program appears to be adequate. However, the following item should be considered for program improvement:

- Providing a reference or requirement in RP 12 that CNSD 3.8.8 be addressed to assure the radiological safety of the repair or assessment teams (413/83-42-69 and 414/83-35-69).

5.4.6 Recovery

The recovery plans were inspected to the requirements of 10 CFR 50.47(b)(8)(13); 10 CFR 50, Appendix E, IV, H and criteria in NUREG-0654, Section II.H and M.

The Emergency Plan specifies the organizational authority for declaring that a recovery phase is to be initiated. This authority rests with the Recovery Manager in the Crises Management Center. Provisions exist for an evaluation of plant conditions as well as the in-plant and out-of-plant radiological conditions. The decision to de-escalate or terminate an emergency condition must be concurred in by the Senior NCR and State(s) representatives. Message notifications are to be made to Function Managers, the Emergency Coordinator, State and local officials, and the NRC. Key positions in the recovery organization are identified.

Based on the above findings, this portion of the licensee's program appears to be adequate.

5.4.7 Public Information

The public information program was reviewed with respect to the requirements of 10 CFR 50.47(b)(7); 10 CFR 50, Appendix E, IV, D and criteria in NUREG-0654, Section II.G.

The inspector talked with the site and corporate emergency preparedness staffs and reviewed the Crisis Management Plan and its implementing plans. The implementing plans (procedures) identify the organizations involved in news dissemination, the locations and methods of contacting them specified, the flow of information inside and outside of the company, and interim provision for dissemination of information to the news media before the news center is activated.

The utility spokesman, and alternates, are specified, and the sources of information to be used by the spokesman are identified. The licensee has

provided for coordination of information between the various organizations and the rumor control program is the assigned responsibility of the Industry/ Agency Coordinator.

The licensee has conducted a series of public information seminars. Letters of invitation were sent to members of the public on a county-county basis.

Based on the above findings, this area appears to be adequate.

5.5.1 Inventory, Operational Check and Calibration of Emergency Equipment, Facilities and Supplies

This area was reviewed with respect to the requirements of CFR 50.47(b)(8); 10 CFR 50, Appendix E, IV, G; and the criteria in NUREG-0654, Section II.H.

EPIP HP/O/B/1000/06 covers the inventory, check and calibration of emergency equipment and supplies. This procedure includes the related limits, precautions and references, and specifies the frequencies for inventory, check and calibration of:

1. the emergency vehicle
2. the portable alternator
3. the two-way low-band radios
4. the self-contained breathing apparatus
5. the emergency kits (including batteries)

The frequency of weather information checks is also specified. The responsibilities for performing the inspection and tests are specified, and for correcting noted deficiencies.

Based upon the above findings, this portion of the licensee's program appears to be adequate.

5.5.2 Drills and Exercises

The area of drills and exercises was reviewed with respect to 10 CFR 50.47(b)(14); and 10 CFR 50, Appendix IV, F and criteria of NUREG-0654, Section II.N.

The programmatic controls for the administration, scheduling and conducting of emergency drills and exercises have been described in the Emergency Plan, Section N, and the Crisis Management Plan, Section N. Facility procedure PT/0/B/4600/06 (PT-06), "Emergency Exercises and Drills," has been implemented since April 1983 for the purpose of conducting periodic exercises/drills to evaluate major portions of the emergency response capability and to develop and maintain key skills. The drills/exercises are administered by the Emergency Planning Coordinator in accordance with PT-06 which includes the following requirements as procedure elements:

1. Provisions require that each drill and exercise be conducted in accordance with a time sequence of postulated events.
2. Observer comments are correlated into corrective action recommendations by the Emergency Planning Coordinator.
3. Required documentation of corrective action taken assures that an appropriate record of completed action is maintained.
4. Frequencies for drills and exercises have been specified and include the participation of key onsite emergency organizations and offsite agencies.

5. Provisions have been made for back shift drills and exercises.

In addition, discussions with the licensee indicate that during the annual exercise the news media facilities and equipment are utilized at the Crisis Management Center. Actual events which require the activation of the Emergency Plan are not considered to take the place of planned drills or exercises.

Based on the above findings, this portion of the licensee's program appears to be adequate.

5.5.3 Review, Revision and Distribution

The review, revision and distribution of the Emergency Plan and Implementing Procedures were reviewed with respect to the requirements of 10 CFR 50.47(b)(16); 10 CFR 50, Appendix E, IV, G and selected criteria of NUREG-0654, Section II.P.

Section P.4 of the Crises Management Plan (CMP) states that, "Review and updating of the EP shall be certified to be correct on an annual basis." The EP also contains provisions for incorporating changes identified by drills and exercises. However, the EP does not contain a provision for updating the EPIPs on an annual basis. PT-07, "Review of Emergency Plan and Procedures," requires "annual reviews" of the station EP and EPIPs.

A review of the existing EPIPs showed that nine health physics procedures (HP-01, HP-05, HP-06, HP-07, HP-08, HP-13, HP-15, and HP-16) and two Catawba Nuclear Station Directives [CNSD 3.7.5 (AS) and CNSD 2.0.1 (TS) have not been updated in the past year.

PT/O/B/4600/07, described above, has three enclosures. Enclosure 13.1 lists the procedure number, procedure title and the group responsible for generation and revision.

Enclosure 13.2 provides a mechanism for formally proposing revisions, and enclosure 13.3 provides a review acceptance form for the Emergency Plan and EPIPs. The licensee plans to apply this procedure in January of 1984.

The licensee has developed PT-05, "Coordination of Communications," that will be used to formally assure that phone numbers listed in the IPIPs are verified and/or modified once each quarter. Not all phones within the various facilities are currently installed. Plans are to initiate this procedure in January of 1984.

Review of the distribution of the Emergency Plan and EPIPs has been made in accord with an approved list by the Document Control staff. The names, titles and phone numbers currently in the EPIPs were tested during walkthroughs (see Section 7.2).

Based upon the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. These areas will be reviewed during a future inspection.

- Implementation of the licensee's program for the Emergency plan and EPIP annual reviews and/or revisions as provided in PT/O/B/4600/07 (413/83-42-70 and 414/83-35-70).
- Implementation of the licensee's program for verification on the phone numbers listed in the EPIPs as required by procedure PT/O/B/4600/05 (413/83-42-71 and 414/83-35-71).

In addition, the following item should be considered for program improvement:

- The Catawba Nuclear Station Emergency Plan should contain a statement that the EPIPs will at least be reviewed and/or revised annually (413/83-42-72 and 414/83-35-72).

5.5.4 Audit

The auditing of the licensee's emergency preparedness program was reviewed with respect to the requirements of 10 CFR 54(t); and criteria in NUREG-0654, Section II.P.

The inspector reviewed the licensee's Corporate auditing program by evaluating procedure 210 of the Quality Assurance Program, audit file SP-82-22 (audits conducted in the past 12 months), and discussions with the audit staff. The emergency plans and procedures are audited once each year. The audits are made at the three nuclear reactor sites, including Catawba. These audits are made by three members of the Corporate auditing staff. The staff reviews procedure and plan provisions, checks equipment availability and compliance with calibration and inventory requirements, and discusses program operability with the station emergency preparedness staff. The audits include evaluations of drills, and the intent is to accomplish one such evaluation annually at one of the three sites.

The Catawba personnel accountability drill was evaluated in 1983. Specific adverse program findings on all such audits have been assigned, for followup and resolution, to the Corporate emergency preparedness staff.

Based upon the above findings, this portion of the licensee's program appears to be adequate.

6.2 GENERAL PUBLIC

The information provided by the licensee to the general public was reviewed with respect to the requirements specified under 6.0, "Coordination With Offsite Groups."

The inspector reviewed the Catawba Nuclear Station Emergency Plan booklet that the licensee plans to mail to all persons within the EPZ. A small revision to the booklet is currently in process, and the mailing is currently planned for January of 1984. In addition to supplying the EPZ population with the booklets, booklets are also going to be distributed to hotels within the EPZ.

The licensee works closely with the state and local agencies, obtaining inputs and reviews on the content of the booklet that will be issued. The plan is to update (if necessary) the booklet and disseminate it annually. The current contents include information about the possible effects of both natural radiation and possible emergency releases of radionuclides. The contents also include instructions for emergencies and followup contacts.

Signs are planned to be placed at boat docks, and signs and booklets at McDowell Park, Carrowinds Theme Park and Heritage Village, where larger groups of people may congregate for recreation, including camping.

Based upon the above findings, the following portions of the licensee's program were found to be incomplete and must be completed prior to exceeding 5% reactor power to achieve an adequate program. These areas will be reviewed during a future inspection:

- Disseminating the emergency plan booklets to the general population and other specified groups (413/83-42-73 and 414/83-35-73).

- Placing emergency signs at boat docks and other applicable locations (413/83-42-74 and 414/83-35-74).

6.3 NEWS MEDIA

The information/training provided by the licensee to the news media was reviewed with respect to the requirements of 10 CFR 50.47(6)(7); 10 CFR 50, Appendix E, IV, D, and the criteria in NUREG-0654, Section II.G.

The inspector reviewed the licensee's news media program with the corporate staff, and looked at the news media center at the C. J. Miller auditorium in Charlotte, North Carolina. The licensee provides the necessary information and training for the North and South Carolina news media annually. They discuss emergency plans, points of contact for release of public information, the space (auditorium) allowed and phone availability, and the four emergency classes that could occur versus normal operation. The conduct of these sessions is accomplished prior to each exercise. The combined two-state media staffs are invited to these sessions each year.

Based upon the above findings, this portion of the licensee's program appears to be adequate.

7.0 DRILLS, EXERCISES AND WALKTHROUGHS

7.1 PROGRAM IMPLEMENTATION

The licensee's program of drills and exercises as described in Section 5.5.2 has been implementing under the cognizance of the Emergency Planning Coordinator. The inspector reviewed the results of five drills recently conducted and found these drills to have been performed in accordance with the PT/0/B/4600/06 (PT-06). Deficiencies identified during the drills were

identified and corrective action responsibility was assigned to the cognizant staff member. Drill-identified improvement items have been reviewed and incorporated into the applicable EPIP as appropriate. The inspector examined the monthly and quarterly schedule of planned drills/exercises and found it to be responsive to the frequencies of drills/exercises prescribed in the Emergency Plan. A major exercise with full participation of the onsite organization and offsite agencies (States and counties) has been scheduled for February 1984.

Based on the above findings, this portion of the licensee's program appears to be adequate.

7.2 WALKTHROUGH OBSERVATIONS

Walkthroughs were conducted with five separate groups which were comprised of Shift Supervisors, Assistant Shift Supervisors and Control Room Operators. Each group was organized into a typical watchstanding organization. The interviews were conducted in the Control Room where the Shift Supervisor had access to the equipment, indicators, and documentation/references that would normally be available to him. No requirements were placed on the operators to perform from memory, rather they were provided with written guidance that stated they should perform in a manner consistent with their normal methods. A hypothetical scenario was prepared by the inspector containing a sequence of degrading plant conditions that escalated the emergency classification from a Notification of Unusual Event, to an Alert, and then to a General Emergency. The watch organization was expected to discuss the indicators used to assess plant conditions, and determine the proper emergency procedure for response to the indicated conditions. This action by the operators was generally adequate. However, the limited number of approved procedures available (see Section 5.2)

prevented a complete evaluation of this area. The watch organizations were able to classify the emergency based on emergency action levels related to the indicators or data presented in the scenario. The classification procedure RP/O/A/5000/01 (RP-01), "Classification of Emergency," was used by the operators with little or no difficulty. Once the emergency classification was completed the Shift Supervisor was able to enter the appropriate procedure for notification of the designated members of the onsite organization and offsite agencies. Actual notification of selected offsite agencies was accomplished using the installed commercial telephone system. The preferred means of offsite agency notification, the selection signal telephone has not been installed. Due to the lack of dose assessment procedures at the present time, the remainder of the scenario involving the general emergency conditions was talked through with the operators but no evaluation was made by the inspector.

A walk-through of dose projection calculations and field monitoring was conducted with health physics personnel. Based on the walkthrough their performance was acceptable. However, all of the equipment was not available to demonstrate the full range of their capabilities.

Based on the above findings, only a limited assessment of the area was made by the inspectors due to the incomplete status of the emergency response procedures, incomplete installation of communications equipment, incomplete installation of radiation analysis equipment, and the incomplete status of the computerized dose assessment procedure for use by facility personnel. This area will be re-evaluated during a subsequent inspection (413/83-42-75 and 414/83-35-75).