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## SUMMARY

The appraisal of the state of onsite emergency preparedness at the Cooper Nuclear Station (CNS) involved seven general areas:

- Administration of the Emergency Preparedness Program Development;
- Emergency Organization;
- Emergency Training;
- Emergency Facilities and Equipment;
- Procedures Which Implement the Emergency Plan;
- Coordination With Offsite Agencies; and Walkthroughs of Emergency Duties, including exercises and drills.

The development of the CNS Emergency Preparedness Program was performed by a limited number of individuals at CNS with only minor input from either the corporate offices or from general station personnel. The results of the appraisal indicated that the existing program contained a number of deficient areas. The appraisal findings indicate that the major causes of these deficiencies were ineffective administration and management of the overall development and implementation of the emergency preparedness program and a very limited scope of training of the station personnel. Emergency Plan and Procedure incongruities, conflicts and omissions, in particular, gave the appearance that there had been a lack of continuity and coordination between the licensee's corporate and site emergency planning staffs during the development process. These observations were substantiated during discussions with the site and corporate planning and management staffs.

The licensee's emergency organization description was incomplete in that it did not adequately define the authorities, responsibilities and interrelationships for performing the various emergency tasks and functions described in the Emergency Plan. Within the scope of procedures developed to implement the Emergency Plan, there were conflicting and unclear delineations of key duties and responsibilities related to overall coordination of the emergency response and the development of protective action recommendations. The licensee's emergency action levels (EALs) were not understandable to the primary users who would be responsible for detecting emergency conditions and initiating appropriate emergency actions. The training program was not completely developed but individuals had received some limited training (within the last few weeks before the NRC Appraisal Team Visit), however the training was limited to discussions of the four classes of emergencies and the emergency action levels (EALS) which fall within each class. Observation and questioning of selected individuals during walkthroughs of their assigned emergency tasks and functions indicated that the individuals were aware of many of the organizational and procedural shortcomings but could perform effectively in spite of them for emergencies which did not result in gross damage to the plant or require significant offsite responses. Licensee coordination with various non-licensee agencies other than with the NRC was not considered adequate.

The auditors concluded that the licensee appeared to be capable of responding to and managing the response to events of limited scope and duration. The ability to respond and manage the response to broader scope of events of longer duration, however, was suspect and the team concluded that there was not reasonable assurance that such a response could be effectively implemented given the present state of development of the emergency preparedness program.

It should be noted that the Appraisal Team fully realizes that due to the time and manpower limitation of the Appraisal, it has not identified all of the minute areas of the licensee's emergency preparedness and response program which may need correction to be in full compliance with the NRC Emergency Preparedness Regulations. Additional deficiencies may be identified during the observation of the licensee's emergency drills and exercises and during other normal NRC inspection.

## 1.0 ADMINISTRATION OF EMERGENCY PREPAREDNESS

The auditors reviewed the contents of the Cooper Nuclear Station (CNS) Emergency Plan, dated April 1, 1981 and its Implementation Procedure 5.7. Further, the auditors held discussions and interviews with both NPPD Corporate personnel and CNS personnel and obtained additional documentation from NPPD regarding their normal corporate structure and emergency duty assignments.

### 1.1 Responsibility Assigned

While the CNS Emergency Plan does state in Section 11.0 that "The Station Superintendent will designate an Emergency Planning Coordinator. . .", the auditors determined that no such designation had taken place at either the station level (CNS) or the corporate level (NPPD). Upon identification of this deficiency to the Station Superintendent and the corporate licensing staff by the auditors, the Station Superintendent issued a memo on June 17, 1981 designating the Chemistry and Health Physics Supervisor as the Emergency Planning Coordinator (EPC) having "responsibility for the development and updating of the emergency plans and coordination of these plans with other response organizations" (Reference to CNSS801373). The auditors noted, however, that no such action had been taken at the Corporate Level.

During review of the position description for the CNS Chemistry and Health Physic Supervisor, the auditors noted that he was responsible for the coordination of all emergency preparedness drills and exercises and for the conduct of offsite training for local response organizations. Further, the auditors noted that the emergency planning and coordination responsibilities were in addition to the normal duties of the Chemistry and Health Physics Supervisor. During discussions with the auditors, the EPC stated that during periods when major revisions to the Emergency Plans were being prepared and coordinated or when fullscale exercises were being coordinated, the work load was greater than a single individual could effectively handle.

During discussions with the station management, the auditors were informed that significant input to the emergency planning effort was provided by the station operations personnel and by chemistry and health physics personnel for the Emergency Plan dated January 2, 1981, but that no such input was provided for the April 1, 1981 Plan due to time constraints. However, during interviews and walk-throughs of the station operators and duty shift supervisors, the auditors determined that the station operations personnel at the working level had not provided input to the emergency planning effort nor were they aware that the January 2, 1981 Emergency Plan even existed. Their first contact with the Emergency Plans and the Emergency Classification System, with its associated initiating conditions for each emergency class, took place approximately three weeks prior to the start of the NRC onsite appraisal effort. The auditors determined that there were no other individuals formally assigned responsibilities for maintaining the emergency response capabilities and that the station personnel did know that the Chemistry and Health Physics Supervisor was responsible for emergency planning.

### 1.2 Authority Assigned

During discussions with the Emergency Planning Coordinator, the auditors determined that, while the individual knew that he was responsible for emergency planning, he could produce no evidence that actual authorities had been delegated to him to enable him to perform his assigned tasks. The individual stated that the very assignment of the responsibility to him implied the authority to perform the task. The auditors noted that, throughout the emergency planning documentation and the implemented program, many similar authorities, responsibilities, and actions were implied but were not explicitly identified. Coordination of the onsite and offsite organizations and the corporate emergency organization was the responsibility of the Emergency Planning Coordinator (Chemistry and Health Physics Supervisor). During discussions with the corporate personnel and the EPC, the auditors noted that the EPC was not aware of a number of major actions taken by the corporate personnel (e.g. - changes in plans for the offsite public warning and notification system, status of public information/education program, status of media education program, etc.). The auditors further noted that while the EPC attends meetings of the Site Operations Review Committee (SORC) by virtue of his position as a department head (Chemistry and Health Physics), this may not continue if the responsibility for the EPC were to shift to a non-department head individual. No provision existed that the EPC be a member of the SORC regardless of the position of the individual in the normal station organization.

### 1.3 Planning Coordination

During discussions with the EPC, the auditors determined that coordination between the licensee and the general public/news media was done at the corporate level only, however the auditors noted that the responsibility was not clearly specified in the Emergency Plan or its Implementation Procedure. The auditors further determined that coordination with offsite Nebraska State Authorities appeared adequate but that the degree of cooperation and coordination with Missouri, Kansas and Iowa State authorities was limited in scope and did not appear to be adequate. The auditors also noted that coordination with local county authorities in both Nebraska and Missouri was limited and not adequate (see Section 6.1).

An evaluation of the findings in other areas of the licensee's emergency preparedness program indicated that, although the various individuals who may be called upon to perform emergency functions do, in general, possess a fundamental knowledge (based upon their normal job functions) sufficient to enable them to perform their assigned emergency duties, the licensee's organizational structure in conjunction with the failure to make functional responsibility assignments has resulted in a failure to achieve a proper degree of internal coordination necessary for the development and implementation of an adequate program.

#### 1.4 Personnel Selection and Qualification

During discussions with the site and corporate individuals responsible for the planning effort within the licensee's organization, the auditors noted that the individuals possessed a general understanding of the principles involved in developing plans and procedures. The auditors also noted, however, that there were no selection or qualification criteria for the individuals filling positions related to emergency preparedness planning activities.

Since there were no selection criteria or minimum qualification criteria implemented within the licensee's organization, there were no clear provisions established for training the individuals to fulfill minimum criteria of these positions. Section 11.2 of the CNS Emergency Plan addressed training for the individuals responsible emergency response but did not address training for those individuals responsible for the emergency planning effort. The auditors noted that there were no provisions or existing plans to provide professional development training for those individuals currently holding emergency planning positions to insure the maintenance of state-of-the art knowledge. Station Management stated that a training program for the currently assigned individual (EPC) and for future individuals who may hold the EPC position had not been considered nor were there plans to provide such training.

#### 1.5 Quality Assurance of Emergency Preparedness Organization

The auditors held discussions with the CNS Supervisor of Quality Assurance and determined that he reports to the Manager of Quality Assurance in the Corporate office. The Manager of Quality Assurance reports to the Director of Licensing and Quality Assurance, who reports to the Assistant General Manager of Power Operation Group 1. Thus, there are four levels of management between the Quality Assurance Staff onsite and the General Manager.

The Supervisor of Quality Assurance interacts with the Station Superintendent on Quality Assurance (QA) findings requiring correction. The mechanism of this interaction is a "Corrective Action Request". The Corrective Action Request form states the problem to the Station Superintendent who utilizes a space provided on the form to indicate changes required to members of his staff. The form also provides a mechanism for tracking by QA until a solution to the condition is obtained.

Quality Assurance, procedure QAP1900 provides for audit of the Emergency Plan and Implementing Procedure to assure that it is current. A controlled distribution is used with a signature sheet which is returned to QA to verify changes are made in all controlled copies of documents.

CNS Quality Assurance procedure QAP1901 provides for audit of emergency preparedness training. The audit includes a review of the records of training and the frequency of training, but does not evaluate whether the training program was effective in providing the insight, skills, and understanding needed by members of the emergency response staff sufficient for them to perform their emergency functions as assigned. The Cooper Nuclear Station participates in "Joint Utility Group 3" audits. The audit group includes

representatives from NPPD, WPPSS, TVA, PASNY, and SMUD. This group audited the Nebraska Public Power District Quality Assurance program on December 10, 1980. The findings indicated that an audit of Section 4.0 of QAP200 on training was not verified by the CNS QA records. The CNS QA plan meets most of the requirements of Regulatory Guide 1.33, however, the documentation was not specific enough to determine if all the requirements were included.

The Quality Assurance Staff on station act as observers during emergency drills and exercises. In addition to their observer's role, they perform QA audits of the emergency response capabilities. Deficiencies found are tracked through "Corrective Action Requests" to assure that changes needed are implemented. Audits by Quality Assurance Personnel are performed at least annually on the records of the calibration of all reactor process monitors, air monitors, fixed radiation monitors, portable radiation detectors and the meteorology system.

#### 1.6 Conclusions and Determinations

Based on the findings in the above areas, improvements in the following areas are required in order to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(16) and the guidance contained in NUREG-0654, Revision 1, items P.2 & 3, designate a single individual within the NPPD organization who shall be given direct working level responsibility for, and authority over, all aspects of the development and maintenance of the Emergency Preparedness Program (298/81-13-01);

Pursuant to the requirements of 10 CFR 50.47(b)(16) and 10 CFR Part 50, Appendix E(IV)(A), develop and implement explicit and specific functional responsibilities and authorities for the various Emergency Preparedness planning and coordination functions (298/81-13-02); and

- Pursuant to the requirements of 10 CFR 50.47(b)(16) and the guidance contained in NUREG-0654, Revision 1, items O.1 & 2, develop and implement a program for training individuals, who are assigned Emergency Planning responsibilities, which will enable them to attain and maintain a state-of-the-art knowledge in the field of emergency preparedness (298/81-13-03).

In addition to the above determinations the following matters should be considered for improvement:

- Evaluation of adequacy of existing staff assigned responsibility for emergency preparedness planning and coordination and development of a means to augment existing staff when necessary (298/81-13-101);
- Development and implementation of a method to provide substantive input from plant staff, down to the working level, to the development of emergency preparedness plans and procedures (298/81-13-102);

- Development and implementation of selection and qualification criteria for individuals performing emergency preparedness development activities (298/81-13-103); and
- Development and implementation of quality assurance procedures to evaluate the effectiveness of the emergency preparedness training (298/81-13-104).

## 2.0 EMERGENCY ORGANIZATION

### 2.1 Onsite Organization

#### 2.1.1 Assignment of Responsibilities and Authorities

The auditors reviewed the contents of the CNS Emergency Plan (EP), dated April 1, 1981, revision 7 of the CNS Emergency Plan Implementation Procedure (EPIP) 5.7, dated March 31, 1981 and held discussions with licensee personnel to evaluate the nature and adequacy of the licensee's onsite emergency response organization and the assignment of emergency duties, responsibilities and authorities. The auditors also reviewed the licensee's entire organizational structure from the Board of Directors down to the individual working level at CNS and reviewed the job descriptions of key emergency response personnel.

The auditors reviewed the content of Section 6.0, "Emergency Action" of the CNS Emergency Plan and attachments B, D, and G of the EPIP 5.7 and discovered the following:

#### "6.1.2 Action of Emergency Director

1. The Emergency Director has the primary responsibility for direction of all activities during an emergency.
2. The Emergency Director has the responsibility for evaluating the emergency and implementing the Emergency Plan if needed.
3. The Emergency Director has the responsibility for the decision to notify and recommend protective actions to authorities responsible for offsite emergency measures.
4. The Emergency Director can authorize emergency workers to receive radiation doses in excess of 10 CFR Part 20.
5. For evaluation and action in a specific emergency, refer to Emergency Procedure 5.7, Attachment "B".

The auditors noted that the Emergency Director was not given the authority to perform his assigned responsibilities with the exception of item 4, emergency worker receipt of radiation doses in excess of 10 CFR Part 20.

Further . . .

#### "6.1.4 Action of Shift Supervisor

1. Act as Emergency Director until relieved of these duties by the Station Superintendent or his designated representative.
2. Perform evaluation and duties as directed by the Emergency Director.

3. Inform the Emergency Director of changing conditions in relation to the emergency.
4. When it has been determined that there is an offsite release, assure the performance outlined in Emergency Procedure 5.7, Attachment "E", and that pertinent data is being recorded.
5. For action in a specific emergency, refer to Emergency Procedure 5.7, Attachment "D".

The auditors noted that the Shift Supervisor was not given the authority to perform his assigned responsibilities.

Further . . .

#### "6.1.5 Action of Control Room Operator

1. The Control Room Operator, in the absence of the Shift Supervisor from the Control Room, will evaluate and determine if the reactor should be shut down in an emergency situation.
2. Perform duties as directed by the Emergency Director or Shift Supervisor.
3. For action in a specific emergency, refer to Emergency Procedure 5.7, Attachment "E".

The auditors noted that the Control Room Operator was not given the authority to perform his assigned responsibilities, including shut-down of the reactor in the absence of the Shift Supervisor.

During discussions with the station personnel the auditors determined that there was no formal designation of authority for the emergency response personnel to perform their assigned responsibilities. Further, the auditors noted that many of the personnel were not assigned specific emergency duties. For example: the "Operation Supervisor" was responsible to "provide back-up assistance to the Emergency Director and Shift Supervisor in evaluating the emergency conditions"; the "Station Operators" were to "perform activities as directed by the Emergency Director or Shift Supervisor", and the "Other Onsite Personnel" were to "perform activities as requested by the Emergency Director."

Based on the above findings, improvement in the following area is required to achieve an adequate program.

- Pursuant to the requirement of 10 CFR Part 50, Appendix E(IV)(A), unambiguously define the authorities, responsibilities and duties of individuals assigned to the licensee's emergency organization (298/81-13-04).

### 2.1.2 Functional Areas Specified

The auditors reviewed the contents of the CNS Emergency Plan and its implementation procedure 5.7 and held discussions with both station and corporate personnel. The auditors noted that no corporate response plan had been developed and docketed with the NRC, even though a substantial amount of information had been developed at the corporate office entitled "Nuclear Emergency Information for Columbus General Office and York Operations Center Offsite Support Personnel". The auditors noted that the corporate information package was divided into specific areas for the Logistics Directors, the Food & Lodging Directors, the Environmental Directors, the Communications Directors, and the Public Affairs Department. Within the scope of the CNS Emergency Plan and its implementation procedure, the auditors noted that there was no clear delineation of the Emergency Response Organization in terms of the functional areas of emergency activity, assignment of responsibilities and authorities for individuals who would be assigned each functional area in an emergency, or specific interfaces among the elements of the onsite Emergency Organization. Further, the Emergency Plan and the EPIP did not specify the individuals, by position or title, who would be selected to assume the responsibilities in each functional area of the Emergency Organization. The auditors noted that the Emergency Organization chart and written description of the Emergency Organization was in reality the normal duty organization and did not identify the relationships of the functional areas of emergency activities as contained in Table B-1 of the NUREG-0654, Revision 1. The auditors further noted that neither the CNS Emergency Plan nor its Implementation Procedure 5.7 address the requirements of Table B-1 as identified in NUREG-0654, Revision 1, and the February 18, 1981 generic letter to all licensees from Darrell G. Eisenhut, Director of the Division of Licensing, Office of Nuclear Reactor Regulation, USNRC.

The auditors noted that the CNS Emergency Plan description of the Emergency Organization provided for an individual designated as the "Emergency Director" (ED) who was responsible for overall coordination and direction of the Licensee's response and that this individual had been given responsibility, but not the authority consistent with NUREG-0654, Revision 1, items A.1.d, and B.2. The auditors further noted, however, that the description of the responsibilities of the ED did not specify those duties and responsibilities which could not be delegated by the ED to other emergency workers, nor was there a clearly specified line of succession for the ED position with formal criteria for the transfer of the ED position.

The auditors determined that formal selection and qualification criteria and formal training for each emergency functional area, had not been established to govern the assignment of personnel to emergency functions or duty positions. The Emergency Plan indicated that certain emergency functions such as chemistry, first aid, repair/corrective actions, etc., would be performed by teams assembled from a manpower pool of various technical specialties. The auditors further noted that the manpower pool relied upon may not be available when needed since site evacuation could result in their having already left the plant site.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR Part 50, Appendix E(IV)(A), revise the description of the Onsite Emergency Organization to reflect functional areas of emergency activity, reporting chains (management structure) and interrelationships of the functional areas down to the working level, consistent with Table B-1, of NUREG-0654, Revision 1 (298/81-13-05);
- Pursuant to the requirements of 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E(IV)(A), develop explicit and specific functional responsibilities and authorities for the various emergency action functions (298/81-13-06);
- Pursuant to the requirements of 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E,(IV)(F), and the guidance contained in NUREG-0654, Revision 1, items 0.1 thru 5, develop a program for training individuals who are assigned emergency action responsibilities which will enable them to attain and maintain a state-of-the-art knowledge in the field of their assigned emergency action areas (298/81-13-07); and
- Pursuant to the requirements of 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E,(IV)(A), include a list of approved licensee personnel (by name) in the Emergency Plan Implementing Procedure, who have been selected and are qualified to perform activities within the functional areas of the onsite emergency organization to which they are assigned (298/81-13-08).

In addition to the above determinations, the following matters should be considered for improvements:

- Evaluation of adequacy of station staff assigned responsibility for emergency actions, by functional area and development of a means to augment staff when necessary (298/81-13-105);
- Development and implementation of selection and qualification criteria for individuals assigned to perform emergency actions and decision making (298/81-13-106); and
- Development of quality assurance procedures to evaluate the effectiveness of the emergency action training for the various functional area (298/81-13-107).

## 2.2 Augmentation Organization

Augmentation of the onsite emergency organization was addressed in Section 7.0 "Notification and Communication"; Section 8.0 "Release of Information"; Section 9.0 "Medical Assistance Plan"; and Section 12.0 "Supplemental Support Activities" of the CNS Emergency Plan. The auditors reviewed the content of these sections of the EP and the appropriate attachments to the EPIP (e.g.,

B, L, M, and O) and held discussions with both station personnel and NPPD headquarters personnel to evaluate the adequacy of the definition of the licensee's augmentation of the onsite Emergency Organization.

The licensee's Emergency Plan in Section 12.0 states that:

"12.1 Concept of Operations

The emergency response plan is designed to be implemented independently of any offsite support. However, it is the purpose of this section to augment the onsite response effort with General Office resources as soon as practical and as needed by the site."

Augmentation of the onsite emergency organization was classified in Section 12.0 as:

- 1) Private Supplemental Support
  - General Electric
  - INPO
- 2) Offsite Agency Coordination
  - State (NE) Communication Van
  - DOE - FMRAP
  - NRC
- 3) NPPD General Office Support

The auditors noted the conspicuous absence of consideration by the licensee of local offsite response capabilities (with the exception of the local hospital and ambulance squad) and of response and emergency action capabilities of the states within the 50 miles EPZ (Nebraska, Missouri, Kansas and Iowa).

The auditors further noted that the CNS Emergency Plan and its associated Implementing Procedure 5.7 did not adequately present the organizational relationships and the authorities of the local support services in relation to the licensee's Emergency Organization. The same was found to be true for the description of the state and county response organizations.

Where non-licensee groups were relied upon to provide emergency response, the working interfaces between the functional areas of emergency activity of the licensee's organization and the non-licensee groups were not described, neither in the Emergency Plan nor its implementation documents.

The auditors noted that long-term augmentation of the onsite Emergency Organization was not addressed in either the CNS Emergency Plan or the EPIP 5.7. Further the area of Recovery Planning was not addressed.

The auditors reviewed Section 12.0 of the CNS Emergency Plan, Attachment "O" to the EPIP 5.7, and held discussions with licensee representatives to verify that the corporate organization, which will augment the onsite Emergency Organization had been defined; that interfaces among the corporate

organizations and the station organization had been delineated; and that the identified corporate functions were consistent with the licensee's overall Emergency Response Organization, the procedures which implement the Emergency Plan, and guidance contained in NUREG-0654, Revision 1. The auditors determined that although there were provisions within the corporate organization for various emergency functions to be performed, overall coordination of the descriptions of the functions to be performed by the station organization with the descriptions of the functions to be performed by the corporate organization was not apparent.

The auditors noted that the CNS Emergency Plan did not contain copies of all letters of agreement with the offsite organizations, contractors and private organizations which might be requested to provide technical assistance to, and, augmentation of, the licensee's Emergency Organization.

Further the auditors determined that the licensee had not made provisions for supplementing the Health Physics Staff beyond 24 hours under accident conditions, nor had the licensee performed any study to demonstrate that the minimum augmentation staff as specified in NUREG-0654, Revision 1, Table B-1, could report to CNS within the specified times of 30 and 60 minutes.

Based on the findings in the above areas, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(1) and 10 CFR Part 50, Appendix E(IV)(A), revise the Emergency Plan and Implementation Procedures to clearly identify the primary responsibilities for emergency response by State and local organizations within the EPZs, and various other supporting organizations on which CNS would depend for technical support during an emergency (298/81-13-09);
- Pursuant to the requirements of 10 CFR 50.47(b)(2) and 10 CFR 50, Appendix E(IV)(A)(3) and (5) thru (8), revise the Emergency Plan and Implementing Procedures to clearly identify the functional areas of emergency support to be provided to the station organization, reporting chains, and the interfaces between the corporate and non-licensure augmentation organizations and the station emergency organization, down to the working level (298/81-13-10);
- Pursuant to the requirements of 10 CFR 50.47(b)(13) and 10 CFR Part 50, Appendix E(IV)(H), develop general plans for the recovery of the CNS after an accident, including consideration of criteria for reentry of the facilities and methods to be used to guide recovery operation until plant operation could be resumed (298/81-13-11);
- Pursuant to the requirements of 10 CFR 50.47(b)(3) and 10 CFR Part 50, Appendix E(IV)(A) and (D) and (E), provide in the Emergency Plan copies of letters of agreement or contracts which demonstrate that arrangements have been made with offsite organizations to supply specifically defined support or cooperation during an emergency (298/81-13-12); and

- Pursuant to the requirements of 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E(IV)(C), revise the emergency plan to include the augmentation of emergency personnel as specified in NUREG-0654, Rev. 1, Table B-1 and provide a method to verify that there is reasonable assurance that the augmentation times can be met for the specified minimum augmentation staff (298/81-13-13).

### 3.0 TRAINING/RETRAINING

#### 3.1 Program Established

The auditors reviewed Section 11.2 (Training) of the CNS Emergency Plan, the Station Training Manual, available lesson outlines and training records, Security Procedure 1.1, CNS Administrative Procedure 1.5 ("Selection and Training of Station Personnel", revision 6, approved 6-3-81), job descriptions of supervisory personnel, and brochures describing the video tapes used in Fire Brigade Training. The auditors interviewed the Training Coordinator, CNS Supervisory personnel, other station personnel, Corporate (General Office) personnel, and contracted offsite support groups.

The Station Training Manual consisted of Reactor Operation training material only. It did not contain any Emergency Plan training information. The auditors determined that the Emergency Plan training frequency was generally once per year (just prior to the annual exercise). In addition, personnel assigned emergency response duties were expected to perform a self-review of changes to the Emergency Plan and Procedures when changes were made. There were no function specific lesson plans.

The auditors reviewed a general lesson outline which was used for Chemistry and Health Physics personnel, First Aid personnel, offsite groups (primary and backup hospitals, and local rescue squad) and for the general emergency planning presentation given to the Department Supervisors during a SORC meeting. Upon questioning of the Department Supervisors, the auditors determined that some Supervisors used portions of that outline for their presentations to their staffs. Student performance objectives were not defined. Student performance was only evaluated if the individuals participated in fire drills or the annual exercise. There were no tests given except for First Aid (verbal) and Security (written). The First Aid training material was the "American Red Cross Standard First Aid and Personal Safety".

Instructors for Emergency Plan training were assigned by CNS Administrative Procedure 1.5, part E.6, which stated "Supervisors of individuals with specific emergency responsibilities will provide appropriate training for these individuals. Supervisors will also provide appropriate emergency training for all individuals in their department." The Engineering Supervisor was assigned responsibilities by his position description for training the Station Fire Chief. However, at the time of the Appraisal Team visit, there was no assigned Fire Chief. The First Aid instructor, a State Certified Emergency Medical Technician, was informally assigned. The Chemistry and Health Physics Supervisor was assigned the responsibility of coordinating emergency plan drills ("exercises" by NUREG-0654 definition) by his position description. The Training Coordinator was assigned responsibilities by his job description to coordinate and document all training activities at CNS, provide advice and support for establishing and implementing training programs, and provide training for licensing of reactor operators.

Station Management stated that the selection criterion for assignment to an area in the emergency response organization was the individual's normal job

function and that the qualification criterion was the existing training program as per ANSI/ANS-3.1-1978, "Selection and Training of Nuclear Power Plant Personnel."

Attendance was documented through use of standardized role forms and training record forms. The most recent training activities had not been documented but the auditors verified, through interviews, that these sessions had occurred.

The Emergency Preparedness lesson outline for Chemistry and Health Physics Personnel did state, in the Section for onsite surveys, that radiation levels could be very much higher, redistributed or in new locations during an emergency at CNS. One of the video tapes used in fire brigade training was entitled "Nuclear Power Plant Fire Fighting" and its accompanying brochure listed some special considerations for radiation and contamination in the fire area. The procedure used in training the security guard force covered only their specific duties and did not give additional guidance in radiation protection measures, etc.

Section 11.2 of the CNS Emergency Plan stated that "All emergency drills and exercises are considered as a training exercise" and that "This concept will be used as a basis for training plant personnel, emergency coordinators, radiation teams, fire fighters, repair and damage control personnel, first aid and rescue personnel, medical support personnel and General Office support personnel." The auditors did not find documentation for specific training for the emergency response duties of these categories of personnel other than the fire brigade, the nursing staffs at the primary and backup hospitals and the offsite first aid and rescue personnel at those hospitals.

Training on the emergency duties and responsibilities of station personnel was covered by a self-review by the station personnel of the Emergency Plan and Implementation Procedure, or by short presentations by their Department heads. Some personnel groups had participated in a walkthrough or practical demonstration of some of their emergency duties using the available equipment and procedures (e.g., some, but not all, of the control room operators had performed practice dose calculations using attachment "E" of EPIP 5.7, and some chemistry personnel had been given a familiarization tour of field survey areas).

With the pyramidal instruction process, i.e., the Station Superintendent and Chemistry and Health Physics Supervisor train Department Supervisors and those Supervisors train their people, all station personnel receive some Emergency Plan training. The Chemistry and Health Physics Supervisor and some of his staff provided training for offsite groups, contractors and vendors. The auditors found documentation that station personnel had trained one (1) General Office member in fire protection. Review of drill records showed that the Public Information Officer (General Office) had participated and hence received some training in his emergency response duties. The auditors did not find documentation that State personnel (Nebraska, Iowa, Missouri, Kansas) or other utilities had received training other than by exercises they may have participated in.

The news media had not been trained or received a familiarization session, although the Information Coordinator (NPPD) stated that one was scheduled for sometime in the Fall.

The general public within the 10 mile EPZ had not received emergency planning information. However the auditors saw a draft of the information package which the licensee stated would be distributed later this year.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(15), and 10 CFR Part 50, Appendix E (IV)(F), establish a formal radiological emergency response training program to provide specialized training and annual retraining for each of the functional areas of the emergency organization. The program shall include classroom instructions and practical demonstration drills, walkthroughs, formal lesson plans and means of evaluating student performance objectives (i.e., written tests or evaluation of performance in drills and walkthroughs). Lesson plans shall include student performance objectives. Training for individuals assigned to first aid functions shall include courses equivalent to Red Cross Multi-Media (298/81-13-14).

### 3.2 Program Implementation

The auditors reviewed the CNS training records, the CNS Administrative Procedure 1.5 ("Selection and Training of Station Personnel," revision 6, approved 6-3-81), interviewed licensee personnel and non-licensee offsite response personnel, and conducted walkthroughs with selected individuals. The format of the training records provided for recording of the instructor's name and the date, subject (usually a title), duration, and attendance of training "classes." Through review of records and interviews, the auditors determined that some Emergency Plan training had been performed within the last year for Corporate and Station Personnel and offsite organizations. The licensee performed most of the training prior to the annual exercise, which occurred in December 1980.

For most station personnel, Emergency Plan training was performed by their Department Supervisor. Section E.6 of Administrative Procedure 1.5 ("Selection of Training of Station Personnel") stated that supervisors of individuals with specific emergency responsibilities will provide appropriate training for these individuals and will also provide appropriate emergency training for all individuals in their department. The Department Supervisors were trained by the Station Superintendent and the Chemistry and Health Physics Supervisor. The Chemistry and Health Supervisor also trained the nursing staffs of the primary and backup hospitals and the local rescue squad.

Security training was performed by the Security Account Supervisor for the Security Guard Force using Security Procedure 1.1; which delineates the duties of the guards during an emergency. First aid training for all station personnel was performed by a station employee (Health Physics Technician) who

was also a State Certified Emergency Medical Technician, using the American Red Cross Standard First Aid text. Fire Brigade training consisted of viewing video tapes and a 2 1/2 hour hands on fire fighting training session. The local offsite fire department received training through exercise participation.

Operations personnel received Emergency Plan training from the Operations Supervisor or Shift Supervisor. Training in Emergency Operations Procedures (Abnormal Procedures) was performed by self-review although a member of the Training group indicated this was being upgraded to be a more intensive training program which would include walkthroughs of the Abnormal Procedures.

Emergency Plan training for station personnel was conducted in an informal, on-the-job fashion by the Department Supervisor. Emergency Plan "training" for Department Supervisors occurred during SORC meetings where discussions of revisions to the CNS Emergency Plan was one part of the meeting agenda. Corporate personnel were also "trained" during a meeting in which revisions, responsibilities and functions were among the items on the agenda. However, the meeting did not appear to include all the corporate individuals who would be expected to respond in an emergency, e.g., individuals to augment the Environmental Monitoring personnel.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E (IV)(F), expand the training program to include all functional areas (e.g., personnel accountability, repair and corrective action teams) of the Emergency Response Organization (298/81-13-15); and
- Pursuant to the requirements of 10 CFR 50.47(b)(15), 10 CFR Part 50, Appendix E (IV)(F) and the guidance contained in NUREG-0654, Revision 1, items 0.1-5, upgrade the training program with the development of formal lesson plans, dedicated time for classroom training, and appropriate numbers and kinds of drills, to ensure that individuals assigned functional responsibilities during an emergency attain consistent levels of knowledge and abilities within their assigned functional area and that levels of knowledge and abilities among all functional areas will provide for effective implementation of all functional tasks (298/81-13-16).

## 4.0 EMERGENCY FACILITIES AND EQUIPMENT

### 4.1 Emergency Facilities

#### 4.1.1 Assessment Facilities

##### 4.1.1.1 Control Room

The auditors reviewed the contents of Sections 5.0, 7.0, and 10.0 of the CNS Emergency Plan and Attachments G, N and O of the EPIP 5.7. Further, the auditors toured the Control Room facilities and held discussions with the control room personnel on all three duty shifts.

The Control Room was located on the third level of the Control Building between the Radwaste Building and the Turbine-generator Building. The Control Room was designated as a controlled area. The auditors noted that there were copies of the CNS Emergency Plan and Implementing Procedures, Technical Specifications, Radiation Protection Procedures, a set of Piping and Instrumentation Drawings (P&IDs), and plant layout drawings in the Control Room. There was also a set of three sector maps for the areas surrounding CNS out to one mile radius, fifteen miles radius and fifty mile radius from the station.

The auditors also reviewed the emergency equipment and communications available in the Control Room for incident response. The auditors noted that there were no readouts of meteorological information in the Control Room. During an emergency, a member of the Control Room personnel would have to leave the Control Room and go to the Computer Room adjacent to the Control Room to gather the necessary meteorological data used as input to offsite dose and consequence calculations. However, the auditors also noted that the Computer Room does not meet the same habitability standards as is required for the Control Room. The auditors determined that, during an emergency in which the Computer Room was inaccessible without wearing appropriate respiratory protection, some Control Room personnel would not be qualified to wear protective respirators due to facial hair (beards and long sideburns). The auditors further determined that some of these same persons were also assigned to the fire brigade and again could not perform their assigned tasks because they would be unable to don respiratory protective equipment. It was noted that the radiation detector for the Control Room was located in the access hallway outside of the Control Room, however, there was a readout and alarm located inside the Control Room.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8), and the guidance contained in NUREG-0654 Revision 1, Annex 1 to Appendix 2, page 2-9, Para. 5(c), provide meteorological data readouts in the control room to the extent necessary for onsite and offsite dose assessment and projection (298/81-13-17); and

- Pursuant to the requirements of 10 CFR 50.47(b)(2), assure that all personnel assigned emergency functions, including the fire brigade, will be capable of responding to an incident. This shall include meeting, while on duty, requirements set forth in NUREG-0041 "Manual of Respiratory Protection Against Airborne Radioactive Materials" (298/81-13-18).

#### 4.1.1.2 Technical Support Center (TSC)

The auditors reviewed the contents of Section 5.1 of the CNS Emergency Plan and the NRC Office of Inspection and Enforcement Health Physics Appraisal Report No. 50-298/80-07, dated September 8, 1980 for CNS. The auditors also reviewed the content of the NPPD letter to Mr. Darrell G. Eisenhut, Director of the Division of Licensing, USNRC (reference No. LQA8100198) dated June 9, 1981, in which NPPD submitted their upgraded emergency support facility conceptual design description.

The Technical Support Center (TSC) was located on the third level of the Control Building across the hall from the Control Room in the Computer Room. The travel time from the TSC to the Control Room would be approximately twenty seconds.

The auditors determined that the personnel reporting to the TSC may include, but not be limited to: 1) the Assistant to the Station Superintendent; 2) the Maintenance Supervisor; 3) the Engineering Supervisor; 4) the Engineering Staff (presently sixteen people); 5) Health Physics and Chemistry representatives; 6) the Instrument and Control Supervisor; 7) the Electrical Foreman; 8) the Mechanical Supervisor; and 9) five NRC representatives. The auditors noted that the NPPD letter to Mr. Eisenhut stating that the TSC had approximately 1290 square feet of floorspace, however, the auditors determined that the room contained computer equipment, computer parts, and reference material which occupies approximately thirty percent of the available floor space thus reducing the true available floor space to approximately 900 square feet.

The auditors noted that the TSC had a dedicated phone line to the Control Room, a plant wide intercom terminal, an NRC ENS phone, a clock, emergency lighting, a site ten station Bone Phone, and two normal station telephones, but did not have any radio communication equipment. The auditors noted that the TSC was normally equipped with one desk, one available conference table and two chairs and a copy of the plant layout drawings and some selected piping and instrumentation drawings.

The auditors also noted that the following items were not present in the TSC: Plant Technical Specifications, Plant Operating Procedures, Emergency Operations Procedures, Final Safety Analysis Report, Plant Operating Records, a continuous air monitor for airborne radioactivity, an area radiation monitor, respiratory protective equipment, portable radiation monitoring devices, and anti-contamination clothing. The auditors noted that the TSC did not meet the same habitability requirements as the Control Room and that there were no restroom facilities, drinking water or eating facilities available in the TSC.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8), and 10 CFR Part 50, Appendix E(IV)(E), and NUREG-0696 "Functional Criteria for Emergency Response Facilities" provide sufficient space in the TSC to accommodate anticipated TSC personnel (298/81-13-19);
- Pursuant to the requirements of 10 CFR 50.47(b)(8) and 10 CFR Part 50, Appendix E(IV)(E), provide necessary equipment to allow response personnel to perform calculations, review drawings, and perform other emergency tasks (298/81-13-20);
- Pursuant to the requirements of 10 CFR 50.47(b)(8) and 10 CFR Part 50, Appendix E(IV)(E), provide the necessary documents in the TSC to enable emergency workers to perform their assigned tasks (298/81-13-21);
- Pursuant to the requirements of 10 CFR 50.47(b)(11) and 10 CFR Part 50, Appendix E(IV)(E), provide devices with both visual and audible alarms to indicate radiological conditions in the TSC (298/81-13-22);
- Pursuant to the requirements of 10 CFR 50.47(b)(11) and 10 CFR Part 50, Appendix E(IV)(E), provide respiratory protection equipment for all persons reporting to the TSC (298/81-13-23); and
- Pursuant to the requirements of 10 CFR 50.47(b)(8), the guidance contained in NUREG-0696, and the generic letter from D. G. Eisenhut, NRC to all licensee dated February 18, 1981, assure that the TSC meets the habitability requirements by the required dates (298/81-13-24).

#### 4.1.1.3 Operations Support Center (OSC)

The auditors reviewed the content of section 5.2 of the CNS Emergency Plan and toured the Operations Support Center which included the following areas: 1) the Electrical Shop; 2) the Maintenance Shop; 3) the Radiochemistry Laboratory; 4) the Health Physics Office Area; and 5) the Instrument and Control Shop. Section 5.0 of the CNS Emergency Plan stated that, "If an emergency dictates, personnel will be instructed to report to their respective Operation Support Center". The auditors noted that each OSC had available at least one commercial telephone, a station intercom system terminal and a system to contact the Emergency Control Center, Control Room, Technical Support Center and other Operation Support Centers (the "Bone Phone"). The auditors also noted that there were no dedicated radiation detection monitors in any of the OSCs (except for the Radiochemistry Laboratory) nor were there any dedicated monitors for airborne radioactivity in any of the OSCs.

The auditors noted that there were no protective clothing, self-contained breathing air devices, or respiratory protective equipment available in any of the OSCs. The auditors also noted, in section 5.2 of the CNS Emergency Plan, that radios are stored in the Security Building which could be used by

corrective action teams dispatched from the OSCs during an emergency. However, due to other demands from the offsite monitoring teams, the fire brigade, and on-site health physics survey teams, the auditors determined that there was not reasonable assurance that the radios stored at security would indeed be available for use in the OSCs during an emergency.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(11) and the guidance contained in NUREG-0696, provide continuous monitoring devices with both visual and audible alarm capabilities for airborne activity and area radiation inside of the OSCs (298/81-13-25); and
- Pursuant to the requirements of 10 CFR 50.47(b)(11) and the guidance contained in NUREG-0696, provide respiratory protection equipment and protective clothing for the maximum number of persons who may report to each OSC (298/81-13-26).

In addition to the above determinations, the following matters should be considered for improvement:

- Evaluation of the existing numbers of portable radios with relationship to the need for such devices by emergency personnel and teams during an emergency (298/81-13-108).

#### 4.1.1.4 Emergency Operation Facility (EOF)

The auditors reviewed the contents of Section 5.3 of the CNS Emergency Plan and Attachment G of the EPIP 5.7 as well as the NPPD letter to Mr. Darrell G. Eisenhut, Director of Licensing, USNRC (Reference No. LQA8100198) dated June 9, 1981, in which NPPD submitted upgraded emergency support facility conceptual design description.

The Emergency Operations Facility (EOF) is called the "Emergency Control Center" by the licensee and is located in the Security Building, outside the station protected area. The auditors toured the Security Building and noted that the EOF had an auditorium, whole body counting room, environmental supply room, conference room, restrooms, telecommunication room, and emergency kit storage room. The auditors noted that the licensee's letter to Mr. Eisenhut stated that the Near-Site Emergency Operation Facility (EOF) contained an area of approximately 3,600 square feet of floor space. Presently an area of approximately 540 square feet has been assigned for the EOF Emergency Coordinating Staff. This area will be occupied by the Emergency Director, Health Physics and Chemistry Supervisor, NRC representatives, FEMA representatives, and appropriate State and local representatives.

The remaining area will be occupied by the station personnel reporting to the auditorium (primary assembly point), whole body counting room (offsite survey teams) and environmental storage room (offsite environmental monitoring teams).

The auditors noted that the emergency kits in the EOF were complete as described in the Emergency Plan, and that all instruments were operable and within their calibration time. The auditors also noted that the communications equipment consisted of ten (10) plug-in phone jacks (telephones are locked in the storage room), a station intercom system terminal, an alternate intercom ("Bone Phone") to the Control Room, Operation Support Centers and Technical Support Center, as well as an NRC ENS telephone, and an NRC HPN telephone. The auditors further noted that a base and mobile station radio (presently being used by security) would be available upon request by the Emergency Director.

The auditors determined that there were no provisions for monitoring either airborne radioactivity or direct radiation in the EOF. The auditors also noted that there were no personnel decontamination facilities available in the EOF nor was there clock available in the EOF, however, upon discovery of the missing clock a new clock was installed that day by the licensee. The auditors determined that the EOF did have the State Plans, sector maps, CNS Emergency Plans, CNS Emergency Procedures, and maps with the CNS Environmental Monitoring TLD and air sample locations. The auditors noted that there were no provisions made for the press in the EOF nor were there any check sources available for checking radiological monitoring instruments for use by field teams prior to departure by the teams from the EOF.

Based on the above findings, improvements in the following areas are required to achieve an adequate program.

- Pursuant to the requirements of 10 CFR 50.47(b)(7) and the guidance contained in NUREG-0654, Revision 1, Item H.9, provide sufficient working space in the emergency facilities to accommodate the State, Local and Federal response personnel (298/81-13-27); and
- Pursuant to the requirements of 10 CFR 50.47(b)(7) and the guidance contained in NUREG-0654, Revision 1, Items H.3.a & b, provide sufficient space to accommodate the news media inside of the EOF (298/81-13-28).

#### 4.1.1.5 Post-Accident Sampling and Analysis

The auditors reviewed the contents of Section 10.0 of the CNS Emergency Plan; Attachments H and I of the EPIP 5.7; toured the post-accident sampling and analysis areas; and held discussions with station chemistry and health Physics personnel.

##### 4.1.1.5.1 Post-Accident Coolant Sampling and Analysis

The reactor coolant sampling room was located on the ground level of the Reactor Building. The auditors determined that this location affords relatively rapid and facile access during a reactor accident. The licensee did not provide the auditors with any analysis of the radiation levels or radiation doses that could be encountered while accessing the coolant sampling room during severe accidents.

During a sampling operation, high radiation levels could exist at the sampling station because the sampling room contains relatively long runs of sampling lines that are proximal to the sampling station. The sampling line was 1/4" OD stainless steel tubing which was not shielded. The sampling line runs across walls to the chemistry cells and then to the hoods. The length of the sampling lines would require approximately 10 minutes for purging. The work stations are 2 feet to 5 feet from the 10 foot runs of the sampling line. The long tubing runs, long purging times, and proximity to the worker may result in high radiation doses during severe accidents, in contrast to ALARA guidelines. If 50% of the core inventory of Xe, K, I, Cs, and Te were released to primary coolant, the radiation dose rate in the sampling room could be about 100 R/hr. The entrance to the sampling room was monitored by an area radiation detector that was within three feet of the sample line. The alarm setpoint was 100 mR/hr.

During discussions with the auditors, the station personnel acknowledged the potential for high radiation doses during sampling under emergency conditions. Automated sampling and analysis equipment had been purchased by the licensee and was awaiting installation. Shielded sample carriers were available for transporting the sample from the sample location to the chemistry laboratory.

#### 4.1.1.5.2 Post-Accident Containment Air Sampling and Analysis

The drywell was sampled by an NMC continuous air monitoring system equipped with quick disconnect sample ports to allow special samples to be drawn from the drywell atmosphere without passing through the filters and measuring system. The sample lines enter the detector system from the rear. This layout will reduce exposure rates to the sample-takers. The licensee did not demonstrate to the auditors that the sample taken is truly representative of the concentration of radionuclides in the drywell. Under emergency conditions, the sample should indicate the concentration in the drywell within an order of magnitude.

#### 4.1.1.5.3 Post-Accident Gas and Particulate Effluent Sampling and Analysis

There are three locations where the exhaust air is monitored prior to discharge to the environment. These are the turbine building via the exhaust, the elevated release point, and the steam jet air ejector (SJAE). These points are equipped with either NMC or GE ERP monitors. A sample of the exhaust air is drawn from the stack and monitored by redundant GE air monitors and the NMC gaseous, iodine, and particulate monitoring system (presently out of service). The GE system measures gaseous radioactivity in the sample. Concentrations of particulate and iodines in the exhaust stream would be measured by removal and analysis of an inline filter and cartridge. The range of the GE system limits the maximum concentration that can be measured in the exhaust air to approximately 1 uCi/cc. The auditors examined purchase requisitions for high-level monitors for the main stack, SJAE, and turbine building exhaust.

There were two ionization detectors attached to the SJAE which measure the radiation released to the off-gas system. These detectors have readouts in

the Control Room. This provides a method of crudely estimating releases greater than one curie per second. This system would give the ability to estimate the release rate or concentration at the elevated release point to a maximum of about  $10^3$  uCi/cc.

#### 4.1.1.5.4 Post-Accident Liquid Effluent Sampling and Analysis

The facilities and equipment for sampling and analysis of post-accident liquid effluents are discussed in Sections 4.2.1.1 and 5.4.2.2 of this report.

#### 4.1.1.5.5 Offsite Laboratory Facilities

Letters of agreement were in place between Cooper Nuclear Power Station and Fort Calhoun Nuclear Power Station to provide backup laboratory facilities during an emergency. The auditors observed that the letter from Fort Calhoun had recently been received at Cooper. This agreement was necessary because the CNS onsite laboratory was adjacent to the Reactor Building and could be incapacitated by high radiation levels during an emergency.

#### 4.1.1.5.6 Conclusions and Determinations

The auditors determined that the analytical chemistry facilities were in place for handling the samples; the counting equipment was in place and accessible during emergencies; the samples could be taken and analyzed in approximately one hour; the sample point were accessible during an emergency; and shielded sample carriers were available for transporting the sample from the sample location to chemistry laboratory. However, the auditors noted that the sampling of post-accident coolant could involve high radiation doses to the sampling team and that the automated coolant sampling and analysis equipment had not been installed. Further, the high-level vent radiation monitors and the in-containment high level monitors had not been installed.

Based on the above findings, improvement in the following area is requested to achieve an adequate program:

- Pursuant to the requirements of NUREG-0737, items II.E and II.F.1, upgrade existing post-accident sampling and analysis facilities, equipment and procedures to insure that the implementation schedules in NUREG-0737 are met and that the radiation doses received during sampling and analysis activities are within the specified guidelines (298/G1-13-29).

### 4.1.2 Protective Facilities

#### 4.1.2.1 Assembly/Reassembly Areas

The CNS Emergency Procedure 5.7, Attachment G, identifies the following seven accountability stations (assembly);

- Technical Support Center
- Health Physics Operations Support Center
- Radiochemistry Operations Support Center

Instrument and Control Operations Support Center  
Electrical Operations Support Center  
Mechanical Operations Support Center  
Emergency Operations Facility

The auditors toured these accountability stations and noted their locations and general arrangements. These facilities are described and discussed in detail in sections 4.1.1.2 (TSC) 4.1.1.3 (OSCs) and 4.1.1.4 (EOF) of this report. The auditors did not observe a personnel accountability drill, however, the auditors did exercise the computer assisted portion of the personnel accountability function by requesting security to perform a "Personnel On Site" listing from the security computer. The auditors noted that a complete computer print out was available, of all personnel onsite, in seven (7) minutes. The auditors noted that the licensee had additional contractor personnel onsite which increased the total number of personnel onsite to above the normal personnel level for the day shift.

The auditors reviewed the CNS Emergency Plan and its Implementation Procedure 5.7 and were unable to locate any specific Personnel Accountability Procedure, however, there was a form for recording the names of missing persons on page 13 of Attachment B in the EPIP 5.7. The auditors determined that there was no specific method to perform personnel accountability nor was there a specific designation of responsibility and authority for this duty.

As discussed in sections 4.1.1.2 thru 4.1.1.4 of this report, the auditors determined that the various emergency facilities and assembly areas did not contain sufficient respiratory protective equipment for the numbers of persons who could report to those facilities during an emergency at CNS.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8) and the guidance contained in NUREG-0654, Revision 1, provide specific personnel accountability procedures identifying how assembly area personnel will be accounted for, and who gets the information (298/81-13-30); and
- Pursuant to the requirements of 10 CFR Part 50, Appendix E(IV)(E), 10 CFR 50.47b.(8), and the guidance contained in NUREG-0654, Revision 1, item J.6., provide for individual respiratory protection and protective clothing for individuals remaining at or arriving onsite during the emergency (298/81-13-31).

#### 4.1.2.2 Medical Treatment Facilities

The auditors reviewed the content of Section 3.0 of the CNS emergency plan and attachments K, L, M and N to the EPIP 5.7 and held discussions with CNS personnel.

The First Aid Facility was located on the second floor of the Administration Building approximately sixty feet from the Health Physics Office. The

auditors toured the First Aid Facility and noted that there were decontamination sinks and a decontamination shower available. It must be noted that the auditors determined that the drains from these sinks and shower went to the plant sanitary sewer which is not continuously monitored. This problem is discussed further in Section 4.1.2.3 of this report. The auditors also noted that there was an operating frisker in the first aid room and a portal monitor located outside the door, and that there were ample supplies of first aid equipment and sufficient space for decontaminating and first aid treatment for several persons. The auditors determined however that KI for thyroid blocking was not available for emergency workers. The Health Physics Office had a reserve supply of dosimeters and TLD's and a set of procedures which include personnel decontamination procedures. The auditors noted that the first aid station had a plant pager intercom and that there was a dedicated vehicle for transporting injured or sick personnel to a hospital. The auditors determined that the dedicated vehicle contained an emergency kit which included: radiation survey instruments, self reading dosimeters, plastic sheets, smear supplies and TLD badges.

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

- Provisions of a copy of the decontamination instructions in the first aid room (298/81-13-109) and
- Provisions of instructions in the first aid room for making the 4% solution of potassium permanganate used for personnel decontamination (298/81-13-110).

#### 4.1.2.3 Decontamination Facilities

The auditors toured the personnel decontamination facilities at CNS and held discussions with station personnel. The auditors noted that the primary station personnel decontamination facility, for both normal daily use and emergency use, was located in the first aid station on the second floor of the administration building. The auditors also noted that the primary station personnel decontamination facility had two lavatories equipped with hot and cold water. There was also a very small shower equipped with hot and cold water and brushes, soap and towels were available for decontamination. The auditors determined that this shower would not accommodate an injured person on a stretcher and that the sinks and shower drain went directly to the station sanitary sewer which does not have a continuous radiation monitor. The auditors determined that the CNS chemistry department collects a sewage sample once a month. The auditors reviewed the last eight months of sewage sample analysis data and noted that there was a gross radiation count performed on the samples and that no indication of contamination above background levels was present. The auditors also noted that a chemical emergency shower head was located in the Radwaste Building. The auditors determined that there was only cold water available to that shower head and that there was equipment stacked in the entrance to the shower and yellow barrels under the shower head wash area. The auditors noted, from interviews with station personnel, that during and following an incident, all personnel

found to be contaminated at the EOF would be returned to the First Aid Station for decontamination if radiological conditions in the Administration Building were favorable.

Based on the above findings, improvement in the following area is required to achieve an adequate program.

- Pursuant to the requirements of 10 CFR 20.106, ensure that all releases of radioactive material to the environment via decontamination facilities are known (298/81-13-32).

\*NOTE: It should be noted that the licensee, upon notification of the above finding, has instructed all station personnel not to use the first-aid station for personnel decontamination (CNSS 810389, June 26, 1981, from CNS-Brownville, Subject: Decontamination Facilities). The auditors noted that the First-Aid Station now has a sign posted restricting personnel decontamination and that service water to the First-Aid Station had been terminated. The auditors further noted that there is a personnel decontamination facility located on the bottom level of the Radwaste Building with a decontamination sink and shower.

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

#### 4.1.3 Expanded Support Facilities

The auditors reviewed the licensee's facilities both onsite and offsite for initial recovery groups. The auditors noted that one warehouse was located west of the Security Building at the CNS Site which could be used during an emergency. The warehouse was approximately 45 feet x 90 feet and the auditors determined that the facility would be of sufficient size for approximately 20-40 corporate and contractor personnel if radiological conditions are within 10 CFR 20 Regulations and stored equipment were moved out of the building during the recovery operations.

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

#### 4.1.4 News Center

The auditors reviewed the contents of Sections 5.3, 8.1, 8.2, and 8.3 of the CNS Emergency Plan and toured the Emergency Operations Facility (EOF) and its emergency response areas, e.g., communications center, primary assembly area, whole body counter and environmental storage area. Section 5.3 of the CNS Emergency Plan does not specifically address space available for the news media. The auditors noted that in Section 8.1, "Release of Information", the Plan indicates that "The Near-Site and alternate Emergency Control Centers may also be used to release information to the news media. Space is available for a limited number of news media representatives". The auditors noted that there were no dedicated special news media facilities or equipment in the EOF.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(7) and the guidance contained in NUREG-0654, Revision 1, items G.3-6, provide space and means of communicating for the news media in the EOF(298/81-13-33).

#### 4.2 Emergency Equipment

##### 4.2.1 Assessment Equipment

##### 4.2.1.1 Emergency Kits and Emergency Survey Instrumentation

The auditors reviewed the contents of the CNS Emergency Plan, Attachments M and N to the EPIP 5.7, Volume 9 of the CNS Health Physics Procedures (Section 9.3) and the NRC Office of Inspection and Enforcement Health Physics Appraisal Report for CNS (Report No. 50-298/80-07).

The auditors also toured those areas where emergency equipment was stored at CNS and held discussions with station personnel. The auditors noted that the following areas were designated as facilities where emergency equipment was stored: Primary Assembly Point (EOF), Control Room, and Alternate Assembly Point (Brownville, NE Fire Dept.).

The auditors determined that all equipment specified in each emergency locker inventory list was available and in place and that all instrument calibrations were up to date and each instrument passed the battery check test. The auditors also determined that there were no check sources available to check low-range survey instruments and that the high-range (10K Roentgen) instruments had built in check sources.

The auditors noted that there were four high-range instruments for routine or emergency use. There were: two RO-1, RAD OWL, 0-500R, Serial No. 397 and Serial No. 398; and two Victoreen, Jordan Instrument Division 0-10KR, Serial No. 2425 and Serial No. 2419. The auditors determined that Rad Owl 397 had been calibrated June 11, 1981, Rad Owl 398 calibrated June 10, 1981, Jordan 2425 calibrated August 13, 1980 and Jordan 2419 calibrated August 13, 1980 and that only RAD OWL Serial No. 398 would properly respond to a source and was considered operable. It should be noted that all high-range instruments were small hand held portable instruments which did not have extendable probes. The auditors determined that there were no portable instruments for the licensee's offsite monitoring teams which will detect and measure radioiodine concentrations in air of at least  $1 \times 10^{-7}$  uCi/cc under field conditions.

The auditors noted that there were no offsite provisions for TLD's for use during recovery and re-entry operations but that all station personnel were assigned TLD's. It was also noted that there were assigned calibration dates affixed to each portable instrument.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8) and (b)(11), provide high-range Radiation Survey instruments that do not require personnel exposure, e.g., hands, to high dose rates (298/81-13-34).

#### 4.2.1.2 Area and Process Radiation Monitors

The auditors reviewed Section 10.2 (Radiological Monitors) of the CNS Emergency Plan and interviewed station personnel.

The auditors found all of the readouts, recorders, and alarms associated with the Area and Process Radiation Monitors, as described in Sections 10.2.1 and 10.2.5 of the EP on the racks behind the main panels in the Control Room, except for the inside primary containment radiation monitor which the licensee stated had not yet been installed. All of the monitors found were operable, although one of the Elevated Release Point (ERP) monitors (the NMC gaseous, particulate and iodine monitor) was out of service and had been for several months. The ERP was being monitored for gaseous releases by a GE monitor.

The auditors determined, through interviews with the Health Physics and Chemistry Supervisor, the Chemist, and by reviews of calibration procedures, that the instruments were maintained on a routine schedule, operability and functional checks were performed and written calibration procedures existed for the monitors.

The Area Radiation Monitoring (ARM) system had sufficient detectors (30) to permit mapping of post-accident radiation conditions, although 19 monitors had full scale readings of  $10^2$  mR/hr, 1 had  $10^4$  mR/hr fullscale (Feedwater Pump Area), 1 had  $10^6$  mR/hr fullscale (Fuel Pool Area) and the remainder were  $10^3$  mR/hr fullscale. The auditors observed the following Radiation Process Monitors: gaseous effluent release monitors; main steam line monitors; steam jet air ejector (off-gas) monitors; and liquid radioactivity monitors.

The Radiation Process Monitors were calibrated using  $^{131}\text{I}$ ,  $^{137}\text{Cs}$  or  $^{60}\text{Co}$  sources in various geometries and strengths. The sources were commercial or manufactured by the licensee as necessary. The auditors noted that the licensee also used the analysis capabilities of the CNS gamma ray spectroscopy system as a means of determining detector efficiencies.

The licensee stated that the gaseous release monitors used isokinetic probes and that sampling lines had been designed to obtain samples representative of the release.

During interviews with licensee personnel, the auditors determined that there was uncertainty on the part of the licensee as to whether or not the detectors could be affected by elevated background radiation.

The licensee also stated that the readouts for gaseous effluent release monitors were used as indicators only and that actual samples would be taken and analyzed by radiochemistry to provide information on an actual release. The auditors determined, using the licensee's procedure, that the fullscale readings on the ERP (GE) monitors corresponded to a release concentration of

approximately 1  $\mu\text{Ci/cc}$ . The licensee also stated that a redesigned and upgraded vent monitoring system that fulfilled NUREG-0737 criteria was to be installed in the near future.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(9) and 10 CFR 50, Appendix E(IV)(E), upgrade as necessary, or document that the Area and Process Radiation Monitors have operating characteristics consistent to assess the accident conditions for which the Emergency Plan is designed to cope and that all detectors are located so that their readouts would accurately reflect their intended use (298/81-13-35);
- Pursuant to the requirements of 10 CFR 50.47(b)(9) and 10 CFR Part 50, Appendix E(IV)(E), upgrade as necessary, or document that the upper detection limits for the Area and Process Radiation Monitors are adequate for accident monitoring (298/81-13-36); and
- Pursuant to the requirements of NUREG-0737, install a containment high-range monitoring system (298/81-13-37).

#### 4.2.1.3 Non-Radiation Process Monitors

The auditors reviewed Section 10.3 (Process Monitors) of the CNS Emergency Plan and interviewed Control Room Operators. Through interviews, the auditors determined that the Emergency Plan description of the Non-Radiation Process Monitors used to initiate emergency measures and aid in the evaluation and assessment of such emergency measures, was ambiguous. However, the auditors noted that the process monitors used by the Senior Reactor Operator and the Shift Supervisor to determine pressure, temperature, level, and flow rate of the primary and associated back-up emergency systems were in place and operable. All monitor readouts were either in the Control Room proper or on the racks behind the main panels. Readouts were readily observable.

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

- Pursuant to guidance contained in NUREG-0654, Revision 1, items H.5 and H.5.c, develop an explicit identification of the non-radiation process monitors used to initiate emergency measures and aid in the evaluation and assessment of such emergency measures (298/81-13-111).

#### 4.2.1.4 Meteorological Instrumentation

The basis for the auditor's review of the licensee's meteorological measurements program included Regulatory Guides 1.23 and 1.97, and the criteria contained in NUREG -0654, -0696, and -0737.

The licensee outlined a description of the meteorological measurements program in Section 10.1.2 of the CNS Emergency Plan. The integration of meteorological data into the licensee's dose assessment scheme was described in Emergency Procedure 5.7, Attachment "D". The auditors reviewed the licensee's preventative maintenance procedures (7.5.3.1, .2, .5, .6, .7, .9) and records for scheduled and past activities.

The auditors determined that the licensee's meteorological capabilities addressed the requirements of NUREG-0737, TAP III. A.2 and the criteria set forth in Appendix 2 to NUREG-0654, Revision 1, in adopting the compensating measures to milestone 3.

The licensee has access to the NRC Health Physics Network in the TSC and EOF to provide the NRC with direct telephone access to the individual responsible for making offsite dose projections.

The meteorological instrumentation can provide the basic parameter (ie. wind direction and speed), and an estimation of atmospheric stability necessary to perform the dose assessment function. Data from the meteorological measurements system are recorded on strip charts located in the Computer Room adjacent to the Control Room; the habitability of this area needs to be assured (see Section 4.1.1.2 of this report). All instruments and recorders were operable and are calibrated on a quarterly schedule.

Provisions for followup messages from the plant to offsite authorities, access to the National Weather Service (NWS) - Omaha as an alternate data source in event of onsite system inoperability, and provisions to inform plant personnel of severe weather conditions in the plant area are all accomplished over the National Warning System (NAWAS) circuit. The access to a 24 hour NWS station, in combination with the onsite measurements program, assures data availability.

There are no operability checks performed on the system between quarterly calibrations to determine that information is qualified. As strip charts are exhausted they are forwarded for data reduction to a contractor (NALCO). As equipment is determined to be out of service there is prompt restoration within the confines of supplier deliveries.

The treatment of meteorological factors in the dose calculation methodology does not consider real-time data. The bases for the procedure does not exist.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(9), and NUREG-0737, TAP III.A.2, implement a meteorological measurements program with a primary system and a backup system which have the following provisions:
  - 1) An inspection or surveillance schedule to assess the operability of the system at a frequency no less than weekly (298/81-13-38); and

- 2) Resolution of siting and exposure deficiencies of the systems relative to the site characteristics and facilities in place to be consistent with "good engineering practice" as outlined in Regulatory Guide 1.23, proposed revision 1 (298/81-13-39).
- Pursuant to the requirement of 10 CFR Part 50, Appendix E(IV)(B), and (H), identify the means to be used for determining the magnitude and for continually assessing the impact of the release of radioactive materials. These means shall include dose projection using real-time meteorological information(298/81-13-40); and
- Pursuant to the requirements of 10 CFR 50.47(b)(9) and 10 CFR Part 50, Appendix E(IV)(B) and (E), develop a dose calculation and assessment capability that includes a treatment of meteorological factors, source characteristics, and building configuration to provide realistic transport and diffusion estimates for including in the dose calculational methodology. This capability shall be outlined in a technical bases document discussing the entire dose calculation scheme (298/81-13-41).

#### 4.2.2 Protective Equipment

##### 4.2.2.1 Respiratory Protection

The auditors reviewed the contents of the CNS Emergency Plan and Attachment J to EPIP 5.7. The auditors also toured the primary facilities noted as having respiratory protection equipment dedicated for emergency response. Those areas identified in the CNS Emergency Plan Implementation Attachment J are: Primary Assembly Point (EOF); Control Room; and Alternate Assembly Point (Brownville Fire Dept.). The auditors noted that the licensee had sufficient respiratory protective equipment as specified in the Attachment J, however, it should be noted that the Technical Support Center and the OSC(s) did not have respiratory equipment available (See Sections 4.1.1.2 (TSC) and 4.1.1.3 (OSC) of this report). The auditors noted that the Secondary Alarm Station (SAS) for security was located in the hall outside the Control Room and that there were two protective respirators for the SAS operator(s), however, the SAS operator is in the same habitability as the Control Room and may turn the key over to the Control Room if necessary and leave.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8) and the guidance contained in NUREG-0654, Revision 1, item J.6.a, provide sufficient respiratory protection equipment for all onsite emergency workers (298/81-13-42).

##### 4.2.2.2 Protective Clothing

The auditors toured the licensee's storage areas for both normal working supplies of protective clothing and reserve supplies. The auditors noted that the normal working supply bins were located outside of the laundry on the

bottom level of the Radwaste Building and that there was an ample supply of protective clothing. The auditors also noted that the licensee had two storage areas for additional clothing, one located on the third level of the Radwaste Building adjacent to the Radiochemistry Laboratory and the other located west of the Radwaste Building in a storehouse. The auditors determined that the licensee had sufficient clothing to begin a recovery operation if necessary.

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

#### 4.2.3 Emergency Communications Equipment

The auditors reviewed Sections 1.0 and 7.0 of the CNS Emergency Plan and its EPIP Attachment B.

The auditors toured the licensee's onsite and offsite emergency response centers and noted that the communications equipment for notifying the offsite authorities was in place as specified in the Emergency Plan. The auditors also noted that the licensee was presently installing a public warning system, however, the system was not completely operable at the time of the site visit.

The station had two distinct alarms for notification of station personnel of abnormal conditions. The fire alarm is a warble sound and the other emergency alarm was a steady tone. All alarms are followed by a verbal announcement of instructions. The auditors noted that the fire alarm is tested on each shift in accordance with the fire plan, however, the emergency alarm is tested only for the emergency exercise. The fire alarms were tested during the time that the auditors were onsite. The auditors determined that the station intercom system is audible and could be heard by the station personnel. The licensee had the capability to notify the NRC via the Emergency Notification System or commercial telephone. The auditors reviewed the EPIP Attachment B., II, Checklist and noted that only the State agencies and the NRC are on the notification checklist. The auditors also noted that there were local county and other federal agency numbers listed in Section X of Attachment B.

The auditors noted that each emergency center had a backup means of communicating with onsite personnel and State and Federal agencies. The auditors also noted that the licensee had backup communications for the Control Room, Technical Support Center, Emergency Communications Center, and Operations Support Centers. The Control Room, in addition to the previously mentioned communications, also has a National Warning System (NAWAS) terminal. Other communications available was a NPPD micro-wave system, connecting CNS to the entire NPPD network in Nebraska. The auditors noted that the licensee had two alternate radio communication systems provided in the Control Room and that these radios were battery powered with an alternating current (ac) trickle charger. The radios in the Control Room will still operate upon loss of a.c. power.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(5)&(6) and the guidance contained in NUREG-0654, Revision 1, items F.1.a&b. and F.3, develop procedures for providing local governments with emergency information (298/81-13-43).

#### 4.2.4 Repair/Corrective Action Equipment

The auditors toured the Maintenance Shop and supply warehouse and reviewed the equipment and materials stored and available for emergency use. The Maintenance Shop had an emergency kit which consisted of chains, hydraulic jacks, lanterns, and spare batteries.

The auditors noted that the Maintenance Shop also had crow bars, cutters and other repair equipment available. The licensee also maintains a supply warehouse for reserved supplies and equipment. The auditors noted that the warehouse supply inventory was kept on a computer terminal, and observed a part being searched for, found, and removed from stock. The auditors determined that the licensee's spare stocks were adequate to allow initiation of repair and corrective actions during an emergency at the CNS.

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

#### 4.2.5 Reserve Emergency Supplies and Equipment

The auditors reviewed the licensee's reserve supplies and equipment and noted that the small hand held emergency high-range instruments did not have extendable probes and should be replaced with longer probe type instruments (see Section 4.2.1.1 of this report) due to ALARA considerations.

For a serious emergency, the licensee relies on the normal inventory of supplies (e.g., survey instruments, dosimetry for the environmental radiation monitoring program, protective clothing and equipment, and other instruments and equipment) to support augmented emergency operations and supplement the emergency reserves.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8) and (11), provide high range instrumentation for normal and emergency use which do not require personnel exposure to high doses to the hands (see Section 4.2.1.1 of this report) (298/81-13-44).

#### 4.2.6 Transportation

The auditors reviewed the CNS Emergency Plan and Emergency Procedure for information describing emergency vehicles and noted that CNS had a dedicated ambulance (standard station wagon) for emergency use. Further, Section IV, "Exclusion Area Boundary Survey", of Attachment I to the EPIP states that . . . "The survey of the property boundary will be conducted . . . in

radio-equipped vehicles". This information was insufficient to determine what type and how many vehicles would be available for offsite monitoring. Upon questioning of station personnel, the auditors noted that there was confusion as to exactly how many vehicles were available and who would use them.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(9) and 10 CFR Part 50, Appendix E(IV)(C), provide procedures describing the type, number, equipment, and availability of vehicles for emergency response, e.g., truck, car, four-wheel drive, two-way radio, winches, etc. (298/81-13-45).

## 5.0 PROCEDURES

### 5.1 General Content and Format

The auditors reviewed the content and format of the CNS Emergency Plan Implementation Procedure 5.7 and the methods used to move the Control Room Operators from the Standard Operating Procedures (SOPs), thru the Emergency Operations Procedures (EOPs), and into the EPIP. The auditors noted that, with few exceptions, the EOPs did not reference to the EPIP. The auditors discussed this deficiency with the reactor operators and duty shift supervisor who were surprised at this finding but upon their own review of the EOPs, they verified that indeed only in a few cases (of very new EOPs) were there any references to the EPIP.

The auditors noted that the existing EPIP and its Attachments did not contain: 1) prerequisites; 2) precautions; 3) limitations of actions; or 4) checklists (with the exception of attachment "B").

The auditors also noted that the procedure did not specify the individuals who have responsibility, authority, and qualifications necessary to perform the tasks governed by the procedure. Further, the action requirements were not clearly presented in a step-by-step sequenced fashion and many single steps (such as "notifications") contained a number of actions, thus making tracking difficult.

The auditors noted that the procedure did not provide guidelines to be used for exercising judgment in the implementation of the specific actions, in the interpretation of emergency action levels, or in the application of protective action guides or offsite recommendations.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(a)(2), correct the CNS Emergency Procedure in Volume 5 of the CNS Operations Manual, to enable the reactor operations personnel to effectively move through the emergency procedures and into the EIPs (298/81-13-46); and
- Pursuant to the requirements of 10 CFR 50.47(b)(2), (5), and (9), correct the existing EPIP and attachments by developing functional procedures (e.g. accident classifications, notifications, dose assessments, first aid, search and rescue, personnel accountability, personnel decontamination, etc.) (298/81-13-47).

In addition, the following areas should be considered for improvement:

- Correction of the EPIP and its attachments by providing sections in each procedure and attachment on prerequisites, precautions, limitations of actions and checklists to assure that the procedure steps have been followed (298/81-13-112);

- Correction of the EPIP and attachments by specifically identifying those individuals by title and name who have the authority, responsibilities, and qualifications necessary to perform the tasks governed by the procedure (298/81-13-113); and
- Correction of the EPIP and attachments by providing specific guidelines to be used in exercising judgment in the implementation of specific actions and the development of offsite recommendations for protective actions by the public (298/81-13-114).

## 5.2 Emergency, Alarm and Abnormal Occurrence Procedures

The auditors reviewed the contents of the CNS Emergency Plan Implementing Procedure 5.7, Volume 5 of the CNS Emergency Operation Manual, and Volume 8 of the CNS Health Physics & Chemistry Procedures Manuals.

The auditors noted that, with few exceptions, the CNS Emergency Operating Procedures (EOPs) do not reference the CNS Emergency Plan Implementation Procedure (EPIP) which should be used by the Station operators to classify the emergency and take the necessary emergency actions including notifications to offsite authorities. The auditors noted that the EPIP had been inserted in the EOP manual, Volume V of the station procedures. The mere presence in the manual of the EPIP does not satisfy the need for direct reference in the EOPs to specific requirements in the EPIP.

The auditors also noted that the EPIP section on security threats gave no action plan and did not reference the Security Plan nor did the Security Plan address the security threat.

The auditors determined that Emergency Operating Procedures in Volumes 2 and 5 of the CNS Operations Manual did address immediate action and follow-up action requirements. Further, some of the emergency action requirements that were included in these volumes of the CNS Operations Manual were also included in the EPIP, however, most of the Emergency Operating Procedures did not reference the specific section of the Emergency Plan Implementation procedure to be followed (see Section 5.1 of this report) and thus did not permit rapid and accurate classification of the event and initiation of the Emergency Plan.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(4) and 10 CFR Part 50, Appendix E(IV)(B), assure that the Emergency Operating Procedures are expanded to include the initiating conditions and EALS in NUREG-0654, Revision 1, Appendix 1 and lead the station operators into the appropriate section of the CNS Emergency Plan Implementing Procedure (298-81-13-48).

### 5.3 Emergency Plan Implementing Instructions

The auditors reviewed the contents of the CNS Emergency Plan Implementation Procedure 5.7 and its Attachments. The auditors noted that there were some sketchy separate implementing instructions for each of the emergency classifications in Attachment B to the CNS EPIP. Those instructions were written for the use by the Emergency Director (ED) and the auditors noted that the response required of the ED were defined for each emergency classification but that the responsibilities that cannot be delegated by ED were not defined.

The emergency action levels (EALs) are based on radiation detection systems and process monitor that had readouts located in the Control Room. The meteorological information is not available in the Control Room (see Section 4.2.1.4 of this report) and the readouts were located in the Computer Room which is not on the Control Room air supply system. The indication of an abnormal condition is available to the ED, however, the CNS Emergency Operating Procedures (EOPs) were not complete and did not consistently reference the necessary sections of the EPIP 5.7 to allow the ED to move easily into the classification, implementation and notification procedures.

The EPIP 5.7 did not tie together all the station procedures needed to support the implementation of the Emergency Plan. Example: the emergency health physics procedures, personnel survey procedures prior to entering the assembly area, and the personnel decontamination procedures for persons attempting to exit the facility and enter the assembly area.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(9) and 10 CFR Part 50, Appendix E(V), correct procedures to ensure that all appropriate and applicable emergency actions are defined, and properly referenced in the CNS Emergency Operations Procedures and the EIPs (298/81-13-49).

### 5.4 Emergency Plan Implementing Procedures

#### 5.4.1 Notifications

Section II, "Action Checklist" of Attachment B to the CNS EPIP 5.7 specified the notification process to be followed during emergencies. The Attachment contained a contact log and a "Nuclear Accident Report Form".

The auditors noted that no local governments would be notified during an emergency, nor were there any preplanned messages for the public. The auditors also noted that for a Site Area Emergency (licensee uses Site Emergency), and General Emergency that the following agencies are notified: Nebraska State Patrol; Missouri State Patrol; Kansas State Patrol; and/or Iowa State Patrol, if the incident directly involves these respective states. The auditors noted that the NRC was to be notified within one hour but that the NRC Resident Inspector at CNS and local officials were not listed to be notified. The auditors noted that in the CNS EPIP Attachment B, "Emergency

Director", VI "Emergency Information", B., "Emergency Notification"; notification is to Nebraska State Patrol only, excluding Missouri which is also in the in the 10 mile exposure pathway. The auditors further noted that the Attachment B procedure does not assign any authority or responsibilities to any other functional area and that the procedure does not specify, by title, who will report to the Technical Support Center, Emergency Operations Facility or Operations Support Centers.

Further, the CNS procedure for activation of emergency facilities is contrary to the "functional Criteria for Emergency Response Facilities" (Final Report) NUREG-0696, Table 1, and "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants", NUREG-0654, FEMA-REP-1, Revision 1.

The auditors also noted that the CNS Emergency Plan Implementation, Procedure, Attachment B, did not contain telephone numbers for station personnel or information as to where the telephone numbers could be located.

Based on the findings in the above area, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(1) and (2); 10 CFR Part 50, Appendix E(IV)(C) and (E); and the guidance contained in NUREG-0654 and 0696, develop and implement procedures for activation of the emergency facilities and call-in of all licensee personnel having emergency duties and responsibilities down to the working level (298/81-13-50); and
- Pursuant to the requirements of 10 CFR 50.47(b)(5) and (7), develop and implement the content of initial and follow-up messages and instructions to response organizations and the public (298/81-13-51).

In addition to the above findings, the following matters should be considered for improvement:

- Notification at the Alert, Site Area Emergency and General Emergency classifications of an emergency of the NRC Resident Inspector (298/81-13-115); and
- Inclusion of all telephone numbers, or a clear reference to them in the notification procedure (298/81-13-116).

#### 5.4.2 Assessment Actions

##### 5.4.2.1 Radiological Surveys

The auditors reviewed the contents of the CNS Emergency Plan, its Implementation Procedure 5.7, the CNS Chemistry Procedures (8.6.1-8.6.4), the CNS Emergency Operations Procedures (5.3.1-5.3.3) and the CNS Health Physics Procedures.

The implementation of assessment actions was implemented under CNS EPIP 5.7. This procedure listed the responsibilities of the Reactor Operators, Shift Supervisor, and Operation Supervisor as attachments. The actions required of the Emergency Personnel were defined by the prepared form to be filled out to ensure the necessary actions were taken. The auditors noted that there was no administrative procedure or directive which pulls all of the individual actions into an organized effort nor was there a procedure which defined the function to be performed by the Station Superintendent and his interface with the Emergency Personnel. The ED function is performed by the Station Superintendent, however, the responsibility is assigned to the Shift Supervisor who acts only in the absence of the Station Superintendent and until he arrives on site. Upon questioning of the Shift Supervisors, the auditors determined that they would take no actions of notification of offsite authorities, NRC, or the public until and unless they were specifically ordered to do so by the Station Superintendent. This is contrary to both the letter and the spirit of 10 CFR Part 50, Appendix E. These deficiencies are discussed in Section 1.0 and 2.0 of this report. The auditors noted that there was also no procedure in EPIP 5.7 which defines the responsibilities and authorities for functions to be performed in each of the emergency facilities and which makes it clear who, how and where the various emergency functions will be performed. The EPIP 5.7 did define instruments and provide the source term curves to be used in assessment actions, however, there was no information present in EPIP 5.7 which delineated how field survey teams will be guided to the plume to obtain air samples and make direct measurements.

Further, the auditors noted that the dose assessment was based on fission product burden and the potential for losing containment barriers was addressed in EPIP 5.7, Attachment H. However, there were no provisions in the implementing procedure for continuous update dose assessment and protective action decision making. Provisions were made for evaluating a source term in the absence of process monitoring system data by sampling the various effluent streams and by making direct readings of radiation fields.

#### 5.4.2.1.1 Offsite Radiological Surveys

The auditors noted that provisions for offsite radiological surveys and data acquisition were provided in the EPIP 5.7 and that adequate forms were provided. Attachment I to EPIP 5.7 contained two sections entitled Downwind Surveys (section III) and Exclusion Area Boundary Survey (section IV). The auditors also noted that prepositioned sample points were established within the boundaries of the NPPD property but that no provisions were made for the licensee to make field surveys in the public domain as this function is accepted by the State of Nebraska. This is consistent with Nebraska State Law. Unfortunately, the auditors determined that the State of Nebraska would be unable to perform this task until several hours into an emergency and that no provision was apparent for surveys of lands in the State of Missouri.

The auditors noted that there was no provision for trend analysis described in the implementing procedure nor was the method for collection and labelling of environmental samples in a central location defined. An "Environmental Assessment Form" appears in Attachment H to the EPIP which provides reporting

of the status of plant releases during an emergency and their consequences but the form does not define how, who and where to report the information. Two four-wheel drive trucks and three automobiles were available for field survey work but provisions were not identified for protective equipment for field survey teams.

#### 5.4.2.1.2 Onsite (Out-of-Plant) Radiological Surveys

The auditors noted that the methods and equipment used for out-of-plant surveys were defined in Attachment I, section IV. The routes used and points to be sampled were identified and prepared forms were included to assure the collection of the required data. The auditors determined that, in general, the Attachment was written from the viewpoint of the person who would perform a similar routine sampling procedure and was therefore impliant in nature, and depended upon the knowledge of the individual carrying out the procedure for adequate performance of the duties it covered. In addition it required ad hoc instruction from the Emergency Director or Chemistry and Health Physics Supervisor.

The attachment did provide for use of Ag-Zeolite Cartridges but the counting equipment did not have an efficiency factor indicated for them.

Page 8 in the Attachment contained a map used for site survey and space for recording data on soil, water, vegetation, and air samples but it was not referenced in the Attachment as to how or when such samples would be taken.

Based on review of the Attachment I and above findings, the auditors concluded that it did not provide adequate instructions for performance of the duties under emergency conditions and was not in a format conclusive enough to ensure that adequate documentation of data and results would be obtained if used in an emergency.

#### 5.4.2.1.3 In-plant Radiological Survey

The auditors determined that there were no written procedures which covered inplant surveys during an emergency other than for sample collections. Normal practices as defined in Health Physics Section 9 of the Station Operating Procedures titled "Health Physics Procedures" would be used. This manual provided adequate health physics procedures which were applicable to emergency conditions, with the exception of special instructions required to cover the use of instruments in high-levels of radiation and the differences in instrument ranges and responses when making measurements in a cloud of airborne radioactive materials with a predominance of beta radiation.

#### 5.4.2.1.4 Conclusions and Determinations

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(9) and (10), develop and implement procedures for Offsite, Onsite and Inplant Radiological surveys

that provide sufficient specific guidance to personnel and include appropriate references to other necessary procedures and radiation protection guidance (298/81-13-52); and

- Pursuant to the requirements of 10 CFR 50.47(b)(9) and (10) and 10 CFR Part 50, Appendix E(IV)(B), ensure that offsite radiological field surveys will be performed on all impacted lands until appropriate State authorities can augment the licensee's staff and take responsibility for that emergency function (298/81-13-53).

In addition to the above findings the following matters should be considered for improvement:

- Development of a procedure or directive which defines the function to be performed in each of the emergency facilities and the overall method of coordination of the efforts and functions performed by these emergency centers (298/81-13-117); and
- Development of a procedure which defines where field survey information is reported and the responsibility for evaluation and plotting of data and analysis of trends (298/81-13-118).

#### 5.4.2.2 Post-Accident Sampling and Analysis

The auditors reviewed the contents of the CNS EPIP 5.7 and determined that there were no specific procedures which addressed post-accident sampling and analysis. The auditors questioned the licensee personnel and noted that the routine sampling procedures contained in Sections 8.4 and 8.5 of the Cooper Nuclear Station Operations Manual provide the radiation safety rationale to be used in all sampling and the methods used for analysis of each type of sample. The procedures also provide the methods used in sampling all the locations within the Reactor Complex.

The procedures in Section 8.5 of the CNS Operating Manual address the methods used for the sampling and analyses of effluent samples.

Procedure 8.4.1, titled "Emergency Sampling", provides the instruction to station personnel to be followed to sample the following during a reactor emergency: 1) reactor primary coolant; 2) noble gases; 3) particulates entrained in gaseous effluent streams; and 4) iodine.

The auditors noted that the following general instructions were given:

"Due to the unpredictable nature of an emergency condition, no step-by-step procedure can be initiated to cover all emergencies. Therefore this procedure is set up to:

Discuss and identify what samples are needed;

By using the logical guideline and instructions of this procedure, discuss and set up a sequence of events to safely collect and analyze samples;

Carry out the predetermined sequence of events to ensure the safe collection and analysis of reactor coolant, plant liquid, noble gases, gaseous particulates and iodine; and

Ensure that Laboratory and Counting Room facilities remain within radiological guidelines and accessible for future emergency analysis."

The auditors noted that procedure 8.4.1 then established a basis for planning the action to be taken. It did not try to list the labels required or provide a list until the conditions to be faced are known. The sampling points were clearly described and the sampling methods graphically depicted. The sampling system and equipment were described in the procedure. A method was provided for estimating the concentration in curies per second at the release point. The dose at the surface of the sample container was to be estimated using an ion chamber detection system under the direction of the Health Chemistry and Physics Supervisor. The transport of the sample was not addressed except that it would be under the direct control of the Health Chemistry and Physics Supervisor and that a plastic lined lead container was provided for transporting the sample.

The auditors determined that there were dilution methods pre-established to provide a sample that would be within the acceptable radiation levels that could be analyzed in the counting laboratory. Provisions for calibration at the level acceptable in the laboratory were also provided.

The auditors noted that the procedures described the methods to be used to protect laboratory personnel working with high-level samples and that provisions in place to limit the activity levels that could be brought into the chemistry laboratory for dilution and analyses. This limit was 100 MR/hr on a 1 liter sample. A sample dose rate of less than 10 MR/hr was required for samples to be brought into the counting laboratory.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(9) and 10 CFR Part 50, Appendix E(IV)(B) and Appendix E(V), develop and implement, as part of the EPIP, specific procedures for post-accident sampling and analysis (298/81-13-54).

#### 5.4.2.3 Radiological Environmental Monitoring Program (REMP)

The auditors reviewed the CNS Emergency Implementation Procedure 5.7 and the Sampling Manual for the CNS Environmental Radiological Monitoring Program.

The auditors determined that there was no procedure for implementing a radiological environmental monitoring program during emergencies. Attachment I

(Chemistry and Health Physics Personnel) to the EPIP had provisions in Section III, "Downwind Surveys" for gathering the particulate filters and charcoal cartridges from the stationary air sampling stations and collecting a soil sample at the downwind survey area if monitor readings indicated deposition had occurred. The particulate filters and charcoal cartridges would be taken to the EOF or onsite radio-chemistry laboratory for counting or analysis. Section IV, "Exclusion Area Boundary Survey" of Attachment I, stated that additional surveys, including air, soil, and water sampling would be performed if applicable and directed by the EOF.

The auditors noted that the licensee did have a routine environmental monitoring program in which licensee personnel collect and prepare samples for shipment to Teledyne Isotopes (Westwood, NJ) where any necessary additional preparation and analyses are performed. The licensee also had a compatible TLD reader for the environmental TLDs but did not use it for routine environmental TLD readings. The licensee also had corporate (General Office) personnel (3-4) who perform the sample collection and preparation during outages.

The auditors noted that neither the potential for onsite readout of environmental TLDs nor the potential for augmentation by corporate personnel were specified in the Emergency Plan or EPIP 5.7. Based on a review of the sampling manual and licensee's equipment the auditors conclude that the licensee could not perform an onsite emergency radiological monitoring program equivalent or acceptably equivalent to the service provided by the contractor.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR Part 50, Appendix E(IV)(E), upgrade existing facilities and equipment, or document the contractor service, for the radiological environmental monitoring program to ensure that there are adequate provisions for continuously assessing the impact of the release of radioactive materials to the environment during an emergency (29E/81-13-55).

#### 5.4.3 Protection Action

##### 5.4.3.1 Radiation Protection During Emergencies

The auditors reviewed the CNS Emergency Plan and EPIP 5.7, and the Health Physics Procedures and Chemistry Procedures. The auditors determined that there was no overall procedure governing the implementation of the radiation protection program during emergencies.

Attachments H, I, J, and K to EPIP 5.7 did address some aspects of radiation protection during emergencies.

Attachment H (Chemistry and Health Physics Supervisor) lists fixed and smearable contamination limits for personnel to be used during an emergency.

Attachment I directs the Chemistry and Health Physics Personnel to "Survey personnel for possible contamination", and to "Perform personnel monitoring and decontamination if necessary and administer first aid to the injured as directed by the Chemistry and Health Physics Supervisor". Section III, "Downwind Surveys", of Attachment I stated "If conditions indicate the need for protective equipment the following is available in the Emergency Locker" and listed coveralls, hoods, rubber and canvas shoe covers, plastic booties, self-contained or filter mask respirators, personnel TLD dosimeter badges and self-reading dosimeters.

Attachment J (Re-entry and Personnel Rescue) stated that each team the Emergency Director designated will consist of at least two individuals, one of whom should be a member of Health Physics. It also stated that, "The re-entry team will don protective clothing as required for the particular emergency and procure the necessary equipment that is stored in the Emergency Box or from station supplies, whichever is appropriate."

Attachment J also gave instructions to personnel to zero their direct reading dosimeters (which should be high-range if the emergency warrants their use), warm up high-range survey instruments, perform a battery check and set range selector switch to first (lowest) range and fit and verify operation of self-contained breathing equipment if it is needed.

Section II, B, of Attachment J assigns responsibility of monitoring time and dose rate to the Health Physics member of the team. Time and dose rate criteria are listed for the search and rescue of personnel. Above 100 R/hr and 5 rem total absorbed dose, rescue personnel were directed to obtain authorization for further efforts from the Emergency Director through the Chemistry and Health Physics Supervisor. A dose equivalent of 12 rem was the criterion for voluntary effort. Re-entry for other than personnel rescue would be limited so that personnel exposure would remain below 5 rem and personnel would require authorization before entering fields greater than 10 R/hr.

Attachment K provided instructions to personnel who might handle the treatment of injured personnel. The rescue personnel were instructed to survey and swipe injured individuals in potentially contaminated areas and decontaminate if readings above background were obtained. For personnel injured within a contaminated area, the rescuers were directed to remove (or have the victim remove, if able,) clothing and use plastic sheeting on the stretcher if one is necessary. Once at the boundary of any contaminated area or in areas of low background radiation levels, a G-M survey meter was to be used for monitoring the individual and further decontamination performed if necessary. Personnel were also assigned to assist in contamination control in the ambulance (using plastic sheeting where necessary) and provide personnel dosimetry to the ambulance driver, when necessary.

The auditors also reviewed Chemistry Procedure 8.4.1, "Emergency Sampling", which stated that precautions and procedures would be discussed and a sequence of events formulated prior to obtaining any samples.

The Health Physics Procedure 9.1.6, "Personnel Decontamination" revision 5, approved 11-27-79), did not contain information on its applicability or use during an emergency nor was it referenced in any of the Attachments reviewed for this section of the report.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(11) and the guidance contained in NUREG-0654, Revision 1, items K.1-K.6, develop procedures that give specific guidance to individuals involved with the administration of radiation protection during an emergency and to the individuals whose emergency response duties would require radiation protection, (298/81-13-56).

#### 5.4.3.2 Evacuation of Owner-Controlled Areas

The auditors reviewed the contents of Attachments B, E, and N to the CNS EPIP 5.7 and noted (as previously discussed in Section 5.4.1 of this report) that the licensee's Emergency Procedures did not provide methods or action levels for determining when plant evacuation would be prudent or required. The auditors also noted that evacuation routes were not posted in or around the station buildings. The auditors determined that evacuation of the station buildings or site was addressed on page 9, Attachment B of the EPIP 5.7.

That Attachment directed the Control Room Operator to: "If required, initiate the emergency alarm and announce the emergency over the plant intercom system" and "If required, order the evacuation of all non-essential site personnel to the Primary Evacuation Assembly Point." Page 2 of Attachment E, "Control Room Operators" requires that "As directed by the Emergency Director initiate the emergency alarm by manual activation from the Control Room and announce the emergency directions over the plant intercom system." The auditors noted that there were no action level(s) that require evacuation of specified areas or buildings and the site nor were the assembly points specified and their use defined. The auditors determined that accountability was required under the CNS Emergency Implementing Procedure, Attachment B, page 9, item C.5.a.

The auditors determined, however, that there was no written procedure for personnel accountability, nor was there a specification as to who would be responsible to perform that task and what would be done to locate missing persons.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(1) and 10 CFR Part 50, Appendix E(IV)(A) and E(IV)(E), provide specific procedures which govern the evacuation of personnel from licensee facilities, including specific identifications of action levels to trigger such evacuation (298/81-13-57).

#### 5.4.3.3 Personnel Accountability

The auditors reviewed the contents of Attachments B, E, and G of the EPIP 5.7 and toured the CNS Secondary Alarm Station (SAS) and were shown the different features of the CNS Security Computer System. The auditors noted that one special feature was the capability of the SAS operator to conduct a "Personnel On Station" check. This check was actually conducted in the morning during a period when the normal maximum operating staff would be on site. Upon request, by the auditors to the Security Officer, the SAS operator initiated a POS demand. The auditors noted that it took seven minutes from start to finish to get a complete list of all persons on site. It was also noted that additional contractor personnel were on site which made the total personnel on site more than might be expected during normal operation. The auditors noted that personnel were required to assemble at their designated or announced assembly area, however, there were no formal procedures for personnel accountability nor was there a designation of responsibility for the performance of such an accountability and what would be done to locate missing persons. The auditors did determine that the Security personnel were required as part of their procedures to perform a POS run every 30 minutes after the declaration of an emergency.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E(IV)(E), provide personnel accountability procedures governing how each assembly area will conduct personnel accountability, and to whom this information will be reported, and what will be done to locate missing persons (298/81-13-58).

#### 5.4.3.4 Personnel Monitoring and Decontamination

Attachment H, page 13, of CNS EPIP 5.7 gives the criteria for emergency contamination limits for personnel.

The auditors noted that decontamination supplies were stored in emergency boxes located at the Primary and Alternate Assembly Points and that the Chemistry and Health Physics Supervisor was allowed judgemental discretion on release limits in an emergency and the level at which decontamination was required.

Radiological surveys for personnel on the normal day shift during an emergency would be performed by Health Physics Technicians and on the offshifts each individual would be responsible for their own monitoring.

The auditors noted that there was no specific procedure for use of materials provided in the decontamination kits nor were provisions made in Attachment I of EPIP 5.7 for radiological surveys of personal automobiles used for evacuation.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(11) and 10 CFR Part 50, Appendix E(IV)(E), develop and implement specific procedures which govern the radiological monitoring and decontamination of personnel and equipment which could be removed from the CNS site during an emergency (298/81-13-59).

#### 5.4.3.5 Onsite First Aid/Search and Rescue

The auditors reviewed the contents of Attachment K, "In-plant Handling of Injured Personnel", to EPIP 5.7 and noted that the procedure was directed toward three distinct areas: clean areas; potentially contaminated areas; and contaminated areas. The procedure discussed provisions for reporting the discovery of an injured person, monitoring the casualty, and handling a contaminated casualty. The auditors noted that the casualty may or may not be decontaminated, depending on severity of injury, and protective measures taken to prevent spread of contamination. Further, the casualty may be transported via the station ambulance or the Auburn Rescue Squad and would be accompanied by at least one person from the station with a G-M survey instrument.

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

#### 5.4.4 Security During Emergencies

The auditors reviewed the contents of the CNS Emergency Plan Implementation Procedure 5.7, and its Attachments. The auditors noted the procedures which would involve security during an incident were not written in the EPIP 5.7, but that the EPIP did reference Administrative Procedure 1.8, "Station Security".

The auditors reviewed the Security Procedures and held discussions with the Security staff and determined that specific security procedures for use during an emergency did not exist with the exception of a procedure which covered the entrance of offsite fire and ambulance support personnel.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(2) and (12); 10 CFR Part 50, Appendix E (IV)(A) and (E), and Appendix E(V), and Table B-1 of NUREG-0654, Revision 1, develop and implement specific procedures governing the duties, authorities and responsibilities of Security Personnel during an emergency (298/81-13-60).

#### 5.4.5 Repair/Corrective Actions

The auditors reviewed the contents of the CNS EPIP 5.7 and its attachments and noted that no procedure existed for specifically addressing repairs or

corrective actions. The procedure did not address what person would initiate such action, what key positions will be needed, the methods used to control and direct corrective action teams, or the criteria used to select individuals for the teams.

Based on the above findings, improvement in the following area is required to be an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(2) and (13); 10 CFR Part 50, Appendix E (IV)(A) and (H); and E(V), develop and implement specific procedures which govern the formation, direction, and control of emergency repair and corrective action teams during an emergency (298/81-13-61).

#### 5.4.6 Recovery

The auditors reviewed the contents of the CNS Emergency Plan and its EPIP 5.7 and determined that NPPD had not developed either plans or procedures to govern the recovery of the CNS and its environs after an emergency. A very limited amount of information appears in Attachment J to the EPIP 5.7 and some additional information had been developed at the corporate level but had not been docketed with the NRC. In any case, the auditors determined that the provisions for recovery operations management and planning were completely inadequate.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(1) and (2) and (13); 10 CFR Part 50, Appendix E(IV)(A) and (H); and the guidance contained in NUREG-0654, Revision 1, items M.2 and 3, develop and implement plans and procedures which will govern the operations of the CNS Recovery Organizations and criteria for its initiation (298/81-13-62); and
- Pursuant to the requirements of 10 CFR 50.47(b)(13), and the guidance contained in NUREG-0654, Revision 1, item M.1, develop procedures with specific criteria upon which the emergency class will be downgraded and provisions for notification of Federal, State and local officials prior to entering a downgraded mode (298/81-13-63).

#### 5.4.7 Public Information

The auditors reviewed Section 8.0 of the Emergency Plan, entitled "Release of Information" and interviewed the Information Coordinator (General Office). The auditors did not find any Emergency Plan Implementation Procedure for Public Information.

Section 8.1 of the Emergency Plan stated that the Public Affairs Staff of the Nebraska Public Power District would provide press releases to the news media during an emergency and would handle release of information to the public concerning any emergency. Section 8.2 of the Emergency Plan (Information

Authentication Center) stated that a Rumor Control Center would be located in the near-site Emergency Operations Facility (EOF).

Although the auditors found that some information had been prepared at the Corporate level which did contain a procedure, entitled "Nuclear Emergency Information Procedure", this information had not been docketed by the time of the Appraisal and therefore the auditors did not include a review of the Nuclear Emergency Information Procedure in this Appraisal Report. The auditors did note however that the Corporate information did contain some initial and followup messages for the public. The auditors noted the complete lack of this type of information in the CNS EP and EPIP and addressed this deficiency in Section 5.4.1 of this report.

Based on the above findings, improvement in the following area is required to achieve an adequate program.

- Pursuant to the requirements of 10 CFR 50.47(b)(5) and (7); 10 CFR Part 50, Appendix D(IV)(D); and the guidance contained in NUREG-0654, Revision 1, items G1 thru 5, and item G.7, develop procedures for Public Information which provide for local and general rumor control, clearly identify the utility spokesperson and source of information, coordinate information releases, and identify the organizations involved in news dissemination, their locations and ways of contacting them (298/81-13-64).

## 5.5 Supplementary Procedures

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

The auditors reviewed CNS Emergency Procedures 5.7 Attachments N and J.

The auditors inspected the emergency kits and found the equipment listed on the inventory sheets to be in place. All instruments were calibrated and operationally checked. The auditors noted that the procedures did not specify that all equipment/instruments would be inventoried and operationally checked each quarter. The auditors also noted that attachments N and J did not reference periodic testing of communications equipment located in emergency centers.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(8); 10 CFR Part 50, Appendix E(IV)(E); and the guidance contained in NUREG-0654, Revision 1, item H.10, develop and implement procedures to inspect, inventory and operationally check emergency equipment/instruments at least once each quarter and after use (298/81-13-65).

### 5.5.2 Drills and Exercises

The auditors reviewed Sections 1.0 (Introduction), 7.2 (Communications) and 11.3 (Exercises and Drills) of the Emergency Plan, the available records of drills and exercises including quality assurance records, the CNS Surveillance Procedure 6.3.11.1 (CNS Emergency Plan Drill, revision 4., approved 11-16-80), Section 6 (Administrative Controls) of the CNS Technical Specifications, the CNS Security Procedure 1.6 (Communications, revision 3, reviewed 9-19-79) and the CNS Administrative Procedure 1.5 (Selection and Training of station personnel, rev. 6, approved 6-3-82). The auditors obtained additional information on the conduct of drills and exercises through interviews with onsite and station personnel.

The auditors noted that although entitled "CNS Emergency Plan Drill", Surveillance Procedure 6.3.11.1 described the conduct of the annual exercise as defined in NUREG-0654, Revision 1, item N.1. a. The Procedure specified the individuals by title, who would: authorize, plan and approve the exercise; hold the post-drill critique; and plan for improvements and modifications as a result of the response to the exercise. The auditors determined that the procedure had provisions for including offsite agencies in the exercise and a critique but there were no provisions for backshift exercises. The procedure contained instructions for the Station Superintendent, Drill Coordinator, Drill Observer and Shift Supervisor but did not otherwise identify the Drill Coordinator or how the individual would be selected. The Procedure did contain Planning, Initiation and Observer forms which would be used in the conduct of the exercise.

Administrative Procedure 1.5 stated that practice drills of the Emergency Plan Drill Procedure (Surveillance Procedure 6.3.11.1) shall be held at least annually, conducted as realistically as practicable and that state and local agencies shall be encouraged to participate. The procedure also stated that CNS personnel would review drill planning and performance in pre- and post-drill conferences and that any revisions to the procedure shall be proposed to the Chemistry and Health Physics Supervisor with any changes reviewed by SORC.

Section 11.3 of the Emergency Plan specified that health physics drills, fire drills, communication drills, radiation monitoring drills and operational drills may be included in the emergency plan drill or exercise. Section 11.3 also stated that fire drills are conducted as per the CNS Technical Specifications; that health physics drills would be conducted semi-annually; and that communications tests were conducted on a frequency indicated in Section 7.2.4 of the Emergency Plan. Section 7.2.4 of the Emergency Plan states that all communication systems are periodically tested during normal use or through Security Procedure 1.6 or during emergency use.

Through review of the exercise records, which included Quality Assurance records, the auditors determined that no procedural mechanism existed for assuring correction of deficiencies identified as a result of exercises or drills although the items identified as such during the critique were corrected or resolved.

The auditors determined that there were no procedures for the conduct of drills separate from the annual exercise, e.g., health physics, fire and communications drills, nor were there records for drills other than drills or elements of drills which were included as part of the exercise and fire drills.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(14); 10 CFR Part 50, Appendix E(IV)(F); and the guidance contained in NUREG-0654, Revision 1, items N.1 thru 5, develop and implement procedures for the Conduct of Drills and Exercises which provide specific guidance on the planning, review, conduct, and critique of drills and exercises (298/81-13-66).

### 5.5.3 Review, Revision and Distribution of Emergency Plan and Procedures

The auditors reviewed Section 1.0 (Introduction) of the CNS Emergency Plan, the CNS Administrative Procedure 1.3 (Procedures; revision 6, approved 2-26-81) and the CNS Quality Assurance Plan QAP-1900 (Emergency Plan, revision 3, 10-30-80). The auditors determined that there were no procedures for the review, revision and distribution of the Emergency Plan and Implementation Procedure. Section 1.0 of the Emergency Plan stated, on pages 1-4 and 1-5, that the Emergency Planning Coordinator reviewed the Plan and Implementation Procedure 5.7 annually to ensure they are kept up to date, that revisions would be marked and revised pages dated, that approved revisions will be forwarded to all organizations and individuals with implementation responsibilities and that phone numbers of offsite organizations found in Implementation Procedure 5.7 would be updated quarterly.

Administrative Procedure 1.3 stated that each Department Supervisor was responsible for assuring that all of the procedures he/she was assigned were reviewed and approved in accordance with Administrative Procedure 1.3.

Volume 5 (Emergency Procedures) of the Station Operations Manual, which contained Emergency Plan Implementation Procedure 5.7, was assigned to the Operations Supervisor by Administrative Procedure 1.3. However, the Emergency Plan Coordinator was the Chemistry and Health Physics Supervisor.

The auditors reviewed the three distribution lists for the Emergency Plan and Implementation Procedure and determined during interviews and walkthroughs with onsite and offsite personnel, that the current Plan and Procedures had been distributed in accordance with those lists. The responsibility for distribution of the Plan and Implementation Procedure was specified on the corporate distribution list to be the responsibility of the Licensing Manager.

The QAP-1900 procedure for the Emergency Plan provided for verifying that call lists are current and documents are up-to-date with all revisions authorized, approved and distributed.

The CNS document control process for assuring that changes to procedures had been received by the copy holders, did not include the Emergency Plan nor offsite individuals and organizations or locations where copies of the Implementation Procedure were kept. During interviews and inspections of facilities and equipment the auditors verified that the offsite individuals and organizations or locations did have current copies of the Plan or Procedure or both.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(16), and 10 CFR Part 50, Appendix E(IV)(G), establish unambiguous responsibilities for the development, review and distribution of the Emergency Plan and EIPs (298/81-13-67); and
- Pursuant to the requirements of 10 CFR 50.47(b)(16) and 10 CFR Part 50, Appendix E(IV)(G), establish unambiguous documentation for assuring that the CNS Emergency Plans and Procedures are maintained in an up-to-date condition by all holders of controlled copies (298/81-13-68).

#### 5.5.4 Audits of Emergency Preparedness

The auditors reviewed Section 11.4 (Quality Assurance Audits) of the CNS Emergency Plan, the CNS Quality Assurance Program procedure QAP-1900 (Emergency Plans, revision 3, approved 10-3-80) and QA audit records.

Section 11.4 stated that an audit of the emergency preparedness program would be conducted annually by NPPD Quality Assurance Personnel as outlined in the QA Program Documents.

Through review of QA audit records and QAP-1900, the auditors determined that QAP-1900 was oriented for auditing of equipment drills and exercises, however, the Emergency Plan and Procedures were included in the actual audit.

The audit procedure provided for observation of the emergency plan exercise (drill) by QA personnel. During interviews the auditors determined that the QA personnel acted simultaneously as Drill Observers and Auditors.

Section 4.0 (Quality Assurance Surveillance and Audit Requirements) of QAP-1900 stated that the QA Department would verify that the Station Operations Review Committee (SORC) reviewed the adequacy of the drill, document any deficiencies or discrepancies and provide adequate corrective action. In addition the QA Department would evaluate the effectiveness of training provided to participants by the exercise.

In QAP-1900 the review of the Emergency Plan and Implementing Procedure was specified to be the responsibility of the Safety Review and Audit Board, located at the General Office.

Based on the above findings, this portion of the licensee's program appears to be adequate but the following matter should be considered for improvements:

- Development of a QA procedure that provides for the criteria in NUREG-0654, Revision 1, item P.5 including a review of all emergency plan training (298/81-13-119).

#### 5.6 Human Factors Engineering

The auditors observed several areas of impediment for the user of the Emergency Plan Implementing Procedure (EPIP). These were discovered as part of walkthrough exercises of the Shift Supervisors. Impediments in the areas of classifying emergency conditions and making appropriate recommendations were identified. The licensee's EPIP was not tabbed for quick location of critical EPIP sections or attachments such as; (1) emergency classification, (2) notification and (3) the Emergency Director emergency procedure.

Decisional aids attached or referenced in the EPIP were not readily available and caused unnecessary time delays in decision making. These aids included evacuation maps of the ten mile EPZ in standard sector (A thru P) nomenclature, dose calculation forms, accident reporting forms, etc.

The auditors further observed that the use of color coding tabs or other similar means would greatly enhance the retrievability of the immediately necessary documents. Similar coding would also be beneficial for those specific instruments used for the classification of emergencies.

Based on the above findings, the following matter should be considered for improvement:

- Evaluation of the usability of existing documents and instruments, which would be used during an emergency, for human factors engineering corrections (298/81-13-120).

## 6.0 COORDINATION WITH OFFSITE GROUPS

### 6.1 Offsite Agencies

The auditors contacted responsible individuals within the following organizations to verify that: 1) they understood their responsibilities and procedures in responding to an emergency at the licensee's facility; 2) that their understandings were consistent with the agreements made between themselves and the licensee and the licensee procedures; and 3) that their expectations as to the interfaces and cooperative relationship with the licensee were adequate.

- Nebraska State Patrol
- Nebraska State Civil Defense
- Nebraska State Department of Health
- Nemaha County NE, Sheriff
- Otoe County NE, Sheriff
- Richardson County NE, Sheriff
- Missouri State Highway Patrol
- Missouri Disaster Planning and Operations Office
- U.S. Coast Guard
- U.S. Department of Energy, Chicago Operations Office (DOE)
- U.S. Environmental Protection Agency (EPA)
- Institute for Nuclear Power Operations (INPO)
- Nemaha County NE, Hospital
- Falls City Community Hospital

These contacts verified that the licensee had contacted the responsible agencies for the purpose of conducting drills, exercises and where applicable, training. It should be noted, however, that the only organizations which actually received training directly from the licensee were the local rescue squads and hospitals. All other organizations either had their own training program or used the state civil defense training materials for their purposes.

The auditors determined that the licensee's concept of training for offsite response personnel was to invite those personnel to participate in drills and exercises but did not include formal classroom type training. Further, the licensee depended upon the offsite response groups to identify the training they needed. Unfortunately it was not clear to the auditors that the offsite response groups could effectively identify all of the many types of training they may need without first the licensee developing a listing and content guide for the types of training the licensee could make available to the offsite response groups.

The licensee's protective action guides and related recommendations appeared to be consistent with those of the State of Nebraska and Missouri. However, the auditors determined that the offsite agencies had not reviewed and approved the emergency actions, protective action guides and associated protective action recommendations for each emergency class.

Each representative contacted expressed satisfaction with the licensee's coordination efforts in relation to notification during an emergency and the exchange of routine planning information. Certain of these agency representatives (local hospitals and rescue squads) indicated that they were not satisfied with the frequency and nature of the training provided by the licensee.

The auditors determined that the letters of agreement between the licensee and offsite response groups were not all current and that letters of agreement did not exist for some response groups or were so ambiguous as to be meaningless. The auditors also determined that the States of Nebraska and Missouri could not activate and provide offsite radiological monitoring teams and equipment for approximately three (3) hours after that need was identified to the States. As has already been discussed (See Section 5.4.2 of this report) the licensee would have to perform this task until the States could respond and accept responsibility for this function.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47 (b)(15); 10 CFR Part 50, Appendix E(IV)(F); and the guidance contained in NUREG-0654, Revision 1, items 0.1.5, evaluate the status of training of offsite response personnel, develop a listing and course description of the types of training the licensee could provide for offsite response personnel, and offer initial training and annual retraining classes (in addition to the training received by participation in exercises and drills) to all offsite response organizations (298/81-13-69); and
- Pursuant to the requirements of 10 CFR 50.47(b)(3); 10 CFR Part 50, Appendix E(IV)(D) and (E) and (G); and the guidance contained in NUREG-0654, Revision 1, items A.3 and B.9, review all letters of agreement with offsite support organizations to ensure that all are still acceptable and will be honored, and ensure that adequately detailed letters of agreement exist for all organizations the licensee will depend on for aid during an emergency (298/81-13-70).

## 6.2 General Public

The auditors reviewed Section 8.4 (Routine Public Information) of the Emergency Plan and interviewed the NPPD Information Coordinator (General Office -Public Affairs Division).

Section 8.4 of the CNS Emergency Plan states that the Public Affairs Division of NPPD Headquarters will provide updated information annually to the general public within the 10 mile EPZ. Through the interview with the Information Coordinator, the auditors determined that annual dissemination of emergency planning information to the public had not occurred. However the auditors saw a draft of the brochure the licensee is planning to distribute and discussed the requirements for dissemination of emergency planning information with the Information Coordinator.

Based on the above findings, improvement in the following area is required to achieve an acceptable program:

- Pursuant to the requirements of 10 CFR 50.47(b)(7) and the guidance contained in NUREG-0654, Revision 1, items G.1, G.2, and G.5, provide for dissemination of emergency planning information to the public (298/81-13-71).

### 6.3 News Media

The auditors reviewed the contents of the CNS Emergency Plan Section 8.3 and conducted personal interviews. The auditors determined that there was not presently established a program for familiarizing the news media with the emergency plan, information about radiation, and accident sequences.

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(7); and the guidance contained in NUREG-0654, Revision 1, item G.5, establish a program to familiarize the news media on at least an annual basis, with the emergency plans, information on radiation, and points of contact for the release of public information during an emergency (298/81-13-72).

## 7.0 DRILLS, EXERCISES AND WALK-THROUGHS

### 7.1 Drill and Exercise Program Implementation

The auditors reviewed Section 11.3 (Exercises and Drills) of the CNS Emergency Plan, drill records, QA records and conducted interviews with station personnel.

Through review of QA and drill records, the auditors determined that drill identified improvement items had been resolved.

Although the Plan is ambiguous in distinguishing between drills and exercises, the auditors determined that the annual Emergency Plan drill was equivalent to the annual exercise in that a major portion of the basic elements of the emergency organization was tested and it was conducted in accordance with an established procedure (Surveillance Procedure 6.3.11.1, CNS Emergency Plan Drill).

By review of Section 11.3 of the Emergency Plan and available records, the auditors determined that only fire drills and the annual emergency plan drills (exercise) had been performed, although the exercise contained a Medical Emergency Drill, Radiological Monitoring Drill, Communications Drill and elements of a Health Physics Drill according to the definitions of these drills in NUREG-0654, Revision 1, items N.2. a-e.

The licensee stated that one of the semi-annual Health Physics Drills was scheduled to be conducted a few weeks after the Appraisal visit.

Although all of the communications systems described in the Plan appeared to be tested by the stated methods or procedures, the tests did not meet the criteria for a drill as specified in NUREG-0654, Revision 1, item N. 2, except when conducted as part of the annual exercise.

Fire drills were conducted at the frequency indicated in Section 6.1.4.A of the CNS Technical Specifications.

Responses to actual fires were substituted for drills. Although MSA air-packs were frequently used and some simulated responses involved the Radwaste Building, the auditors could not determine, after review of fire drill records, that special considerations for radiation and contamination in the fire area, e.g., as outlined in Section IV B of the CNS Emergency Procedure 5.4.1 (Revision 12, approved 4-12-81), were tested by the drills.

The auditors did not find records or procedures describing the conduct of what was specified in Section 11.3 of the Emergency Plan as "Operational Drills".

Based on the above findings, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(14); 10 CFR 50, Appendix E(IV)(F); and the guidance contained in NUREG-0654, Revision 1,

item N.2, develop and implement a schedule of drills and exercises which adequately tests the components of your emergency response capabilities and equipment (298/81-13-73).

## 7.2 Walk-Through Observations

### 7.2.1 Emergency Detection (EAL Recognition) and Emergency Classification

The auditors reviewed the contents of Attachment "B" of the CNS Emergency Plan Implementation Procedure 5.7 and held discussions with several of the station operation personnel who are normally assigned as Shift Supervisors for the reactor operations shift. In addition, the auditors performed a "walk-through" of the EAL recognition and emergency classification responsibilities of those Shift Supervisors. The auditors supplied the individuals questioned with specific instrument conditions as a starting point and requested that the individual take that information and classify the emergency based upon the EAL's as defined in the EPIP 5.7.

The Auditors determined that the initiating conditions as defined in EPIP 5.7 were neither well known nor understood by the station operation personnel and that those personnel questioned had had no input to the development of those initiating conditions. The auditors further determined that the station operators had only received about two hours of training on the CNS Emergency Plan and that that training was limited to discussions on the meaning of the four classes of emergencies and their associated initiating conditions. The auditors noted that the training had been given to the operation personnel within 2-3 weeks of the start of the NRC Emergency Preparedness Appraisal and that no tests or other means were used to verify the effectiveness of the training session.

During the walk-throughs, the auditors determined that there was not a cross referencing system leading the station operator out of the normal station operations procedures, through the emergency operation procedure and into the CNS EPIP 5.7. The auditors also noted a reluctance on the part of the Shift Supervisors to perform the classification of an emergency. The auditors determined that a specific line of succession of senior station management personnel would be exhausted before the Shift Supervisor would perform the emergency classification. The individuals who would be called upon to make that classification, in order of priority, are: 1) Station Superintendent; 2) Assistant to the Station Superintendent; 3) Engineering Supervisor; 4) Operations Supervisor; and 5) on duty Shift Supervisors.

The auditors noted that this line of succession was not addressed in either the CNS Emergency Plan or the EPIP 5.7.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR Part 50, Appendix E(IV)(C), develop and implement methods to lead, by direct reference, the Shift

Supervisor to the applicable section of Emergency Implementation Procedure (298/81-13-74); and

- Pursuant to the requirements of 10 CFR Part 50, Appendix E(IV)(F), established and implemented a formal training program which gives the Shift Supervisor and the SRO a clear working knowledge of initiating conditions, emergency action levels, and the classification of emergencies (298/81-13-75).

### 7.2.2 Dose Calculations

The auditors, utilizing Attachments D and E of the CNS EPIP 5.7, performed walkthroughs with three Shift Supervisors and four Control Room Operators (Unit 1 or Unit 2 operators).

Attachment E (Control Room Operators) requires the control room operator (CRO) to record relevant data on gaseous releases on a form contained in the Attachment. The control room operators were asked when would they or what cued them to fill out Attachment E of CNS EPIP 5.7. While there was no statement in the Attachment which instructs the CRO what to do with the information, once gathered, all CROs responded that they would give it to the Shift Supervisor. This was done and then the Shift Supervisors were asked what they would do with this information. The Shift Supervisors stated that they would use Attachment E (Shift Supervisor) and fill out information in Section IV, "Uncontrolled Release of Gaseous Radioactivity". They were then asked what would they do with the information they had generated. After an answer was received, the walkthrough was terminated.

Based on these walkthroughs, the auditors determined that the CROs did not immediately know which recorder to use for obtaining the meteorological data. The recorders were not identified as to which instruments were being recorded. Most CROs knew meteorological instruments were located at two heights and some made a choice depending upon which monitor was going to be read (The Attachment format has meteorological data first, then radiation monitor readings). Others simply chose one, stating they didn't know a reason why.

The CROs picked different radiation monitors to read, one stating that the monitor with the highest reading would be picked, others stating that the Elevated Release Point should be monitored. Offscale readings would be recorded as just that, according to one individual.

The auditors noted that there was no consistent, clear, reason for initiating the use of Attachment E. Verbal instructions from Shift Supervisors or Emergency Directors or instruction from Abnormal Procedures were among answers the auditors obtained. When some Abnormal Procedures were followed through, the auditors noted that they did not direct the operators to Attachment E, as they had previously stated.

Attachment E did not contain all the information or steps necessary to provide the required data. Supplemental instructions taped near the readouts were required.

Shift Supervisors did not demonstrate consistent levels of knowledge about Attachment E. Some did not know the calculational process allowed them to calculate doses beyond 0.5 miles although the graph does permit calculations out to 10 miles. Some did not know that Sampling Procedure 8.4.1 permitted calculation of data required in Attachment E if monitors were offscale or inoperable. There was a general lack of knowledge concerning potential meteorological effects and how these could be factored in to the dose calculation.

Based on the above walkthroughs, the auditors made findings in areas of training, content and format of procedures, and specific procedures. The findings are addressed in other sections of this report.

### 7.2.3 Post-Accident Coolant Sampling and Analysis

The auditors reviewed the equipment and facilities used to sample and analyze the primary reactor coolant during an accident. The auditors noted that the sampling station was located within a standard fume hood in a room about 8' x 10', which left an aisle about 4 feet wide for personnel. The sample lines were routed along the wall opposite the hood at about seven feet above the floor. The lines cross over the aisle to get to the reactor water chemistry cells, and at the point where the line made the right angle turn it was within three feet of the fixed area radiation monitor which was set to alarm at 100 mR/hr. The sample lines were unshielded and the primary coolant flowing through these lines during a fuel failure accident would make this location uninhabitable as a result of the radiation emanating from these unshielded sample lines. The close proximity of the radiation detector to the line would alert personnel of a high radiation level so that no overexposure is likely to occur, however, it is questionable whether a sample could in fact be taken during an accident due to the potential high-radiation levels. In any case the existing facility did not adequately reflect proper ALARA considerations.

The fume hood housing the sample station had an inadequate exhaust to give sufficient air velocity at the face of the hood. The sample was easily obtained, but the size of the sample lines make the combined sampling and flushing time longer in duration than would be desirable under accident conditions. The lines were 1/4" OD stainless steel tubing. Provisions were made for transporting the samples in a lead liner in a special bucket. The sample would be diluted to less than 10 mR/hr prior to being allowed in the counting laboratories. Dilution hoods were provided in two locations outside the laboratory, all the hoods checked had inadequate face velocity.

The sample handling and analysis appeared to be satisfactory. The counting laboratory was equipped to handle hot samples and had established geometries and calibration for distances up to 20 cm from the Geli detector. The NRC Region IV Mobile Measurements Laboratory was on site during this appraisal and made comparison of the licensee's counting equipment with standards counted in their mobile laboratory. A review of this entire comparison indicated that the licensee has acceptable counting analysis programs.

Based on the above findings, improvements in the following areas are required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR, Part 20, evaluate the existing primary coolant sampling equipment with respect to ALARA considerations and normal state-of-the-art industrial standards of good practice (298/81-13-76); and
- Pursuant to the requirements of 10 CFR Part 20, OSHA Regulations, and industrial standards of "good practice" correct the fume hood fans to ensure that the air velocity at the base of the fume hood equals or exceeds 100 linear feet per minute (298/81-13-77).

#### 7.2.4 Post-Accident Containment Air Sampling & Analysis

The containment air was sampled by an NMC monitor which samples the drywell. This monitor was equipped to permit sampling bombs to be connected into the sample line and filled with a sample of containment air. This sample could then be used to make direct measurements of the activity in the containment air or be taken to the counting laboratory for more sophisticated analysis using the counting laboratory equipment. The continuous monitoring of the drywell had a limited range which would indicate a breach in the primary system, but could not serve as a trend monitor of the drywell radioactivity in the control room. The auditors determined that a program for installing ionization chambers in the drywell had been initiated by the licensee.

The auditors noted that if the drywell were breached, the activity leaking from the drywell would be exhausted through the elevated release point (ERP). The air monitor sampling this release point is functional but is not in service because of moisture collection problems at this sampling point made the result unreliable. The elevated release to the environment was actually sampled back in the reactor building by sampling the exhaust stream that leads to the elevated release point.

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

- Improvement of the ability to measure the fission product burden in the drywell (298/81-13-121).

#### 7.2.5 In-Plant Sampling and Analysis

The auditors walked a health physics technician through inplant sampling under emergency conditions. The radiation detector that would be used to establish safe radiation levels in sampling was a PIC 6 with ranges 1 to 1000 mR/hr and 1R to 1000 R/hr. There was no provision for monitoring in a gas cloud situation. The equipment review for emergency air sampling of particulates and iodine were also reviewed. The Health Physics counting facility would count particulates air samples and smears. The chemistry laboratory would count the charcoal filters for iodine analyzed and the liquid samples.

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

#### 7.2.6 Offsite Environmental Sampling and Analysis

The auditors took a Health Physics Technician on a walkthrough of offsite surveys. Attachment I of CNS EPIP 5.7 was the procedure that covered this area.

Generally the walkthrough was adequate in that necessary equipment was available and operable, although there were areas of concern that are noted below.

The initial sequence of emergency actions followed was different from what was stated in Attachment I. The individual stated that he would go to the primary assembly point, retrieve equipment from the emergency locker and setup the equipment in the whole body counting room of the EOF. Attachment I directs personnel that report to the EOF to bring portable high-range survey instruments, air samples and calculators if possible. Since the licensee relies to a large extent on specific verbal instructions over the intercom/PA System it was uncertain whether the individual should have reported to the Operational Support Center (OSC) first.

The individual was asked to make a complete set of measurements. A copy of Attachment I was procured and the procedure for Downwind Surveys was performed. The individual stated he would not take any protective clothing with him. The action performed included choosing a particular sector for monitoring, locating an approximate area in the sector then taking an air sample and monitoring at waist and ground level with a G-M counter, using an open window. Only one of the trucks (which were not designated exclusively as emergency vehicles) was radio-equipped, but an operable, portable radio was obtained from the guardhouse, as were keys to the truck.

There were no markers or specific reference points to indicate where measurements should be taken. The available maps (from Attachment I) would be adequate only for someone with detailed prior knowledge of sampling areas.

The licensee stated that as a result of a drill (exercise) in which Chemistry Technicians had trouble finding the sampling areas, the Chemistry Technicians were given a familiarization tour of the access roads and areas.

The individual answered logically, when questioned, about adverse conditions for which there were no written procedures or other instruction. The auditors concluded such behavior was a necessary supplement to available procedures.

Based on the above walkthrough the auditors made findings in areas of training and specific procedures. These findings are addressed in the specific sections of this report.

### 7.2.7 Protective Action Decision Walkthroughs

The auditor walked the Shift Supervisors and the Assistant to the Station Superintendent through the dose calculations and protective action decision making process. A low level of knowledge was generally observed on the dose calculation process and most of the Shift Supervisors would take no action on protective action decision making unless forced to do so by the absence of the Station Superintendent or his designees.

Based on the above finding, improvement in the following area is required to achieve an adequate program:

- Pursuant to the requirements of 10 CFR 50.47(b)(1), (2), (9) and (10); and 10 CFR Part 50, Appendix E(IV)(A) and (B), provide an alternate to the Shift Supervisor and the Station Superintendent who would make dose calculations, assess the need for protective actions and make recommendations for offsite protective actions to the ED (298/81-13-78).

## 8.0 EXIT MEETING

On June 26, 1981, at the conclusion of the on-site portion of the appraisal, the appraisal team, along with a representative from the NRC Office of Inspection and Enforcement Headquarters, met with licensee representatives denoted in Annex A to this report. The Team Leader summarized the scope of the appraisal and the significant appraisal findings.

Licensee management acknowledged the appraisal findings and indicated that, prior to the NRC appraisal, they were aware that there were many areas which needed to be improved. Limited resources in conjunction with the short-time frame permitted by the regulations from the Emergency Plan submittal to plan implementation, however, made it difficult to accomplish all that was required.

At the conclusion of the exit meeting, NRC management from the Division of Emergency Preparedness left with the licensee management a preliminary draft listing of significant findings that would require resolution. Immediately following the exit meeting, the NRC staff met with the licensee's management and emergency preparedness staff and reviewed the specifics of the preliminary significant findings to ensure mutual understanding.

Further, on September 4, 1981, Mr. Karl V. Seyfrit, Director, Region IV, and other members of the Nuclear Regulatory Commission staff met with C. Jones, Assistant General Manager for Operations and other members of his staff of the Nebraska Public Power District to discuss the results of the NRC Emergency Preparedness Appraisal of Cooper Nuclear Stations. At the meeting, problems needing immediate attention were identified and mutually agreed upon dates for corrective actions were established.

## ANNEX A

## INDIVIDUALS CONTACTED

## 1.0 Principal Licensee Individuals

- G. Adkins, Shift Supervisor
- R. Black, Shift Supervisor
- P. Borer, Engineering Supervisor
- G. Bray, Station Operator
- G. Bridgewater, Lead Utilityman
- \*R. Buntain, Director of Power Supply
- M. Cade, Station Operator
- L. Cooper, Manager, Environmental Affairs
- \*B. Creason, Operations Supervisor
- \*D. DuBois, NRC Resident Inspector
- B. Fitzsimmons, Mechanical Supervisor
- J. Flash, Information Coordinator
- R. Gardner, Shift Supervisor
- R. Gibson, Quality Assurance Specialist
- B. Gilbert, Training Coordinator
- C. Goebel, Administrative Supervisor
- B. Iliff, Unit Operator I
- B. Jansky, Shift Supervisor
- H. Jantzen, Instrumentation and Control Supervisor
- \*C. Jones, 1st Assistant General Manager for Operations
- G. Ketner, Lead Chemistry Technician
- J. Kuttler, Lead Health Physics Technician
- \*L. Lessor, Station Superintendent
- F. Mangnall
- B. McDonald, Health Physicist
- P. Morris, Health Physics Technician
- L. Olson
- R. Parmelee, Unit Operator I
- J. Peaslee, Shift Supervisor
- \*J. Pilant, Director of Licensing and Quality Assurance
- \*J. Sayer, Chemistry and Health Physics Supervisor
- D. Shallenberger, Unit Operator I
- D. Sheesley, Security Supervisor
- G. Smith, Quality Assurance Specialist
- V. Stairs, Unit Operator I
- P. Thomason, Assistant to the Station Superintendent
- \*K. Walden, Licensing Engineer
- J. Warren, Chemist
- \*J. Weaver, Licensing Manager
- D. Werner, Unit Operator II
- R. Windham, Health Physics Technician
- V. Wolstenholm, Quality Assurance Supervisor, CNS
- M. Wright, Chemistry Technician

\*Denotes these individuals attended exit meeting on June 26, 1981.

## ANNEX A (continued)

## 2.0 Non-Licensee Individuals

- B. Beaty, Director Missouri Disaster Planning and Operations Office
- E. Binder, Director Nebraska State Civil Defense Headquarters
- G. Boan, Sheriff Nemaha County, NE
- E. Burns, In Service Coordinator (Training), Falls City Community Hospital
- H. Esluet, Sheriff, Otoe County, NE
- S. Gilliland, In Service Coordinator (Training), Nemaha County Hospital
- G. Krueger, Administrator, Nemaha County Hospital
- F. Laden, Assistant Director Nebraska Civil Defense Headquarters
- R. Liekhus, Nebraska State Patrol Headquarters
- M. Rathman, Administrator, Falls City Community Hospital
- G. Ramer, Deputy, Richardson County Sheriff's Department
- K. Rounphf, Chief, Nebraska City Police Department
- J. Sartor, Missouri State Highway Patrol Headquarters
- H. Simmons, Director, Nebraska State Department of Health

\*Denotes these individuals attended exit meeting on June 26, 1981.